



# STATE MATCH SUPPLEMENT

Massachusetts  
Curriculum  
Frameworks  
English Language Arts,  
Mathematics, and Science  
Grades 8–12

and

EXPLORE<sup>®</sup>, PLAN<sup>®</sup>,  
the ACT<sup>®</sup>, and  
WorkKeys<sup>®</sup>

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## Preface

This document is a supplement to the *State Match Massachusetts Curriculum Frameworks English Language Arts, Mathematics, and Science Grades 8–12 and ACT's EXPLORE, PLAN, the ACT, and WorkKeys (August 2008)*. This supplement identifies specific ACT College Readiness Standards that correspond to each Massachusetts Standard in a side-by-side format. The left side of each page presents the Massachusetts Standards (highlighted if measured by ACT's corresponding testing program). The right side of each page presents the specific ACT College Readiness Standard(s) and WorkKeys Skill(s) that correspond to each Massachusetts Standard.

Massachusetts Standards listed here are from the Massachusetts Curriculum Frameworks as presented on the Massachusetts Department of Education's website in February 2008.



**SUPPLEMENT  
TABLES 1A–1E:  
ENGLISH  
LANGUAGE ARTS**

**TABLE 1A**

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
Language	
<p><b>Standard 1: Discussion</b></p> <p>Students will use agreed-upon rules for informal and formal discussions in small and large groups.</p>	
<p><b>1.1:</b> Follow agreed-upon rules for discussion.</p>	
<p><b>1.3:</b> Apply understanding of agreed-upon rules and individual roles in order to make decisions.</p>	
<p><b>1.4:</b> Know and apply rules for formal discussions (<i>classroom, parliamentary debate, town meeting rules</i>).</p>	
<p><b>Standard 2: Questioning, Listening, and Contributing</b></p> <p>Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.</p>	
<p><b>2.1:</b> Contribute knowledge to class discussion in order to develop a topic for a class project.</p>	
<p><b>2.2:</b> Contribute knowledge to class discussion in order to develop ideas for a class project and generate interview questions to be used as part of the project.</p>	
<p><b>2.3:</b> Gather relevant information for a research project or composition through interviews.</p>	
<p><b>2.4:</b> Integrate relevant information gathered from group discussions and interviews for reports.</p>	
<p><b>Standard 3: Oral Presentation</b></p> <p>Students will make oral presentations that demonstrate appropriate consideration of audience, purpose, and the information to be conveyed.</p>	
<p><b>3.1:</b> Give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.</p>	
<p><b>3.2:</b> Maintain focus on the topic.</p>	
<p><b>3.3:</b> Adapt language to persuade, to explain, or to seek information.</p>	
<p><b>3.4:</b> Give oral presentations about experiences or interests using eye contact, proper place, adequate volume, and clear pronunciation.</p>	
<p><b>3.5:</b> Make informal presentations that have a recognizable organization (<i>sequencing, summarizing</i>).</p>	



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
3.6: Express an opinion of a literary work or film in an organized way, with supporting detail.	
3.7: Use teacher-developed assessment criteria to prepare their presentations.	
3.8: Give oral presentations for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.9: Use teacher-developed assessment criteria to prepare their presentations.	
3.10: Present an organized interpretation of a literary work, film, or dramatic production.	
3.11: Use appropriate techniques for oral persuasion.	
3.12: Give oral presentations to different audiences for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.13: Create a scoring guide based on categories supplied by the teacher ( <i>content, presentation style</i> ) to prepare and assess their presentations.	
<b>Standard 4: Vocabulary and Concept Development</b>	
Students will understand and acquire new vocabulary and use it correctly in reading and writing.	
4.1: Identify and sort common words into various classifications.	
4.2: Describe common objects and events in general and specific language.	
4.3: Identify and sort common words into conceptual categories.	
4.4: Identify base words and their inflectional forms.	<p align="center"><b>English College Readiness Standards</b></p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>4.5:</b> Identify the relevant meaning for a word with multiple meanings using its context.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.6:</b> Identify common antonyms and synonyms.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.7:</b> Use knowledge of the meaning of individual words to predict the meaning of unknown compound words.</p>	<p><b>Reading</b> College Readiness Standards</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.8:</b> Determine meanings of words by using a beginning dictionary.</p>	
<p><b>4.9:</b> Identify the meaning of common prefixes.</p>	
<p><b>4.10:</b> Identify the meaning of common Greek and Latin roots to determine the meaning of unfamiliar words.</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>4.11:</b> Identify the meaning of common idioms and figurative phrases.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.12:</b> Identify playful uses of language (<i>puns, jokes, palindromes</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.13:</b> Determine the meaning of unknown words using their context.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.14:</b> Recognize and use words with multiple meanings and be able to determine which meaning is intended from the context of the sentence.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.15:</b> Determine meanings of words and alternate word choices using a dictionary or thesaurus.</p>	
<p><b>4.16:</b> Identify and apply the meaning of the terms <i>antonym</i>, <i>synonym</i>, and <i>homophone</i>.</p>	
<p><b>4.17:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.18:</b> Determine the meaning of unfamiliar words using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.19:</b> Determine pronunciations, meanings, alternate word choices, and parts of speech of words using dictionaries and thesauruses.</p>	
<p><b>4.20:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.21:</b> Determine the meaning of unfamiliar words by using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.22:</b> Determine pronunciations, meanings, alternate word choices, parts of speech, or etymologies of words using dictionaries and thesauruses.</p>	
<p><b>Standard 5: Structure and Origins of Modern English</b></p>	
<p>Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.</p>	
<p><b>5.1:</b> Use language to express spatial and temporal relationships.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p>
<p><b>5.2:</b> Recognize that the names of things can also be the names of actions.</p>	
<p><b>5.3:</b> Identify correct capitalization for names and places, and correct capitalization and commas in dates.</p>	
<p><b>5.4:</b> Identify appropriate end marks.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.5:</b> Recognize the subject-predicate relationship in sentences.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>
<p><b>5.6:</b> Identify the four basic parts of speech.</p>	
<p><b>5.7:</b> Identify correct mechanics (end marks, commas for series, capitalization), correct usage (subject and verb agreement in a simple sentence), and correct sentence structure (elimination of sentence fragments).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.8:</b> Identify words or word parts from other languages that have been adopted into the English language.</p>	
<p><b>5.9:</b> Identify the eight basic parts of speech (noun, pronoun, verb, adverb, adjective, conjunction, preposition, interjection).</p>	
<p><b>5.10:</b> Expand or reduce sentences (adding or deleting modifiers, combining or decombining sentences).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>
<p><b>5.11:</b> Identify verb phrases and verb tenses.</p>	
<p><b>5.12:</b> Recognize that a word performs different functions according to its position in the sentence.</p>	
<p><b>5.13:</b> Identify simple and compound sentences.</p>	
<p><b>5.14:</b> Identify correct mechanics (apostrophes, quotation marks, comma use in compound sentences, paragraph indentations) and correct sentence structure (elimination of sentence fragments and run-ons).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Conventions of Usage:</b> Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b> Use apostrophes to indicate simple possessive nouns</p>
<p><b>5.15:</b> Recognize the basic patterns of English sentences (noun-verb; noun-verb-noun; noun-verb-noun-noun; noun-linking verb-noun).</p>	
<p><b>5.16:</b> Distinguish phrases from clauses.</p>	
<p><b>5.17:</b> Recognize the makeup and function of prepositional phrases.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>5.18:</b> Identify simple, compound, and complex sentences.</p>	
<p><b>5.19:</b> Recognize appropriate use of pronoun reference.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Revise vague nouns and pronouns that create obvious logic problems Identify and correct ambiguous pronoun references</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>5.20:</b> Identify correct mechanics (comma after introductory structures), correct usage (pronoun reference), and correct sentence structure (complete sentences, properly placed modifiers).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.21:</b> Employ grammar and usage rhetorically by combining, including, reordering, and reducing sentences.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p>
<p><b>5.22:</b> Describe the origins and meanings of common words, as well as of foreign words or phrases used frequently in written English.</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>Standard 6: Formal and Informal English</b>	
Students will describe, analyze, and use appropriately formal and informal English.	
<b>6.1:</b> Identify formal and informal language in stories, poems, and plays.	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<b>6.2:</b> Recognize dialect in the conversational voices in American folk tales.	
<b>6.3:</b> Identify formal and informal language use in advertisements read, heard, and/or seen.	
<b>6.4:</b> Demonstrate through role-playing appropriate use of formal and informal language.	
<b>6.5:</b> Write stories using a mix of formal and informal language.	
<b>6.6:</b> Identify differences between oral and written language patterns.	
<b>6.7:</b> Analyze the language styles of different characters in literary works.	<p align="center"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
Reading and Literature	
<b>Standard 7: Beginning Reading</b>	
<p><b>Students will understand the nature of written English</b> and the relationship of letters and spelling patterns to the sounds of speech.</p>	
<p><b>7.1:</b> Demonstrate understanding of the forms and functions of written English:</p>	
<ul style="list-style-type: none"> <li>● recognize that printed materials provide information or entertaining stories;</li> </ul>	
<ul style="list-style-type: none"> <li>● know how to handle a book and turn the pages;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the covers and title page of a book;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that, in English, print moves left to right across the page and from top to bottom;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify upper- and lower-case letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that written words are separated by spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that sentences in print are made up of separate words.</li> </ul>	
<p><b>7.2:</b> Demonstrate orally that phonemes exist and that they can be isolated and manipulated:</p>	
<ul style="list-style-type: none"> <li>● understand that a sound is a phoneme, or one distinct sound;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that words are made up of one or more syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize and produce rhyming words;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the initial, medial, and final sounds of a word;</li> </ul>	
<ul style="list-style-type: none"> <li>● blend sounds to make words.</li> </ul>	
<p><b>7.3:</b> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:</p>	
<ul style="list-style-type: none"> <li>● know that there is a link between letters and sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize letter-sound matches by naming and identifying each letter of the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that written words are composed of letters that represent sounds;</li> </ul>	

**TABLE 1A**

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>● use letter-sound matches to decode simple words.</li> </ul>	
<p><b>7.4:</b> Demonstrate understanding of the various features of written English:</p>	
<ul style="list-style-type: none"> <li>● know the order of the letters in the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that spoken words are represented in written English by sequences of letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● match oral words to printed words;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that there are correct spellings for words;</li> </ul>	
<ul style="list-style-type: none"> <li>● use correct spelling of appropriate high-frequency words, whether irregularly or regularly spelled;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize the distinguishing features of a sentence and a paragraph;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the author and title of a book, and use a table of contents.</li> </ul>	
<p><b>7.5:</b> Demonstrate orally that phonemes exist:</p>	
<ul style="list-style-type: none"> <li>● generate the sounds from all the letters and letter patterns, including consonant blends, long- and short-vowel patterns, and onsets and rimes and combine these sounds into recognizable words;</li> </ul>	
<ul style="list-style-type: none"> <li>● use knowledge of vowel digraphs, vowel diphthongs, and r-controlled letter-sound associations (<i>as in star</i>) to read words.</li> </ul>	
<p><b>7.6:</b> Recognize common irregularly spelled words by sight.</p>	
<p><b>7.7:</b> Use letter-sound knowledge to decode written English:</p>	
<ul style="list-style-type: none"> <li>● decode accurately phonetically regular one-syllable and multi-syllable real words and nonsense words;</li> </ul>	
<ul style="list-style-type: none"> <li>● read accurately many irregularly spelled words, special vowel spellings, and common word endings;</li> </ul>	
<ul style="list-style-type: none"> <li>● apply knowledge of letter patterns to identify syllables;</li> </ul>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>• apply independently the most common letter-sound correspondences, including the sounds represented by single letters, consonant blends, consonant digraphs, and vowel digraphs and diphthongs;</li> </ul>	
<ul style="list-style-type: none"> <li>• know and use more difficult word families (-<i>ought</i>) and known words to decode unknown words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read words with several syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• read aloud with fluency and comprehension at grade level.</li> </ul>	
<p><b>7.8:</b> Use letter-sound knowledge to decode written English.</p>	
<p><b>7.9:</b> Read grade-appropriate imaginative/literary and informational/expository text with comprehension.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>7.10:</b> Read aloud grade-appropriate imaginative/literary and informational/expository text fluently, accurately, and with comprehension, using appropriate timing, change in voice, and expression.</p>	
<p><b>Standard 8: Understanding a Text</b></p>	
<p>Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.</p>	
<p><b>8.1:</b> Make predictions using prior knowledge, pictures, and text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.2:</b> Retell a main event from a story heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.3:</b> Ask questions about the important characters, settings, and events.</p>	
<p><b>8.4:</b> Make predictions about the content of the text using prior knowledge and text features (<i>title, captions, illustrations</i>).</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.5:</b> Retell important facts from a text heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>
<p><b>8.6:</b> Make predictions about what will happen next in a story, and explain whether they were confirmed or disconfirmed and why.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.7:</b> Retell a story's beginning, middle, and end.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.8:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p>
<p><b>8.9:</b> Make predictions about the content of a text using prior knowledge and text features (<i>headings, table of contents, key words</i>), and explain whether they were confirmed or disconfirmed and why.</p>	



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.10:</b> <b>Restate main ideas.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.11:</b> <b>Identify and show the relevance of foreshadowing clues.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.12:</b> <b>Identify sensory details and figurative language.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>8.13:</b> <b>Identify the speaker of a poem or story.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages
8.14: Make judgments about setting, characters, and events and support them with evidence from the text.	
8.15: <b>Locate facts</b> that answer the reader’s questions.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
8.16: <b>Distinguish cause from effect.</b>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p>
8.17: <b>Distinguish fact from opinion</b> or fiction.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
8.18: <b>Summarize main ideas and supporting details.</b>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.19:</b> Identify and analyze sensory details and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>8.20:</b> Identify and analyze the author's use of dialogue and description.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.21:</b> Recognize organizational structures (<i>chronological order, logical order, cause and effect, classification schemes</i>).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.22:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.23:</b> Use knowledge of genre characteristics to analyze a text.</p>	
<p><b>8.24:</b> Interpret mood and tone, and give supporting evidence in a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.25:</b> Interpret a character's traits, emotions, or motivation and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.26:</b> Recognize organizational structures and use of arguments for and against an issue.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.27:</b> Identify evidence used to support an argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.28:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>Standard 9: Making Connections</b></p> <p>Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.</p>	
<p><b>9.1:</b> Identify similarities in plot, setting, and character among the works of an author or illustrator.</p>	
<p><b>9.2:</b> Identify different interpretations of plot, setting, and character in the same work by different illustrators.</p>	
<p><b>9.3:</b> Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author’s life.</p>	
<p><b>9.4:</b> Relate a literary work to information about its setting.</p>	
<p><b>9.5:</b> Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.</p>	
<p><b>Standard 10: Genre</b></p> <p>Students will identify, analyze, and apply knowledge of the characteristics of different genres.</p>	
<p><b>10.1:</b> Identify differences among the common forms of literature: poetry, prose, fiction, nonfiction (<i>informational and expository</i>), and dramatic literature.</p>	
<p><b>10.2:</b> Distinguish among forms of literature such as poetry, prose, fiction, nonfiction, and drama and apply this knowledge as a strategy for reading and writing.</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>10.3:</b> Identify and analyze the characteristics of various genres (<i>poetry, fiction, nonfiction, short story, dramatic literature</i>) as forms with distinct characteristics and purposes.</p>	
<p><b>10.4:</b> Identify and analyze the characteristics of various genres (<i>poetry, fiction, nonfiction, short story, dramatic literature</i>) as forms chosen by an author to accomplish a purpose.</p>	
<p><b>Standard 11: Theme</b></p>	
<p>Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.</p>	
<p><b>11.1:</b> Relate themes in works of fiction and nonfiction to personal experience.</p>	
<p><b>11.2:</b> Identify themes as lessons in folktales, fables, and Greek myths for children.</p>	
<p><b>11.3:</b> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Summarize basic events and ideas in more challenging passages</p>
<p><b>11.4:</b> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic.</p>	
<p><b>Standard 12: Fiction</b></p>	
<p>Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.</p>	
<p><b>12.1:</b> Identify the elements of plot, character, and setting in a favorite story.</p>	
<p><b>12.2:</b> Identify and analyze the elements of plot, character, and setting in the stories they read and write.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Recognize a clear intent of an author or narrator in uncomplicated literary narratives            Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages            Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages            Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>12.3:</b> Identify and analyze the elements of setting, characterization, and plot (including conflict).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>12.4:</b> Locate and analyze elements of plot and characterization and then use an understanding of these elements to determine how qualities of the central characters influence the resolution of the conflict.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
<b>Standard 13: Nonfiction</b>	
Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.	
13.1: Identify and use knowledge of common textual features (title, headings, captions, key words, table of contents).	
13.2: Identify and use knowledge of common graphic features (illustrations, type size).	
13.3: Make predictions about the content of a text using prior knowledge and text and graphic features.	
13.4: Explain whether predictions about the content of a text were confirmed or disconfirmed and why.	
13.5: Restate main ideas and important facts from a text heard or read.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>            Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages            Infer the main idea or purpose of straightforward paragraphs in more challenging passages            Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b>            Locate basic facts (e.g., names, dates, events) clearly stated in a passage            Locate simple details at the sentence and paragraph level in uncomplicated passages            Locate important details in uncomplicated passages            Locate important details in more challenging passages</p>
13.6: Identify and use knowledge of common textual features ( <i>paragraphs, topic sentences, concluding sentences, glossary</i> ).	
13.7: Identify and use knowledge of common graphic features ( <i>charts, maps, diagrams, illustrations</i> ).	
13.8: Identify and use knowledge of common organizational structures ( <i>chronological order</i> ).	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages
<p><b>13.9:</b> <b>Locate facts</b> that answer the reader’s questions.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>13.10:</b> <b>Distinguish cause from effect.</b></p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p>
<p><b>13.11:</b> <b>Distinguish fact from opinion</b> or fiction.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>13.12:</b> <b>Summarize main ideas and supporting details.</b></p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>13.13:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, glossary, index).</p>	
<p><b>13.14:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams, captions, illustrations).</p>	
<p><b>13.15:</b> Identify and use knowledge of common organizational structures (chronological order, logical order, cause and effect, classification schemes).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.17:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Locate and interpret minor or subtly stated details in uncomplicated passages
<p><b>13.18:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography).</p>	
<p><b>13.19:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams).</p>	
<p><b>13.20:</b> Identify and use knowledge of common organizational structures (logical order, comparison and contrast, cause and effect relationships).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.21:</b> Recognize use of arguments for and against an issue.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.22:</b> Identify evidence used to support an argument.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
<p><b>13.23:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>Standard 14: Poetry</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of poetry and provide evidence from the text to support their understanding.</p>	
<p><b>14.1:</b> Identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.</p>	
<p><b>14.2:</b> Identify rhyme and rhythm, repetition, similes, and sensory images in poems.</p>	
<p><b>14.3:</b> Respond to and analyze the effects of sound, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole); and</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length).</li> </ul>	
<p><b>14.4:</b> Respond to and analyze the effects of sound, form, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, internal rhyme, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole);</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length, word position).</li> </ul>	
<p><b>Standard 15: Style and Language</b></p> <p>Students will identify and analyze how an author’s words appeal to the senses, create imagery, suggest mood, and set tone, and provide evidence from the text to support their understanding.</p>	
<p><b>15.1:</b> Identify the senses implied in words appealing to the senses in literature and spoken language.</p>	
<p><b>15.2:</b> Identify words appealing to the senses or involving direct comparisons in literature and spoken language.</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>15.3:</b> Identify imagery, figurative language, rhythm, or flow when responding to literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>15.4:</b> Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>15.5:</b> Identify and analyze imagery and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>15.6:</b> Identify and analyze how an author's use of words creates tone and mood.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>Standard 16: Myth, Traditional Narrative, and Classical Literature</b>	
Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.	
<b>16.1:</b> Identify familiar forms of traditional literature read aloud.	
<b>16.2:</b> Retell or dramatize traditional literature.	
<b>16.3:</b> Identify and predict recurring phrases ( <i>Once upon a time</i> ) in traditional literature.	
<b>16.4:</b> Identify phenomena explained in origin myths.	
<b>16.5:</b> Identify the adventures or exploits of a character type in traditional literature.	
<b>16.6:</b> Acquire knowledge of culturally significant characters and events in Greek, Roman, and Norse mythology and other traditional literature.	
<b>16.7:</b> Compare traditional literature from different cultures.	
<b>16.8:</b> Identify common structures and stylistic elements in traditional literature.	
<b>16.9:</b> Identify conventions in epic tales.	
<b>16.10:</b> Identify and analyze similarities and differences in mythologies from different cultures.	
<b>Standard 17: Dramatic Literature</b>	
Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.	
<b>17.1:</b> Identify the elements of dialogue and use them in informal plays.	
<b>17.2:</b> Identify and analyze the elements of plot and character, as presented through dialogue in scripts that are read, viewed, written, or performed.	
<b>17.3:</b> Identify and analyze structural elements particular to dramatic literature ( <i>scenes, acts, cast of characters, stage directions</i> ) in the plays they read, view, write, and perform.	
<b>17.4:</b> Identify and analyze the similarities and differences between a narrative text and its film or play version.	

**TABLE 1A**

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>17.5:</b> Identify and analyze elements of setting, plot, and characterization in the plays that are read, viewed, written, and/or performed:</p>	
<ul style="list-style-type: none"> <li>● setting (place, historical period, time of day);</li> </ul>	
<ul style="list-style-type: none"> <li>● plot (exposition, conflict, rising action, falling action); and</li> </ul>	
<ul style="list-style-type: none"> <li>● characterization (character motivations, actions, thoughts, development).</li> </ul>	
<p><b>17.6:</b> Identify and analyze the similarities and differences in the presentation of setting, character, and plot in texts, plays, and films.</p>	
<p><b>Standard 18: Dramatic Reading and Performance</b></p> <p>Students will plan and present dramatic readings, recitations, and performances that demonstrate appropriate consideration of audience and purpose.</p>	
<p><b>18.1:</b> Rehearse and perform stories, plays, and poems for an audience using eye contact, volume, and clear enunciation appropriate to the selection.</p>	
<p><b>18.2:</b> Plan and perform readings of selected texts for an audience, using clear diction and voice quality (<i>volume, tempo, pitch, tone</i>) appropriate to the selection, and use teacher-developed assessment criteria to prepare presentations.</p>	
<p><b>18.3:</b> Develop characters through the use of basic acting skills (<i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i>) and self-assess using teacher-developed criteria before performing.</p>	
<p><b>18.4:</b> Develop and present characters through the use of basic acting skills (<i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i>), explain the artistic choices made, and use a scoring guide with teacher-developed categories (<i>content, presentation style</i>) to create scoring criteria for assessment.</p>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
Composition	
<b>Standard 19: Writing</b>	
Students will write with a clear focus, coherent organization, and sufficient detail.	
<b>19.1:</b> Draw pictures and/or use letters or phonetically spelled words to tell a story.	
<b>19.2:</b> Dictate sentences for a story and collaborate to put the sentences in chronological sequence.	
<b>19.3:</b> Draw pictures and/or use letters or phonetically spelled words to give others information.	
<b>19.4:</b> Dictate sentences for a letter or directions and collaborate to put the sentences in order.	
<b>19.5:</b> Write or dictate stories that have a beginning, middle, and end.	
<b>19.6:</b> Write or dictate short poems.	
<b>19.7:</b> Write or dictate letters, directions, or short accounts of personal experiences that follow a logical order.	
<b>19.8:</b> Write or dictate research questions.	
<b>19.9:</b> Write stories that have a beginning, middle, and end and contain details of setting.	
<b>19.10:</b> Write short poems that contain simple sense details.	
<b>19.11:</b> Write brief summaries of information gathered through research.	
<b>19.12:</b> Write a brief interpretation or explanation of a literary or informational text using evidence from the text as support.	
<b>19.13:</b> Write an account based on personal experience that has a clear focus and sufficient supporting detail.	
<b>19.14:</b> Write stories or scripts containing the basic elements of fiction ( <i>characters, dialogue, setting, plot with a clear resolution</i> ).	
<b>19.15:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia</i> ), figurative language ( <i>simile, metaphor</i> ), and graphic elements ( <i>capital letters, line length</i> ).	
<b>19.16:</b> Write brief research reports with clear focus and supporting detail.	

**TABLE 1A**

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>19.17:</b> Write a short explanation of a process that includes a topic statement, supporting details, and a conclusion.	
<b>19.18:</b> Write formal letters to correspondents such as authors, newspapers, businesses, or government officials.	
<b>19.19:</b> Write stories or scripts with well-developed characters, setting, dialogue, clear conflict and resolution, and sufficient descriptive detail.	
<b>19.20:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia, rhyme scheme</i> ), figurative language ( <i>simile, metaphor, personification</i> ), and graphic elements ( <i>capital letters, line length, word position</i> ).	
<b>19.21:</b> Write reports based on research that include quotations, footnotes or endnotes, and a bibliography.	
<b>19.22:</b> Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.	
<b>19.23:</b> Write multi-paragraph compositions that have clear topic development, logical organization, effective use of detail, and variety in sentence structure.	
<p><b>Standard 20: Consideration of Audience and Purpose</b></p> <p>Students will write for different audiences and purposes.</p>	
<b>20.1:</b> Use a variety of forms or genres when writing for different purposes.	
<b>20.2:</b> Use appropriate language for different audiences and purposes.	
<b>20.3:</b> Make distinctions among fiction, nonfiction, dramatic literature, and poetry, and use these genres selectively when writing for different purposes.	
<b>20.4:</b> Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>Standard 21: Revising</b></p>	
<p>Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.</p>	
<p><b>21.1:</b> After writing or dictating a composition, identify words and phrases that could be added to make the thought clearer, more logical, or more expressive.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>21.2:</b> Revise writing to improve level of detail after determining what could be added or deleted.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p>
<p><b>21.3:</b> Improve word choice by using dictionaries.</p>	
<p><b>21.4:</b> Revise writing to improve level of detail and precision of language after determining where to add images and sensory detail, combine sentences, vary sentences, and rearrange text.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.5:</b> Improve word choice by using dictionaries or thesauruses.</p>	
<p><b>21.6:</b> Revise writing to improve organization and diction after checking the logic underlying the order of ideas, the precision of vocabulary used, and the economy of writing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>21.7:</b> Improve word choice by using a variety of references.</p>	
<p><b>Standard 22: Standard English Conventions</b></p>	
<p>Students will use knowledge of standard English conventions in their writing, revising, and editing.</p>	
<p><b>22.1:</b> Print upper- and lower-case letters of the alphabet.</p>	
<p><b>22.2:</b> Use correct standard English mechanics such as:</p>	
<ul style="list-style-type: none"> <li>● printing upper- and lower-case letters legibly and using them to make words;</li> </ul>	
<ul style="list-style-type: none"> <li>● separating words with spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● understanding and applying rules for capitalization at the beginning of a sentence, for names and places and capitalization and commas in dates.</li> </ul>	
<ul style="list-style-type: none"> <li>● using correct spelling of sight and/or spelling words; and</li> </ul>	
<ul style="list-style-type: none"> <li>● using appropriate end marks such as periods and question marks.</li> </ul>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.3:</b> Write legibly in cursive, leaving space between letters in a word and between words in a sentence.</p>	
<p><b>22.4:</b> Use knowledge of correct mechanics (<i>end marks, commas for series, capitalization</i>), usage (<i>subject and verb agreement in a simple sentence</i>), and sentence structure (<i>elimination of fragments</i>) when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>22.5:</b> Use knowledge of letter sounds, word parts, word segmentation, and syllabication to monitor and correct spelling.</p>	
<p><b>22.6:</b> Spell most commonly used homophones correctly in their writing (<i>there, they're, their; two, too, to</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p>
<p><b>22.7:</b> Use additional knowledge of correct mechanics (<i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i>), correct sentence structure (<i>elimination of fragments and run-ons</i>), and correct standard English spelling (<i>commonly used homophones</i>) when writing, revising, and editing.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Use apostrophes to indicate simple possessive nouns</p>
<p><b>22.8:</b> Use knowledge of types of sentences (<i>simple, compound, complex</i>), correct mechanics (<i>comma after introductory structures</i>), correct usage (<i>pronoun reference</i>), sentence structure (<i>complete sentences, properly placed modifiers</i>), and standard English spelling when writing and editing.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>

TABLE 1A

<p>Massachusetts Grade 8 English Language Arts</p>	<p>EXPLORE English and/or Reading College Readiness Standards</p>
	<p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>Standard 23: Organizing Ideas in Writing</b></p>	
<p>Students will organize ideas in writing in a way that makes sense for their purpose.</p>	
<p>23.1: Arrange events in order when writing or dictating.</p>	
<p>23.2: Arrange ideas in a way that makes sense.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b> Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>) Decide the most logical place to add a sentence in an essay Add a sentence that introduces a simple paragraph Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>) Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p>23.3: Organize plot events of a story in an order that leads to a climax.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b> Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>) Decide the most logical place to add a sentence in an essay</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.4:</b> Organize ideas for a brief response to a reading.</p>	
<p><b>23.5:</b> Organize ideas for an account of personal experience in a way that makes sense.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.6:</b> Decide on the placement of descriptive details about setting, characters, and events in stories.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p>
<p><b>23.7:</b> Group related ideas and place them in logical order when writing summaries or reports.</p>	
<p><b>23.8:</b> Organize information about a topic into a coherent paragraph with a topic sentence, sufficient supporting detail, and a concluding sentence.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Add a sentence that introduces a simple paragraph</p>

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.9:</b> Integrate the use of organizing techniques that break up strict chronological order in a story (<i>starting in the middle of the action, then filling in background information using flashbacks</i>).</p>	
<p><b>23.10:</b> Organize information into a coherent essay or report with a thesis statement in the introduction, transition sentences to link paragraphs, and a conclusion.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.11:</b> Organize ideas for writing comparison-and-contrast essays.</p>	
<p><b>Standard 24: Research</b></p> <p>Students will gather information from a variety of sources, analyze and evaluate the quality of the information they obtain, and use it to answer their own questions.</p>	
<p><b>24.1:</b> Generate questions and gather information from several sources in a classroom, school, or public library.</p>	
<p><b>24.2:</b> Identify and apply steps in conducting and reporting research:</p>	
<ul style="list-style-type: none"> <li>Define the need for information and formulate open-ended research questions.</li> </ul>	
<ul style="list-style-type: none"> <li>Initiate a plan for searching for information.</li> </ul>	

TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>Locate resources.</li> </ul>	
<ul style="list-style-type: none"> <li>Evaluate the relevance of the information.</li> </ul>	
<ul style="list-style-type: none"> <li>Interpret, use, and communicate the information.</li> </ul>	
<ul style="list-style-type: none"> <li>Evaluate the research project as a whole.</li> </ul>	
<p><b>24.3:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual and group projects:</p>	
<ul style="list-style-type: none"> <li>use an expanded range of print and non-print sources (<i>atlases, data bases, electronic, on-line resources</i>);</li> </ul>	
<ul style="list-style-type: none"> <li>follow established criteria for evaluating information;</li> </ul>	
<ul style="list-style-type: none"> <li>locate specific information within resources by using indexes, tables of contents, electronic search key words;</li> </ul>	
<ul style="list-style-type: none"> <li>organize and present research using the grades 5–6 Learning Standards in the Composition Strand as a guide for writing; and</li> </ul>	
<ul style="list-style-type: none"> <li>provide appropriate documentation in a consistent format.</li> </ul>	
<p><b>24.4:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual projects:</p>	
<ul style="list-style-type: none"> <li>differentiate between primary and secondary source materials;</li> </ul>	
<ul style="list-style-type: none"> <li>differentiate between paraphrasing and using direct quotes in a report;</li> </ul>	
<ul style="list-style-type: none"> <li>organize and present research using the grade 7–8 Learning Standards in the Composition Strand as a guide for writing;</li> </ul>	
<ul style="list-style-type: none"> <li>document information and quotations and use a consistent format for footnotes or endnotes; and</li> </ul>	
<ul style="list-style-type: none"> <li>use standard bibliographic format to document sources.</li> </ul>	



TABLE 1A

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>Standard 25: Evaluating Writing and Presentations</b></p>	
<p>Students will develop and use appropriate rhetorical, logical, and stylistic criteria for assessing final versions of their compositions or research projects before presenting them to varied audiences.</p>	
<p><b>25.1:</b> Support judgments about classroom activities or presentations.</p>	
<p><b>25.2:</b> Form and explain personal standards or judgments of quality, display them in the classroom, and present them to family members.</p>	
<p><b>25.3:</b> Use prescribed criteria from a scoring rubric to evaluate compositions, recitations, or performances before presenting them to an audience.</p>	
<p><b>25.4:</b> As a group, develop and use scoring guides or rubrics to improve organization and presentation of written and oral projects.</p>	
<p>Media</p>	
<p><b>Standard 26: Analysis of Media</b></p>	
<p>Students will identify, analyze, and apply knowledge of the conventions, elements, and techniques of film, radio, video, television, multimedia productions, the Internet, and emerging technologies and provide evidence from the works to support their understanding.</p>	
<p><b>26.1:</b> Identify techniques used in television (<i>animation, close-ups, wide-angle shots, sound effects, music, graphics</i>) and use knowledge of these techniques to distinguish between facts and misleading information.</p>	
<p><b>26.2:</b> Compare stories in print with their filmed adaptations, describing the similarities and differences in the portrayal of characters, plot, and settings.</p>	
<p><b>26.3:</b> Identify techniques used in educational reference software and websites and describe how these techniques are the same as or different from the techniques used by authors and illustrators of print materials.</p>	
<p><b>26.4:</b> Analyze the effect on the reader's or viewer's emotions of text and image in print journalism, and images, sound, and text in electronic journalism, distinguishing techniques used in each to achieve these effects.</p>	

**TABLE 1A**

Massachusetts Grade 8 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>Standard 27: Media Production</b></p> <p>Students will design and create coherent media productions (audio, video, television, multimedia, Internet, emerging technologies) with a clear controlling idea, adequate detail, and appropriate consideration of audience, purpose, and medium.</p>	
<p><b>27.1:</b> Create radio scripts, audiotapes, or videotapes for display or transmission.</p>	
<p><b>27.2:</b> Create presentations using computer technology.</p>	
<p><b>27.3:</b> Create a media production using effective images, text, music, sound effects, or graphics.</p>	
<p><b>27.4:</b> Create media presentations and written reports on the same subject and compare the differences in effects of each medium.</p>	
<p><b>27.5:</b> Use criteria to assess the effectiveness of media presentations.</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
Language	
<b>Standard 1: Discussion</b>	
Students will use agreed-upon rules for informal and formal discussions in small and large groups.	
1.1: Follow agreed-upon rules for discussion.	
1.3: Apply understanding of agreed-upon rules and individual roles in order to make decisions.	
1.4: Know and apply rules for formal discussions ( <i>classroom, parliamentary debate, town meeting rules</i> ).	
1.5: Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.	
<b>Standard 2: Questioning, Listening, and Contributing</b>	
Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.	
2.1: Contribute knowledge to class discussion in order to develop a topic for a class project.	
2.2: Contribute knowledge to class discussion in order to develop ideas for a class project and generate interview questions to be used as part of the project.	
2.3: Gather relevant information for a research project or composition through interviews.	
2.4: Integrate relevant information gathered from group discussions and interviews for reports.	
2.5: Summarize in a coherent and organized way information and ideas learned from a focused discussion.	
<b>Standard 3: Oral Presentation</b>	
Students will make oral presentations that demonstrate appropriate consideration of audience, purpose, and the information to be conveyed.	
3.1: Give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.	
3.2: Maintain focus on the topic.	
3.3: Adapt language to persuade, to explain, or to seek information.	

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
3.4: Give oral presentations about experiences or interests using eye contact, proper place, adequate volume, and clear pronunciation.	
3.5: Make informal presentations that have a recognizable organization ( <i>sequencing, summarizing</i> ).	
3.6: Express an opinion of a literary work or film in an organized way, with supporting detail.	
3.7: Use teacher-developed assessment criteria to prepare their presentations.	
3.8: Give oral presentations for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.9: Use teacher-developed assessment criteria to prepare their presentations.	
3.10: Present an organized interpretation of a literary work, film, or dramatic production.	
3.11: Use appropriate techniques for oral persuasion.	
3.12: Give oral presentations to different audiences for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.13: Create a scoring guide based on categories supplied by the teacher ( <i>content, presentation style</i> ) to prepare and assess their presentations.	
3.14: Give formal and informal talks to various audiences and for various purposes using appropriate level of formality and rhetorical devices.	
3.15: Analyze effective speeches made for a variety of purposes and prepare and deliver a speech containing some of these features.	
3.16: Create an appropriate scoring guide to prepare, improve, and assess presentations.	
<b>Standard 4: Vocabulary and Concept Development</b>	
Students will understand and acquire new vocabulary and use it correctly in reading and writing.	
4.1: Identify and sort common words into various classifications.	
4.2: Describe common objects and events in general and specific language.	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>4.3:</b> Identify and sort common words into conceptual categories.</p>	
<p><b>4.4:</b> Identify base words and their inflectional forms.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
<p><b>4.5:</b> Identify the relevant meaning for a word with multiple meanings using its context.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.6:</b> Identify common antonyms and synonyms.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.7:</b> Use knowledge of the meaning of individual words to predict the meaning of unknown compound words.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.8:</b> Determine meanings of words by using a beginning dictionary.</p>	
<p><b>4.9:</b> Identify the meaning of common prefixes.</p>	
<p><b>4.10:</b> Identify the meaning of common Greek and Latin roots to determine the meaning of unfamiliar words.</p>	
<p><b>4.11:</b> Identify the meaning of common idioms and figurative phrases.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.12:</b> Identify playful uses of language (<i>puns, jokes, palindromes</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b> Identify the basic purpose or role of a specified phrase or sentence</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.13:</b> Determine the meaning of unknown words using their context.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b> Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.14:</b> Recognize and use words with multiple meanings and be able to determine which meaning is intended from the context of the sentence.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b> Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>4.15:</b> Determine meanings of words and alternate word choices using a dictionary or thesaurus.</p>	
<p><b>4.16:</b> Identify and apply the meaning of the terms <i>antonym</i>, <i>synonym</i>, and <i>homophone</i>.</p>	
<p><b>4.17:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.18:</b> Determine the meaning of unfamiliar words using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.19:</b> Determine pronunciations, meanings, alternate word choices, and parts of speech of words using dictionaries and thesauruses.</p>	
<p><b>4.20:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>4.21:</b> Determine the meaning of unfamiliar words by using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.22:</b> Determine pronunciations, meanings, alternate word choices, parts of speech, or etymologies of words using dictionaries and thesauruses.</p>	
<p><b>4.23:</b> Identify and use correctly idioms, cognates, words with literal and figurative meanings, and patterns of word changes that indicate different meanings or functions.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.24:</b> Use knowledge of Greek, Latin, and Norse mythology, the Bible, and other works often alluded to in British and American literature to understand the meanings of new words.</p>	
<p><b>4.25:</b> Use general dictionaries, specialized dictionaries, thesauruses, or related references as needed to increase learning.</p>	
<p><b>Standard 5: Structure and Origins of Modern English</b></p> <p>Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.</p>	
<p><b>5.1:</b> Use language to express spatial and temporal relationships.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p>
5.2: Recognize that the names of things can also be the names of actions.	
5.3: Identify correct capitalization for names and places, and correct capitalization and commas in dates.	
5.4: Identify appropriate end marks.	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
5.5: Recognize the subject-predicate relationship in sentences.	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>
5.6: Identify the four basic parts of speech.	
5.7: Identify correct mechanics (end marks, commas for series, capitalization), correct usage (subject and verb agreement in a simple sentence), and correct sentence structure (elimination of sentence fragments).	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.8:</b> Identify words or word parts from other languages that have been adopted into the English language.</p>	
<p><b>5.9:</b> Identify the eight basic parts of speech (<i>noun, pronoun, verb, adverb, adjective, conjunction, preposition, interjection</i>).</p>	
<p><b>5.10:</b> Expand or reduce sentences (<i>adding or deleting modifiers, combining or decombining sentences</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>
<p><b>5.11</b> Identify verb phrases and verb tenses.</p>	
<p><b>5.12:</b> Recognize that a word performs different functions according to its position in the sentence.</p>	
<p><b>5.13:</b> Identify simple and compound sentences.</p>	
<p><b>5.14:</b> Identify correct mechanics (<i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i>) and correct sentence structure (<i>elimination of sentence fragments and run-ons</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Conventions of Usage:</b> Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b> Use apostrophes to indicate simple possessive nouns</p>
<p><b>5.15:</b> Recognize the basic patterns of English sentences (<i>noun-verb</i>; <i>noun-verb-noun</i>; <i>noun-verb-noun-noun</i>; <i>noun-linking verb-noun</i>).</p>	
<p><b>5.16:</b> Distinguish phrases from clauses.</p>	
<p><b>5.17:</b> Recognize the makeup and function of prepositional phrases.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>5.18:</b> Identify simple, compound, and complex sentences.</p>	
<p><b>5.19:</b> Recognize appropriate use of pronoun reference.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Revise vague nouns and pronouns that create obvious logic problems Identify and correct ambiguous pronoun references</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>5.20:</b> Identify correct mechanics (<i>comma after introductory structures</i>), correct usage (<i>pronoun reference</i>), and correct sentence structure (<i>complete sentences, properly placed modifiers</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.21:</b> Employ grammar and usage rhetorically by combining, including, reordering, and reducing sentences.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p>
<p><b>5.22:</b> Describe the origins and meanings of common words, as well as of foreign words or phrases used frequently in written English.</p>	
<p><b>5.23:</b> Identify simple, compound, complex, and compound-complex sentences.</p>	
<p><b>5.24:</b> Identify nominalized, adjectival, and adverbial clauses.</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>5.25:</b> Recognize the functions of verbals: participles, gerunds, and infinitives.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
<p><b>5.26:</b> Analyze the structure of a sentence (<i>traditional diagram, transformational model</i>).</p>	
<p><b>5.27:</b> Identify rhetorically functional sentence structure (<i>parallelism, properly placed modifiers</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p>
<p><b>5.28:</b> Identify correct mechanics (<i>semicolons, colons, hyphens</i>), correct usage (<i>tense consistency</i>), and correct sentence structure (<i>parallel structure</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p>
<p><b>5.29:</b> Describe the origins and meanings of common words and foreign words or phrases used frequently in written English, and show their relationship to historical events or developments (<i>glasnost, coup d'état</i>).</p>	
<p><b>Standard 6: Formal and Informal English</b></p> <p>Students will describe, analyze, and use appropriately formal and informal English.</p>	
<p><b>6.1:</b> Identify formal and informal language in stories, poems, and plays.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>6.2:</b> Recognize dialect in the conversational voices in American folk tales.</p>	
<p><b>6.3:</b> Identify formal and informal language use in advertisements read, heard, and/or seen.</p>	
<p><b>6.4:</b> Demonstrate through role-playing appropriate use of formal and informal language.</p>	
<p><b>6.5:</b> Write stories using a mix of formal and informal language.</p>	
<p><b>6.6:</b> Identify differences between oral and written language patterns.</p>	
<p><b>6.7:</b> Analyze the language styles of different characters in literary works.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p>



**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
<b>6.8:</b> Identify content-specific vocabulary, terminology, or jargon unique to particular social or professional groups.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b> Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p>
<b>6.9:</b> Identify differences between the voice, tone, diction, and syntax used in media presentations ( <i>documentary films, news broadcasts, taped interviews</i> ) and these elements in informal speech.	
Reading and Literature	
<b>Standard 7: Beginning Reading</b>	
<p>Students will understand the nature of written English and the relationship of letters and spelling patterns to the sounds of speech.</p>	
<b>7.1:</b> Demonstrate understanding of the forms and functions of written English:	
<ul style="list-style-type: none"> <li>● recognize that printed materials provide information or entertaining stories;</li> </ul>	
<ul style="list-style-type: none"> <li>● know how to handle a book and turn the pages;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the covers and title page of a book;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that, in English, print moves left to right across the page and from top to bottom;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify upper- and lower-case letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that written words are separated by spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that sentences in print are made up of separate words.</li> </ul>	
<b>7.2:</b> Demonstrate orally that phonemes exist and that they can be isolated and manipulated:	
<ul style="list-style-type: none"> <li>● understand that a sound is a phoneme, or one distinct sound;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that words are made up of one or more syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize and produce rhyming words;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the initial, medial, and final sounds of a word;</li> </ul>	



**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>blend sounds to make words.</li> </ul>	
<p><b>7.3:</b> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:</p>	
<ul style="list-style-type: none"> <li>know that there is a link between letters and sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize letter-sound matches by naming and identifying each letter of the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that written words are composed of letters that represent sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>use letter-sound matches to decode simple words.</li> </ul>	
<p><b>7.4:</b> Demonstrate understanding of the various features of written English:</p>	
<ul style="list-style-type: none"> <li>know the order of the letters in the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that spoken words are represented in written English by sequences of letters;</li> </ul>	
<ul style="list-style-type: none"> <li>match oral words to printed words;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that there are correct spellings for words;</li> </ul>	
<ul style="list-style-type: none"> <li>use correct spelling of appropriate high-frequency words, whether irregularly or regularly spelled;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize the distinguishing features of a sentence and a paragraph;</li> </ul>	
<ul style="list-style-type: none"> <li>identify the author and title of a book, and use a table of contents.</li> </ul>	
<p><b>7.5:</b> Demonstrate orally that phonemes exist:</p>	
<ul style="list-style-type: none"> <li>generate the sounds from all the letters and letter patterns, including consonant blends, long- and short-vowel patterns, and onsets and rimes and combine these sounds into recognizable words;</li> </ul>	
<ul style="list-style-type: none"> <li>use knowledge of vowel digraphs, vowel diphthongs, and r-controlled letter-sound associations (<i>as in star</i>) to read words.</li> </ul>	
<p><b>7.6:</b> Recognize common irregularly spelled words by sight.</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>7.7:</b> Use letter-sound knowledge to decode written English:</p>	
<ul style="list-style-type: none"> <li>• decode accurately phonetically regular one-syllable and multi-syllable real words and nonsense words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read accurately many irregularly spelled words, special vowel spellings, and common word endings;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply knowledge of letter patterns to identify syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply independently the most common letter-sound correspondences, including the sounds represented by single letters, consonant blends, consonant digraphs, and vowel digraphs and diphthongs;</li> </ul>	
<ul style="list-style-type: none"> <li>• know and use more difficult word families (-<i>ought</i>) and known words to decode unknown words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read words with several syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• read aloud with fluency and comprehension at grade level.</li> </ul>	
<p><b>7.8:</b> Use letter-sound knowledge to decode written English.</p>	
<p><b>7.9:</b> <b>Read grade-appropriate imaginative/literary and informational/expository text with comprehension.</b></p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>

**TABLE 1B**

<p>Massachusetts Grades 9-10 English Language Arts</p>	<p>EXPLORE English and/or Reading College Readiness Standards</p>
	<p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>7.10:</b> Read aloud grade-appropriate imaginative/literary and informational/expository text fluently, accurately, and with comprehension, using appropriate timing, change in voice, and expression.</p>	
<p><b>Standard 8: Understanding a Text</b></p>	
<p>Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.</p>	
<p><b>8.1:</b> Make predictions using prior knowledge, pictures, and text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.2:</b> Retell a main event from a story heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.3:</b> Ask questions about the important characters, settings, and events.</p>	
<p><b>8.4:</b> Make predictions about the content of the text using prior knowledge and text features (<i>title, captions, illustrations</i>).</p>	
<p><b>8.5:</b> Retell important facts from a text heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>
<p><b>8.6:</b> Make predictions about what will happen next in a story, and explain whether they were confirmed or disconfirmed and why.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.7:</b> Retell a story's beginning, middle, and end.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.8:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p>
<p><b>8.9:</b> Make predictions about the content of a text using prior knowledge and text features (<i>headings, table of contents, key words</i>), and explain whether they were confirmed or disconfirmed and why.</p>	
<p><b>8.10:</b> <b>Restate main ideas.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.11:</b> <b>Identify and show the relevance of foreshadowing clues.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.12:</b> <b>Identify sensory details and figurative language.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages
<p><b>8.13:</b> Identify the speaker of a poem or story.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.14:</b> Make judgments about setting, characters, and events and support them with evidence from the text.</p>	
<p><b>8.15:</b> Locate facts that answer the reader’s questions.</p>	<p><b>Reading</b> College Readiness Standards  <b>Supporting Details:</b>            Locate basic facts (e.g., names, dates, events) clearly stated in a passage            Locate simple details at the sentence and paragraph level in uncomplicated passages            Locate important details in uncomplicated passages            Locate important details in more challenging passages            Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.16:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards  <b>Sequential, Comparative, and Cause-Effect Relationships:</b>            Recognize clear cause-effect relationships described within a single sentence in a passage            Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives            Identify clear cause-effect relationships in uncomplicated passages            Understand implied or subtly stated cause-effect relationships in uncomplicated passages            Identify clear cause-effect relationships in more challenging passages</p>
<p><b>8.17:</b> Distinguish fact from opinion or fiction.</p>	<p><b>Reading</b> College Readiness Standards  <b>Generalizations and Conclusions:</b>            Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages            Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages            Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.18:</b> Summarize main ideas and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.19:</b> Identify and analyze sensory details and figurative language.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>8.20:</b> Identify and analyze the author's use of dialogue and description.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.21:</b> Recognize organizational structures (<i>chronological order, logical order, cause and effect, classification schemes</i>).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.22:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.23:</b> Use knowledge of genre characteristics to analyze a text.</p>	
<p><b>8.24:</b> Interpret mood and tone, and give supporting evidence in a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.25:</b> Interpret a character's traits, emotions, or motivation and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>8.26:</b> Recognize organizational structures and use of arguments for and against an issue.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
<p><b>8.27:</b> Identify evidence used to support an argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.28:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>8.29:</b> Identify and analyze patterns of imagery or symbolism.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.30:</b> Identify and interpret themes and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.31:</b> Analyze the logic and use of evidence in an author’s argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>Standard 9: Making Connections</b></p> <p>Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.</p>	
<p><b>9.1:</b> Identify similarities in plot, setting, and character among the works of an author or illustrator.</p>	
<p><b>9.2:</b> Identify different interpretations of plot, setting, and character in the same work by different illustrators.</p>	
<p><b>9.3:</b> Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author’s life.</p>	
<p><b>9.4:</b> Relate a literary work to information about its setting.</p>	
<p><b>9.5:</b> Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.</p>	
<p><b>9.6:</b> Relate a literary work to primary source documents of its literary period or historical setting.</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>Standard 10: Genre</b></p> <p>Students will identify, analyze, and apply knowledge of the characteristics of different genres.</p>	
<p><b>10.1:</b> Identify differences among the common forms of literature: poetry, prose, fiction, nonfiction (<i>informational and expository</i>), and dramatic literature.</p>	
<p><b>10.2:</b> Distinguish among forms of literature such as poetry, prose, fiction, nonfiction, and drama and apply this knowledge as a strategy for reading and writing.</p>	
<p><b>10.3:</b> Identify and analyze the characteristics of various genres (<i>poetry, fiction, nonfiction, short story, dramatic literature</i>) as forms with distinct characteristics and purposes.</p>	
<p><b>10.4:</b> Identify and analyze the characteristics of various genres (<i>poetry, fiction, nonfiction, short story, dramatic literature</i>) as forms chosen by an author to accomplish a purpose.</p>	
<p><b>10.5:</b> Compare and contrast the presentation of a theme or topic across genres to explain how the selection of genre shapes the message.</p>	
<p><b>Standard 11: Theme</b></p> <p>Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.</p>	
<p><b>11.1:</b> Relate themes in works of fiction and nonfiction to personal experience.</p>	
<p><b>11.2:</b> Identify themes as lessons in folktales, fables, and Greek myths for children.</p>	
<p><b>11.3:</b> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Summarize basic events and ideas in more challenging passages</p>
<p><b>11.4:</b> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic.</p>	
<p><b>11.5:</b> Apply knowledge of the concept that the theme or meaning of a selection represents a view or comment on life, and provide support from the text for the identified themes.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Summarize basic events and ideas in more challenging passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>Standard 12: Fiction</b>	
Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.	
12.1: Identify the elements of plot, character, and setting in a favorite story.	
12.2: Identify and analyze the elements of plot, character, and setting in the stories they read and write.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>12.3:</b> Identify and analyze the elements of setting, characterization, and plot (including conflict).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p>



**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>12.4:</b> Locate and analyze elements of plot and characterization and then use an understanding of these elements to determine how qualities of the central characters influence the resolution of the conflict.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p>

**TABLE 1B**

<p>Massachusetts Grades 9-10 English Language Arts</p>	<p>EXPLORE English and/or Reading College Readiness Standards</p>
	<p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>12.5:</b> <b>Locate and analyze such elements in fiction as point of view, foreshadowing, and irony.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>Standard 13: Nonfiction</b></p>	
<p>Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.</p>	
<p><b>13.1:</b> Identify and use knowledge of common textual features (title, headings, captions, key words, table of contents).</p>	
<p><b>13.2:</b> Identify and use knowledge of common graphic features (illustrations, type size)</p>	
<p><b>13.3:</b> Make predictions about the content of a text using prior knowledge and text and graphic features.</p>	
<p><b>13.4:</b> Explain whether predictions about the content of a text were confirmed or disconfirmed and why.</p>	
<p><b>13.5:</b> Restate main ideas and important facts from a text heard or read.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>
<p><b>13.6:</b> Identify and use knowledge of common textual features (<i>paragraphs, topic sentences, concluding sentences, glossary</i>).</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>13.7:</b> Identify and use knowledge of common graphic features (<i>charts, maps, diagrams, captions, illustrations</i>).</p>	
<p><b>13.8:</b> Identify and use knowledge of common organizational structures (<i>chronological order</i>).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.9:</b> Locate facts that answer the reader’s questions.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>13.10:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p>
<p><b>13.11:</b> Distinguish fact from opinion or fiction.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>13.12:</b> Summarize main ideas and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>            Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages            Infer the main idea or purpose of straightforward paragraphs in more challenging passages            Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b>            Locate basic facts (e.g., names, dates, events) clearly stated in a passage            Locate simple details at the sentence and paragraph level in uncomplicated passages            Locate important details in uncomplicated passages            Locate important details in more challenging passages            Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>13.13:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, glossary, index).</p>	
<p><b>13.14:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams, captions, illustrations).</p>	
<p><b>13.15:</b> Identify and use knowledge of common organizational structures (chronological order, logical order, cause and effect, classification schemes).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.17:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>            Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages            Infer the main idea or purpose of straightforward paragraphs in more challenging passages            Summarize basic events and ideas in more challenging passages</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>13.18:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography).</p>	
<p><b>13.19:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams).</p>	
<p><b>13.20:</b> Identify and use knowledge of common organizational structures (logical order, comparison and contrast, cause and effect relationships).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.21:</b> Recognize use of arguments for and against an issue.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.22:</b> Identify evidence used to support an argument.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>



**TABLE 1B**

<p>Massachusetts Grades 9-10 English Language Arts</p>	<p>EXPLORE English and/or Reading College Readiness Standards</p>
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.23:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>13.24:</b> Analyze the logic and use of evidence in an author’s argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>13.25:</b> Analyze and explain the structure and elements of nonfiction works.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>Standard 14: Poetry</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of poetry and provide evidence from the text to support their understanding.</p>	
<p><b>14.1:</b> Identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.</p>	
<p><b>14.2:</b> Identify rhyme and rhythm, repetition, similes, and sensory images in poems.</p>	
<p><b>14.3:</b> Respond to and analyze the effects of sound, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole); and</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length).</li> </ul>	
<p><b>14.4:</b> Respond to and analyze the effects of sound, form, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, internal rhyme, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole);</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length, word position).</li> </ul>	
<p><b>14.5:</b> Identify, respond to, and analyze the effects of sound, form, figurative language, graphics, and dramatic structure of poems:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme, consonance, assonance);</li> </ul>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>form (ballad, sonnet, heroic couplets);</li> </ul>	
<ul style="list-style-type: none"> <li>figurative language (personification, metaphor, simile, hyperbole, symbolism); and</li> </ul>	
<ul style="list-style-type: none"> <li>dramatic structure.</li> </ul>	
<p><b>Standard 15: Style and Language</b></p>	
<p>Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone, and provide evidence from the text to support their understanding.</p>	
<p><b>15.1:</b> Identify the senses implied in words appealing to the senses in literature and spoken language.</p>	
<p><b>15.2:</b> Identify words appealing to the senses or involving direct comparisons in literature and spoken language.</p>	
<p><b>15.3:</b> Identify imagery, figurative language, rhythm, or flow when responding to literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>15.4:</b> Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>15.5:</b> Identify and analyze imagery and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>
<p><b>15.6:</b> Identify and analyze how an author's use of words creates tone and mood.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>
<p><b>15.7:</b> Evaluate how an author's choice of words advances the theme or purpose of a work.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>15.8:</b> Identify and describe the importance of sentence variety in the overall effectiveness of an imaginary/literary or informational/expository work.</p>	
<p><b>Standard 16: Myth, Traditional Narrative, and Classical Literature</b></p>	
<p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.</p>	
<p><b>16.1:</b> Identify familiar forms of traditional literature read aloud.</p>	
<p><b>16.2:</b> Retell or dramatize traditional literature.</p>	
<p><b>16.3:</b> Identify and predict recurring phrases (<i>Once upon a time</i>) in traditional literature.</p>	
<p><b>16.4:</b> Identify phenomena explained in origin myths.</p>	
<p><b>16.5:</b> Identify the adventures or exploits of a character type in traditional literature.</p>	
<p><b>16.6:</b> Acquire knowledge of culturally significant characters and events in Greek, Roman, and Norse mythology and other traditional literature.</p>	

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>16.7:</b> Compare traditional literature from different cultures.	
<b>16.8:</b> Identify common structures and stylistic elements in traditional literature.	
<b>16.9:</b> Identify conventions in epic tales.	
<b>16.10:</b> Identify and analyze similarities and differences in mythologies from different cultures.	
<b>16.11:</b> Analyze the characters, structure, and themes of classical Greek drama and epic poetry.	
<p><b>Standard 17: Dramatic Literature</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.</p>	
<b>17.1:</b> Identify the elements of dialogue and use them in informal plays.	
<b>17.2:</b> Identify and analyze the elements of plot and character, as presented through dialogue in scripts that are read, viewed, written, or performed.	
<b>17.3:</b> Identify and analyze structural elements particular to dramatic literature ( <i>scenes, acts, cast of characters, stage directions</i> ) in the plays they read, view, write, and perform.	
<b>17.4:</b> Identify and analyze the similarities and differences between a narrative text and its film or play version.	
<b>17.5:</b> Identify and analyze elements of setting, plot, and characterization in the plays that are read, viewed, written, and/or performed:	
<ul style="list-style-type: none"> <li>● setting (place, historical period, time of day);</li> </ul>	
<ul style="list-style-type: none"> <li>● plot (<i>exposition, conflict, rising action, falling action</i>); and</li> </ul>	
<ul style="list-style-type: none"> <li>● characterization (character motivations, actions, thoughts, development).</li> </ul>	
<b>17.6:</b> Identify and analyze the similarities and differences in the presentation of setting, character, and plot in texts, plays, and films.	
<b>17.7:</b> Identify and analyze how dramatic conventions support, interpret, and enhance dramatic text.	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>Standard 18: Dramatic Reading and Performance</b>	
Students will plan and present dramatic readings, recitations, and performances that demonstrate appropriate consideration of audience and purpose.	
<b>18.1:</b> Rehearse and perform stories, plays, and poems for an audience using eye contact, volume, and clear enunciation appropriate to the selection.	
<b>18.2:</b> Plan and perform readings of selected texts for an audience, using clear diction and voice quality ( <i>volume, tempo, pitch, tone</i> ) appropriate to the selection, and use teacher-developed assessment criteria to prepare presentations.	
<b>18.3:</b> Develop characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ) and self-assess using teacher-developed criteria before performing.	
<b>18.4:</b> Develop and present characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ), explain the artistic choices made, and use a scoring guide with teacher-developed categories ( <i>content, presentation style</i> ) to create scoring criteria for assessment.	
<b>18.5:</b> Develop, communicate, and sustain consistent characters in improvisational, formal, and informal productions and create scoring guides with categories and criteria for assessment of presentations.	
Composition	
<b>Standard 19: Writing</b>	
Students will write with a clear focus, coherent organization, and sufficient detail.	
<b>19.1:</b> Draw pictures and/or use letters or phonetically spelled words to tell a story.	
<b>19.2:</b> Dictate sentences for a story and collaborate to put the sentences in chronological sequence.	
<b>19.3:</b> Draw pictures and/or use letters or phonetically spelled words to give others information.	
<b>19.4:</b> Dictate sentences for a letter or directions and collaborate to put the sentences in order.	
<b>19.5:</b> Write or dictate stories that have a beginning, middle, and end.	

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>19.6:</b> Write or dictate short poems.	
<b>19.7:</b> Write or dictate letters, directions, or short accounts of personal experiences that follow a logical order.	
<b>19.8:</b> Write or dictate research questions.	
<b>19.9:</b> Write stories that have a beginning, middle, and end and contain details of setting.	
<b>19.10:</b> Write short poems that contain simple sense details.	
<b>19.11:</b> Write brief summaries of information gathered through research.	
<b>19.12:</b> Write a brief interpretation or explanation of a literary or informational text using evidence from the text as support.	
<b>19.13:</b> Write an account based on personal experience that has a clear focus and sufficient supporting detail.	
<b>19.14:</b> Write stories or scripts containing the basic elements of fiction ( <i>characters, dialogue, setting, plot with a clear resolution</i> ).	
<b>19.15:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia</i> ), figurative language ( <i>simile, metaphor</i> ), and graphic elements ( <i>capital letters, line length</i> ).	
<b>19.16:</b> Write brief research reports with clear focus and supporting detail.	
<b>19.17:</b> Write a short explanation of a process that includes a topic statement, supporting details, and a conclusion.	
<b>19.18:</b> Write formal letters to correspondents such as authors, newspapers, businesses, or government officials.	
<b>19.19:</b> Write stories or scripts with well-developed characters, setting, dialogue, clear conflict and resolution, and sufficient descriptive detail.	
<b>19.20:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia, rhyme scheme</i> ), figurative language ( <i>simile, metaphor, personification</i> ), and graphic elements ( <i>capital letters, line length, word position</i> ).	
<b>19.21:</b> Write reports based on research that include quotations, footnotes or endnotes, and a bibliography.	



**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>19.22:</b> Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.	
<b>19.23:</b> Write multi-paragraph compositions that have clear topic development, logical organization, effective use of detail, and variety in sentence structure.	
<b>19.24:</b> Write well-organized stories or scripts with an explicit or implicit theme and details that contribute to a definite mood or tone.	
<b>19.25:</b> Write poems using a range of poetic techniques, forms ( <i>sonnet, ballad</i> ), and figurative language.	
<b>19.26:</b> Write well-organized essays ( <i>persuasive, literary, personal</i> ) that have a clear focus, logical development, effective use of detail, and variety in sentence structure.	
<b>19.27:</b> Write well-organized research papers that prove a thesis statement using logical organization, effective supporting evidence, and variety in sentence structure.	
<p><b>Standard 20: Consideration of Audience and Purpose</b></p> <p>Students will write for different audiences and purposes.</p>	
<b>20.1:</b> Use a variety of forms or genres when writing for different purposes.	
<b>20.2:</b> Use appropriate language for different audiences and purposes.	
<b>20.3:</b> Make distinctions among fiction, nonfiction, dramatic literature, and poetry, and use these genres selectively when writing for different purposes.	
<b>20.4:</b> Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.	
<b>20.5:</b> Use different levels of formality, style, and tone when composing for different audiences.	
<p><b>Standard 21: Revising</b></p> <p>Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.</p>	
<b>21.1:</b> After writing or dictating a composition, identify words and phrases that could be added to make the thought clearer, more logical, or more expressive.	<p><b>English College Readiness Standards</b></p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.2:</b> Revise writing to improve level of detail after determining what could be added or deleted.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p>
<p><b>21.3:</b> Improve word choice by using dictionaries.</p>	
<p><b>21.4:</b> Revise writing to improve level of detail and precision of language after determining where to add images and sensory detail, combine sentences, vary sentences, and rearrange text.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.5:</b> Improve word choice by using dictionaries or thesauruses.</p>	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>21.6:</b> Revise writing to improve organization and diction after checking the logic underlying the order of ideas, the precision of vocabulary used, and the economy of writing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.7:</b> Improve word choice by using a variety of references.</p>	
<p><b>21.8:</b> Revise writing by attending to topic/idea development, organization, level of detail, language/style, sentence structure, grammar and usage, and mechanics.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p> <p>Ensure that a verb agrees with its subject when there is some text between the two</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Delete commas that create basic sense problems (e.g., between verb and direct object)</p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p> <p>Use commas to set off simple parenthetical phrases</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p> <p>Use punctuation to set off complex parenthetical phrases</p> <p>Recognize and delete unnecessary commas based on a careful reading of a complicated sentence (e.g., between the elements of a compound subject or compound verb joined by <i>and</i>)</p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Recognize inappropriate uses of colons and semicolons</p>
<p><b>Standard 22: Standard English Conventions</b></p>	
<p>Students will use knowledge of standard English conventions in their writing, revising, and editing.</p>	
<p><b>22.1:</b> Print upper- and lower-case letters of the alphabet.</p>	
<p><b>22.2:</b> Use correct standard English mechanics such as:</p>	
<ul style="list-style-type: none"> <li>• printing upper- and lower-case letters legibly and using them to make words;</li> </ul>	
<ul style="list-style-type: none"> <li>• separating words with spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>• understanding and applying rules for capitalization at the beginning of a sentence, for names and places, and capitalization and commas in dates.</li> </ul>	
<ul style="list-style-type: none"> <li>• using correct spelling of sight and/or spelling words; and</li> </ul>	
<ul style="list-style-type: none"> <li>• using appropriate end marks such as periods and question marks.</li> </ul>	<p style="text-align: center;"><b>English College Readiness Standards Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.3:</b> Write legibly in cursive, leaving space between letters in a word and between words in a sentence.</p>	
<p><b>22.4:</b> Use knowledge of correct mechanics (<i>end marks, commas for series, capitalization</i>), usage (<i>subject and verb agreement in a simple sentence</i>), and sentence structure (<i>elimination of fragments</i>) when writing and editing.</p>	<p style="text-align: center;"><b>English College Readiness Standards Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.5:</b> Use knowledge of letter sounds, word parts, word segmentation, and syllabication to monitor and correct spelling.</p>	
<p><b>22.6:</b> Spell most commonly used homophones correctly in their writing (<i>there, they're, their; two, too, to</i>).</p>	<p><b>English College Readiness Standards</b></p> <p><b>Conventions of Usage:</b> Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p>
<p><b>22.7:</b> Use additional knowledge of correct mechanics (<i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i>), correct sentence structure (<i>elimination of fragments and run-ons</i>), and correct standard English spelling (<i>commonly used homophones</i>) when writing, revising, and editing.</p>	<p><b>English College Readiness Standards</b></p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b> Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b> Use apostrophes to indicate simple possessive nouns</p>
<p><b>22.8:</b> Use knowledge of types of sentences (<i>simple, compound, complex</i>), correct mechanics (<i>comma after introductory structures</i>), correct usage (<i>pronoun reference</i>), sentence structure (<i>complete sentences, properly placed modifiers</i>), and standard English spelling when writing and editing.</p>	<p><b>English College Readiness Standards</b></p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Revise vague nouns and pronouns that create obvious logic problems Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>



TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.9:</b> Use knowledge of types of clauses (<i>main and subordinate</i>), verbals (<i>gerunds, infinitives, participles</i>), mechanics (<i>semicolons, colons, hyphens</i>), usage (<i>tense consistency</i>), sentence structure (<i>parallel structure</i>), and standard English spelling when writing and editing.</p>	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p>
<p><b>Standard 23: Organizing Ideas in Writing</b></p> <p>Students will organize ideas in writing in a way that makes sense for their purpose.</p>	
<p><b>23.1:</b> Arrange events in order when writing or dictating.</p>	
<p><b>23.2:</b> Arrange ideas in a way that makes sense.</p>	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.3:</b> Organize plot events of a story in an order that leads to a climax.</p>	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.4:</b> Organize ideas for a brief response to a reading.</p>	
<p><b>23.5:</b> Organize ideas for an account of personal experience in a way that makes sense.</p>	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p>

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.6:</b> Decide on the placement of descriptive details about setting, characters, and events in stories.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p>
<p><b>23.7:</b> Group related ideas and place them in logical order when writing summaries or reports.</p>	
<p><b>23.8:</b> Organize information about a topic into a coherent paragraph with a topic sentence, sufficient supporting detail, and a concluding sentence.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.9:</b> Integrate the use of organizing techniques that break up strict chronological order in a story (<i>starting in the middle of the action, then filling in background information using flashbacks</i>).</p>	
<p><b>23.10:</b> Organize information into a coherent essay or report with a thesis statement in the introduction, transition sentences to link paragraphs, and a conclusion.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p>

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
	<p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<b>23.11:</b> Organize ideas for writing comparison-and-contrast essays.	
<b>23.12:</b> Integrate all elements of fiction to emphasize the theme and tone of the story.	
<b>23.13:</b> Organize ideas for a critical essay about literature or a research report with an original thesis statement in the introduction, well constructed paragraphs that build an effective argument, transition sentences to link paragraphs into a coherent whole, and a conclusion.	
<p><b>Standard 24: Research</b></p> <p>Students will gather information from a variety of sources, analyze and evaluate the quality of the information they obtain, and use it to answer their own questions.</p>	
<b>24.1:</b> Generate questions and gather information from several sources in a classroom, school, or public library.	
<b>24.2:</b> Identify and apply steps in conducting and reporting research:	
<ul style="list-style-type: none"> <li>● Define the need for information and formulate open-ended research questions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Initiate a plan for searching for information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Locate resources.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the relevance of the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Interpret, use, and communicate the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the research project as a whole.</li> </ul>	

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>24.3:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual and group projects:	
<ul style="list-style-type: none"> <li>● use an expanded range of print and non-print sources (<i>atlases, data bases, electronic, on-line resources</i>);</li> </ul>	
<ul style="list-style-type: none"> <li>● follow established criteria for evaluating information;</li> </ul>	
<ul style="list-style-type: none"> <li>● locate specific information within resources by using indexes, tables of contents, electronic search key words;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grades 5–6 Learning Standards in the Composition Strand as a guide for writing; and</li> </ul>	
<ul style="list-style-type: none"> <li>● provide appropriate documentation in a consistent format.</li> </ul>	
<b>24.4:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual projects:	
<ul style="list-style-type: none"> <li>● differentiate between primary and secondary source materials;</li> </ul>	
<ul style="list-style-type: none"> <li>● differentiate between paraphrasing and using direct quotes in a report;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grade 7–8 Learning Standards in the Composition Strand as a guide for writing;</li> </ul>	
<ul style="list-style-type: none"> <li>● document information and quotations and use a consistent format for footnotes or endnotes; and</li> </ul>	
<ul style="list-style-type: none"> <li>● use standard bibliographic format to document sources.</li> </ul>	
<b>24.5:</b> Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, documenting sources in a consistent and standard format, and presenting research.	

TABLE 1B

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<b>Standard 25: Evaluating Writing and Presentations</b>	
Students will develop and use appropriate rhetorical, logical, and stylistic criteria for assessing final versions of their compositions or research projects before presenting them to varied audiences.	
<b>25.1:</b> Support judgments about classroom activities or presentations.	
<b>25.2:</b> Form and explain personal standards or judgments of quality, display them in the classroom, and present them to family members.	
<b>25.3:</b> Use prescribed criteria from a scoring rubric to evaluate compositions, recitations, or performances before presenting them to an audience.	
<b>25.4:</b> As a group, develop and use scoring guides or rubrics to improve organization and presentation of written and oral projects.	
<b>25.5:</b> Use group-generated criteria for evaluating different forms of writing and explain why these are important before applying them.	
Media	
<b>Standard 26: Analysis of Media</b>	
Students will identify, analyze, and apply knowledge of the conventions, elements, and techniques of film, radio, video, television, multimedia productions, the Internet, and emerging technologies, and provide evidence from the works to support their understanding.	
<b>26.1:</b> Identify techniques used in television ( <i>animation, close-ups, wide-angle shots, sound effects, music, graphics</i> ) and use knowledge of these techniques to distinguish between facts and misleading information.	
<b>26.2:</b> Compare stories in print with their filmed adaptations, describing the similarities and differences in the portrayal of characters, plot, and settings.	
<b>26.3:</b> Identify techniques used in educational reference software and websites and describe how these techniques are the same as or different from the techniques used by authors and illustrators of print materials.	
<b>26.4:</b> Analyze the effect on the reader's or viewer's emotions of text and image in print journalism, and images, sound, and text in electronic journalism, distinguishing techniques used in each to achieve these effects.	
<b>26.5:</b> Analyze visual or aural techniques used in a media message for a particular audience and evaluate their effectiveness.	

**TABLE 1B**

Massachusetts Grades 9-10 English Language Arts	EXPLORE English and/or Reading College Readiness Standards
<p><b>Standard 27: Media Production</b></p> <p>Students will design and create coherent media productions (audio, video, television, multimedia, Internet, emerging technologies) with a clear controlling idea, adequate detail, and appropriate consideration of audience, purpose, and medium.</p>	
<p><b>27.1:</b> Create radio scripts, audiotapes, or videotapes for display or transmission.</p>	
<p><b>27.2:</b> Create presentations using computer technology.</p>	
<p><b>27.3:</b> Create a media production using effective images, text, music, sound effects, or graphics.</p>	
<p><b>27.4:</b> Create media presentations and written reports on the same subject and compare the differences in effects of each medium.</p>	
<p><b>27.5:</b> Use criteria to assess the effectiveness of media presentations.</p>	
<p><b>27.6:</b> Create media presentations that effectively use graphics, images, and/or sound to present a distinctive point of view on a topic.</p>	
<p><b>27.7:</b> Develop and apply criteria for assessing the effectiveness of the presentation, style, and content of films and other forms of electronic communication.</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
Language	
<b>Standard 1: Discussion</b>	
Students will use agreed-upon rules for informal and formal discussions in small and large groups.	
1.1: Follow agreed-upon rules for discussion.	
1.3: Apply understanding of agreed-upon rules and individual roles in order to make decisions.	
1.4: Know and apply rules for formal discussions ( <i>classroom, parliamentary debate, town meeting rules</i> ).	
1.5: Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.	
<b>Standard 2: Questioning, Listening, and Contributing</b>	
Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.	
2.1: Contribute knowledge to class discussion in order to develop a topic for a class project.	
2.2: Contribute knowledge to class discussion in order to develop ideas for a class project and generate interview questions to be used as part of the project.	
2.3: Gather relevant information for a research project or composition through interviews.	
2.4: Integrate relevant information gathered from group discussions and interviews for reports.	
2.5: Summarize in a coherent and organized way information and ideas learned from a focused discussion.	
<b>Standard 3: Oral Presentation</b>	
Students will make oral presentations that demonstrate appropriate consideration of audience, purpose, and the information to be conveyed.	
3.1: Give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.	
3.2: Maintain focus on the topic.	
3.3: Adapt language to persuade, to explain, or to seek information.	



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
3.4: Give oral presentations about experiences or interests using eye contact, proper place, adequate volume, and clear pronunciation.	
3.5: Make informal presentations that have a recognizable organization ( <i>sequencing, summarizing</i> ).	
3.6: Express an opinion of a literary work or film in an organized way, with supporting detail.	
3.7: Use teacher-developed assessment criteria to prepare their presentations.	
3.8: Give oral presentations for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.9: Use teacher-developed assessment criteria to prepare their presentations.	
3.10: Present an organized interpretation of a literary work, film, or dramatic production.	
3.11: Use appropriate techniques for oral persuasion.	
3.12: Give oral presentations to different audiences for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
3.13: Create a scoring guide based on categories supplied by the teacher ( <i>content, presentation style</i> ) to prepare and assess their presentations.	
3.14: Give formal and informal talks to various audiences and for various purposes using appropriate level of formality and rhetorical devices.	
3.15: Analyze effective speeches made for a variety of purposes and prepare and deliver a speech containing some of these features.	
3.16: Create an appropriate scoring guide to prepare, improve, and assess presentations.	
<b>Standard 4: Vocabulary and Concept Development</b>	
Students will understand and acquire new vocabulary and use it correctly in reading and writing.	
4.1: Identify and sort common words into various classifications.	
4.2: Describe common objects and events in general and specific language.	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
4.3: Identify and sort common words into conceptual categories.	
4.4: Identify base words and their inflectional forms.	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b> Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i> Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
4.5: Identify the relevant meaning for a word with multiple meanings using its context.	<p><b>Meanings of Words:</b> Understand the implication of a familiar word or phrase and of simple descriptive language Use context to understand basic figurative language Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
4.6: Identify common antonyms and synonyms.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b> Understand the implication of a familiar word or phrase and of simple descriptive language Use context to understand basic figurative language Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
4.7: Use knowledge of the meaning of individual words to predict the meaning of unknown compound words.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b> Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.8:</b> Determine meanings of words by using a beginning dictionary.</p>	
<p><b>4.9:</b> Identify the meaning of common prefixes.</p>	
<p><b>4.10:</b> Identify the meaning of common Greek and Latin roots to determine the meaning of unfamiliar words.</p>	
<p><b>4.11:</b> Identify the meaning of common idioms and figurative phrases.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.12:</b> Identify playful uses of language (<i>puns, jokes, palindromes</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.13:</b> Determine the meaning of unknown words using their context.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.14:</b> Recognize and use words with multiple meanings and be able to determine which meaning is intended from the context of the sentence.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.15:</b> Determine meanings of words and alternate word choices using a dictionary or thesaurus.</p>	
<p><b>4.16:</b> Identify and apply the meaning of the terms <i>antonym</i>, <i>synonym</i>, and <i>homophone</i>.</p>	
<p><b>4.17:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading College Readiness Standards</b></p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.18:</b> Determine the meaning of unfamiliar words using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.19:</b> Determine pronunciations, meanings, alternate word choices, and parts of speech of words using dictionaries and thesauruses.</p>	
<p><b>4.20:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading College Readiness Standards</b></p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.21:</b> Determine the meaning of unfamiliar words by using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.22:</b> Determine pronunciations, meanings, alternate word choices, parts of speech, or etymologies of words using dictionaries and thesauruses.</p>	
<p><b>4.23:</b> Identify and use correctly idioms, cognates, words with literal and figurative meanings, and patterns of word changes that indicate different meanings or functions.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.24:</b> Use knowledge of Greek, Latin, and Norse mythology, the Bible, and other works often alluded to in British and American literature to understand the meanings of new words.</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
4.25: Use general dictionaries, specialized dictionaries, thesauruses, or related references as needed to increase learning.	
<p><b>Standard 5: Structure and Origins of Modern English</b></p> <p>Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.</p>	
<p>5.1: Use language to express spatial and temporal relationships.</p>	<p><b>Reading</b> College Readiness Standards  <b>Sequential, Comparative, and Cause-Effect Relationships:</b>  Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages  Order simple sequences of events in uncomplicated literary narratives  Identify clear relationships between people, ideas, and so on in uncomplicated passages  Order sequences of events in uncomplicated passages  Understand relationships between people, ideas, and so on in uncomplicated passages  Identify clear relationships between characters, ideas, and so on in more challenging literary narratives  Order sequences of events in more challenging passages  Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>English</b> College Readiness Standards  <b>Organization, Unity, and Coherence:</b>  Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)  Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)  Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p>
5.2: Recognize that the names of things can also be the names of actions.	
5.3: Identify correct capitalization for names and places, and correct capitalization and commas in dates.	
5.4: Identify appropriate end marks.	<p><b>English</b> College Readiness Standards  <b>Conventions of Punctuation:</b>  Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
5.5: Recognize the subject-predicate relationship in sentences.	<p><b>English</b> College Readiness Standards  <b>Sentence Structure and Formation:</b>  Use conjunctions or punctuation to join simple clauses</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
<p><b>5.6:</b> Identify the four basic parts of speech.</p>	
<p><b>5.7:</b> Identify correct mechanics (<i>end marks, commas for series, capitalization</i>), correct usage (<i>subject and verb agreement in a simple sentence</i>), and correct sentence structure (<i>elimination of sentence fragments</i>).</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.8:</b> Identify words or word parts from other languages that have been adopted into the English language.</p>	
<p><b>5.9:</b> Identify the eight basic parts of speech (<i>noun, pronoun, verb, adverb, adjective, conjunction, preposition, interjection</i>).</p>	
<p><b>5.10:</b> Expand or reduce sentences (<i>adding or deleting modifiers, combining or decombining sentences</i>).</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
5.11 Identify verb phrases and verb tenses.	
5.12: Recognize that a word performs different functions according to its position in the sentence.	
5.13: Identify simple and compound sentences.	
<p>5.14: Identify correct mechanics (<i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i>) and correct sentence structure (<i>elimination of sentence fragments and run-ons</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p>
5.15: Recognize the basic patterns of English sentences (noun-verb; noun-verb-noun; noun-verb-noun-noun; noun-linking verb-noun).	
5.16: Distinguish phrases from clauses.	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p>5.17: Recognize the makeup and function of prepositional phrases.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p>5.18: Identify simple, compound, and complex sentences.</p>	
<p>5.19: Recognize appropriate use of pronoun reference.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p>
<p>5.20: Identify correct mechanics (comma after introductory structures), correct usage (pronoun reference), and correct sentence structure (complete sentences, properly placed modifiers).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>5.21:</b> Employ grammar and usage rhetorically by combining, including, reordering, and reducing sentences.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
<p><b>5.22:</b> Describe the origins and meanings of common words, as well as of foreign words or phrases used frequently in written English.</p>	
<p><b>5.23:</b> Identify simple, compound, complex, and compound-complex sentences.</p>	
<p><b>5.24:</b> Identify nominalized, adjectival, and adverbial clauses.</p>	
<p><b>5.25:</b> Recognize the functions of verbals: participles, gerunds, and infinitives.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
<p><b>5.26:</b> Analyze the structure of a sentence (<i>traditional diagram, transformational model</i>).</p>	
<p><b>5.27:</b> Identify rhetorically functional sentence structure (<i>parallelism, properly placed modifiers</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p>
<p><b>5.28:</b> Identify correct mechanics (<i>semicolons, colons, hyphens</i>), correct usage (<i>tense consistency</i>), and correct sentence structure (<i>parallel structure</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use a semicolon to indicate a relationship between closely related independent clauses</p>
<p><b>5.29:</b> Describe the origins and meanings of common words and foreign words or phrases used frequently in written English, and show their relationship to historical events or developments (<i>glasnost, coup d'état</i>).</p>	
<p><b>Standard 6: Formal and Informal English</b></p> <p>Students will describe, analyze, and use appropriately formal and informal English.</p>	
<p><b>6.1:</b> Identify formal and informal language in stories, poems, and plays.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>6.2:</b> Recognize dialect in the conversational voices in American folk tales.</p>	
<p><b>6.3:</b> Identify formal and informal language use in advertisements read, heard, and/or seen.</p>	
<p><b>6.4:</b> Demonstrate through role-playing appropriate use of formal and informal language.</p>	
<p><b>6.5:</b> Write stories using a mix of formal and informal language.</p>	
<p><b>6.6:</b> Identify differences between oral and written language patterns.</p>	
<p><b>6.7:</b> Analyze the language styles of different characters in literary works.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>6.8:</b> Identify content-specific vocabulary, terminology, or jargon unique to particular social or professional groups.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>6.9:</b> Identify differences between the voice, tone, diction, and syntax used in media presentations (<i>documentary films, news broadcasts, taped interviews</i>) and these elements in informal speech.</p>	
<p>Reading and Literature</p>	
<p><b>Standard 7: Beginning Reading</b></p> <p>Students will understand the nature of written English and the relationship of letters and spelling patterns to the sounds of speech.</p>	
<p><b>7.1:</b> Demonstrate understanding of the forms and functions of written English:</p>	
<ul style="list-style-type: none"> <li>recognize that printed materials provide information or entertaining stories;</li> </ul>	
<ul style="list-style-type: none"> <li>know how to handle a book and turn the pages;</li> </ul>	
<ul style="list-style-type: none"> <li>identify the covers and title page of a book;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that, in English, print moves left to right across the page and from top to bottom;</li> </ul>	
<ul style="list-style-type: none"> <li>identify upper- and lower-case letters;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that written words are separated by spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that sentences in print are made up of separate words.</li> </ul>	

**TABLE 1C**

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>7.2:</b> Demonstrate orally that phonemes exist and that they can be isolated and manipulated:	
<ul style="list-style-type: none"> <li>● understand that a sound is a phoneme, or one distinct sound;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that words are made up of one or more syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize and produce rhyming words;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the initial, medial, and final sounds of a word;</li> </ul>	
<ul style="list-style-type: none"> <li>● blend sounds to make words.</li> </ul>	
<b>7.3:</b> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:	
<ul style="list-style-type: none"> <li>● know that there is a link between letters and sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize letter-sound matches by naming and identifying each letter of the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that written words are composed of letters that represent sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>● use letter-sound matches to decode simple words.</li> </ul>	
<b>7.4:</b> Demonstrate understanding of the various features of written English:	
<ul style="list-style-type: none"> <li>● know the order of the letters in the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that spoken words are represented in written English by sequences of letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● match oral words to printed words;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that there are correct spellings for words;</li> </ul>	
<ul style="list-style-type: none"> <li>● use correct spelling of appropriate high-frequency words, whether irregularly or regularly spelled;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize the distinguishing features of a sentence and a paragraph;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the author and title of a book, and use a table of contents.</li> </ul>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>7.5:</b> Demonstrate orally that phonemes exist:</p>	
<ul style="list-style-type: none"> <li>● generate the sounds from all the letters and letter patterns, including consonant blends, long- and short-vowel patterns, and onsets and rimes and combine these sounds into recognizable words;</li> </ul>	
<ul style="list-style-type: none"> <li>● use knowledge of vowel digraphs, vowel diphthongs, and r-controlled letter-sound associations (<i>as in star</i>) to read words.</li> </ul>	
<p><b>7.6:</b> Recognize common irregularly spelled words by sight.</p>	
<p><b>7.7:</b> Use letter-sound knowledge to decode written English:</p>	
<ul style="list-style-type: none"> <li>● decode accurately phonetically regular one-syllable and multi-syllable real words and nonsense words;</li> </ul>	
<ul style="list-style-type: none"> <li>● read accurately many irregularly spelled words, special vowel spellings, and common word endings;</li> </ul>	
<ul style="list-style-type: none"> <li>● apply knowledge of letter patterns to identify syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● apply independently the most common letter-sound correspondences, including the sounds represented by single letters, consonant blends, consonant digraphs, and vowel digraphs and diphthongs;</li> </ul>	
<ul style="list-style-type: none"> <li>● know and use more difficult word families (<i>-ought</i>) and known words to decode unknown words;</li> </ul>	
<ul style="list-style-type: none"> <li>● read words with several syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● read aloud with fluency and comprehension at grade level.</li> </ul>	
<p><b>7.8:</b> Use letter-sound knowledge to decode written English.</p>	
<p><b>7.9:</b> Read grade-appropriate imaginative/literary and informational/expository text with comprehension.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p>



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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>7.10:</b> Read aloud grade-appropriate imaginative/literary and informational/expository text fluently, accurately, and with comprehension, using appropriate timing, change in voice, and expression.</p>	

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>Standard 8: Understanding a Text</b>	
<b>Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.</b>	
<p><b>8.1:</b> <b>Make predictions using</b> prior knowledge, pictures, and text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.2:</b> <b>Retell a main event from a story</b> heard or <b>read</b>.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>8.3:</b> Ask questions about the important characters, settings, and events.</p>	
<p><b>8.4:</b> Make predictions about the content of the text using prior knowledge and text features (<i>title, captions, illustrations</i>).</p>	
<p><b>8.5:</b> <b>Retell important facts from a text</b> heard or <b>read</b>.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Locate important details in uncomplicated passages Locate important details in more challenging passages</p>
<p><b>8.6:</b> Make predictions about what will happen next in a story, and explain whether they were confirmed or disconfirmed and why.</p>	<p><b>Reading</b> College Readiness Standards <b>Generalizations and Conclusions:</b> Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages Draw simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.7:</b> Retell a story's beginning, middle, and end.</p>	<p><b>Reading</b> College Readiness Standards <b>Main Ideas and Author's Approach:</b> Summarize basic events and ideas in more challenging passages</p>
<p><b>8.8:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards <b>Sequential, Comparative, and Cause-Effect Relationships:</b> Recognize clear cause-effect relationships described within a single sentence in a passage Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives Identify clear cause-effect relationships in uncomplicated passages Understand implied or subtly stated cause-effect relationships in uncomplicated passages Identify clear cause-effect relationships in more challenging passages Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
<p><b>8.9:</b> Make predictions about the content of a text using prior knowledge and text features (<i>headings, table of contents, key words</i>), and explain whether they were confirmed or disconfirmed and why.</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>8.10:</b> <b>Restate main ideas.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>8.11:</b> <b>Identify and show the relevance of foreshadowing clues.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.12:</b> <b>Identify sensory details and figurative language.</b></p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>8.13:</b> Identify the speaker of a poem or story.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.14:</b> Make judgments about setting, characters, and events and support them with evidence from the text.</p>	
<p><b>8.15:</b> Locate facts that answer the reader’s questions.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>8.16:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
<p><b>8.17:</b> Distinguish fact from opinion or fiction.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.18:</b> Summarize main ideas and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>8.19:</b> Identify and analyze sensory details and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>8.20:</b> Identify and analyze the author's use of dialogue and description.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.21:</b> Recognize organizational structures (chronological order, logical order, cause and effect, classification schemes).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.22:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>8.23:</b> Use knowledge of genre characteristics to analyze a text.</p>	
<p><b>8.24:</b> Interpret mood and tone, and give supporting evidence in a text.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.25:</b> Interpret a character's traits, emotions, or motivation and give supporting evidence from a text.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
<p><b>8.26:</b> Recognize organizational structures and use of arguments for and against an issue.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.27:</b> Identify evidence used to support an argument.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.28:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>8.29:</b> Identify and analyze patterns of imagery or symbolism.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.30:</b> Identify and interpret themes and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>8.31:</b> Analyze the logic and use of evidence in an author’s argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>Standard 9: Making Connections</b>	
Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.	
9.1: Identify similarities in plot, setting, and character among the works of an author or illustrator.	
9.2: Identify different interpretations of plot, setting, and character in the same work by different illustrators.	
9.3: Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author's life.	
9.4: Relate a literary work to information about its setting.	
9.5: Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.	
9.6: Relate a literary work to primary source documents of its literary period or historical setting.	
<b>Standard 10: Genre</b>	
Students will identify, analyze, and apply knowledge of the characteristics of different genres.	
10.1: Identify differences among the common forms of literature: poetry, prose, fiction, nonfiction ( <i>informational and expository</i> ), and dramatic literature.	
10.2: Distinguish among forms of literature such as poetry, prose, fiction, nonfiction, and drama and apply this knowledge as a strategy for reading and writing.	
10.3: Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms with distinct characteristics and purposes.	
10.4: Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms chosen by an author to accomplish a purpose.	
10.5: Compare and contrast the presentation of a theme or topic across genres to explain how the selection of genre shapes the message.	
<b>Standard 11: Theme</b>	
Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.	
11.1: Relate themes in works of fiction and nonfiction to personal experience.	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>11.2:</b> Identify themes as lessons in folktales, fables, and Greek myths for children.</p>	
<p><b>11.3:</b> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Summarize basic events and ideas in more challenging passages            Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>11.4:</b> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic.</p>	
<p><b>11.5:</b> Apply knowledge of the concept that the theme or meaning of a selection represents a view or comment on life, and provide support from the text for the identified themes.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Summarize basic events and ideas in more challenging passages            Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>Standard 12: Fiction</b></p> <p>Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.</p>	
<p><b>12.1:</b> Identify the elements of plot, character, and setting in a favorite story.</p>	
<p><b>12.2:</b> Identify and analyze the elements of plot, character, and setting in the stories they read and write.</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Recognize a clear intent of an author or narrator in uncomplicated literary narratives            Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages            Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages            Infer the main idea or purpose of straightforward paragraphs in more challenging passages            Summarize basic events and ideas in more challenging passages            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages            Infer the main idea or purpose of more challenging passages or their paragraphs</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>12.3:</b> Identify and analyze the elements of setting, characterization, and plot (including conflict).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>12.4:</b> Locate and analyze elements of plot and characterization and then use an understanding of these elements to determine how qualities of the central characters influence the resolution of the conflict.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>12.5:</b> Locate and analyze such elements in fiction as point of view, foreshadowing, and irony.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>Standard 13: Nonfiction</b></p> <p>Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.</p>	
<p><b>13.1:</b> Identify and use knowledge of common textual features (title, headings, captions, key words, table of contents).</p>	
<p><b>13.2:</b> Identify and use knowledge of common graphic features (illustrations, type size)</p>	
<p><b>13.3:</b> Make predictions about the content of a text using prior knowledge and text and graphic features.</p>	
<p><b>13.4:</b> Explain whether predictions about the content of a text were confirmed or disconfirmed and why.</p>	
<p><b>13.5:</b> Restate main ideas and important facts from a text heard or read.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>13.6:</b> Identify and use knowledge of common textual features (<i>paragraphs, topic sentences, concluding sentences, glossary</i>).</p>	
<p><b>13.7:</b> Identify and use knowledge of common graphic features (<i>charts, maps, diagrams, captions, illustrations</i>).</p>	
<p><b>13.8:</b> Identify and use knowledge of common organizational structures (<i>chronological order</i>).</p>	<p><b>Reading</b> College Readiness Standards  <b>Main Ideas and Author’s Approach:</b>            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages            Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.9:</b> Locate facts that answer the reader’s questions.</p>	<p><b>Reading</b> College Readiness Standards  <b>Supporting Details:</b>            Locate basic facts (e.g., names, dates, events) clearly stated in a passage            Locate simple details at the sentence and paragraph level in uncomplicated passages            Locate important details in uncomplicated passages            Locate important details in more challenging passages            Locate and interpret minor or subtly stated details in uncomplicated passages            Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>13.10:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards  <b>Sequential, Comparative, and Cause-Effect Relationships:</b>            Recognize clear cause-effect relationships described within a single sentence in a passage            Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives            Identify clear cause-effect relationships in uncomplicated passages            Understand implied or subtly stated cause-effect relationships in uncomplicated passages            Identify clear cause-effect relationships in more challenging passages            Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
<p><b>13.11:</b> Distinguish fact from opinion or fiction.</p>	<p><b>Reading</b> College Readiness Standards  <b>Generalizations and Conclusions:</b>            Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages            Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>13.12:</b> Summarize main ideas and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>13.13:</b> Identify and use knowledge of common textual features (<i>paragraphs, topic sentences, concluding sentences, glossary, index</i>).</p>	
<p><b>13.14:</b> Identify and use knowledge of common graphic features (<i>charts, maps, diagrams, captions, illustrations</i>).</p>	
<p><b>13.15:</b> Identify and use knowledge of common organizational structures (<i>chronological order, logical order, cause and effect, classification schemes</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>



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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages
<p><b>13.17:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>  Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives  Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives  Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages  Infer the main idea or purpose of straightforward paragraphs in more challenging passages  Summarize basic events and ideas in more challenging passages  Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b>  Locate basic facts (e.g., names, dates, events) clearly stated in a passage  Locate simple details at the sentence and paragraph level in uncomplicated passages  Locate important details in uncomplicated passages  Locate important details in more challenging passages  Locate and interpret minor or subtly stated details in uncomplicated passages  Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>13.18:</b> Identify and use knowledge of common textual features (<i>paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography</i>).</p>	
<p><b>13.19:</b> Identify and use knowledge of common graphic features (<i>charts, maps, diagrams</i>).</p>	
<p><b>13.20:</b> Identify and use knowledge of common organizational structures (<i>logical order, comparison and contrast, cause and effect relationships</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>  Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages  Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.21:</b> Recognize use of arguments for and against an issue.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b>  Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.22:</b> Identify evidence used to support an argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.23:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>13.24:</b> Analyze the logic and use of evidence in an author’s argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>13.25:</b> Analyze and explain the structure and elements of nonfiction works.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>Standard 14: Poetry</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of poetry and provide evidence from the text to support their understanding.</p>	
<p><b>14.1:</b> Identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.</p>	
<p><b>14.2:</b> Identify rhyme and rhythm, repetition, similes, and sensory images in poems.</p>	
<p><b>14.3:</b> Respond to and analyze the effects of sound, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole); and</li> </ul>	

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<ul style="list-style-type: none"> <li>graphics (capital letters, line length).</li> </ul>	
<p><b>14.4:</b> Respond to and analyze the effects of sound, form, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>sound (alliteration, onomatopoeia, internal rhyme, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>figurative language (personification, metaphor, simile, hyperbole);</li> </ul>	
<ul style="list-style-type: none"> <li>graphics (capital letters, line length, word position).</li> </ul>	
<p><b>14.5:</b> Identify, respond to, and analyze the effects of sound, form, figurative language, graphics, and dramatic structure of poems:</p>	
<ul style="list-style-type: none"> <li>sound (alliteration, onomatopoeia, rhyme scheme, consonance, assonance);</li> </ul>	
<ul style="list-style-type: none"> <li>form (ballad, sonnet, heroic couplets);</li> </ul>	
<ul style="list-style-type: none"> <li>figurative language (personification, metaphor, simile, hyperbole, symbolism); and</li> </ul>	
<ul style="list-style-type: none"> <li>dramatic structure.</li> </ul>	
<p><b>Standard 15: Style and Language</b></p>	
<p>Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone, and provide evidence from the text to support their understanding.</p>	
<p><b>15.1:</b> Identify the senses implied in words appealing to the senses in literature and spoken language.</p>	
<p><b>15.2:</b> Identify words appealing to the senses or involving direct comparisons in literature and spoken language.</p>	
<p><b>15.3:</b> Identify imagery, figurative language, rhythm, or flow when responding to literature.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b>            Recognize a clear function of a part of an uncomplicated passage            Make simple inferences about how details are used in passages            Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b>            Identify clear relationships between people, ideas, and so on in uncomplicated passages            Understand relationships between people, ideas, and so on in uncomplicated passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.4:</b> Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.5:</b> Identify and analyze imagery and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.6:</b> Identify and analyze how an author’s use of words creates tone and mood.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>15.7:</b> Evaluate how an author’s choice of words advances the theme or purpose of a work.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>15.8:</b> Identify and describe the importance of sentence variety in the overall effectiveness of an imaginary/literary or informational/expository work.</p>	
<p><b>Standard 16: Myth, Traditional Narrative, and Classical Literature</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.</p>	
<p><b>16.1:</b> Identify familiar forms of traditional literature read aloud.</p>	
<p><b>16.2:</b> Retell or dramatize traditional literature.</p>	
<p><b>16.3:</b> Identify and predict recurring phrases (<i>Once upon a time</i>) in traditional literature.</p>	
<p><b>16.4:</b> Identify phenomena explained in origin myths.</p>	
<p><b>16.5:</b> Identify the adventures or exploits of a character type in traditional literature.</p>	
<p><b>16.6:</b> Acquire knowledge of culturally significant characters and events in Greek, Roman, and Norse mythology and other traditional literature.</p>	
<p><b>16.7:</b> Compare traditional literature from different cultures.</p>	
<p><b>16.8:</b> Identify common structures and stylistic elements in traditional literature.</p>	
<p><b>16.9:</b> Identify conventions in epic tales.</p>	
<p><b>16.10:</b> Identify and analyze similarities and differences in mythologies from different cultures.</p>	
<p><b>16.11:</b> Analyze the characters, structure, and themes of classical Greek drama and epic poetry.</p>	
<p><b>Standard 17: Dramatic Literature</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.</p>	
<p><b>17.1:</b> Identify the elements of dialogue and use them in informal plays.</p>	
<p><b>17.2:</b> Identify and analyze the elements of plot and character, as presented through dialogue in scripts that are read, viewed, written, or performed.</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>17.3:</b> Identify and analyze structural elements particular to dramatic literature ( <i>scenes, acts, cast of characters, stage directions</i> ) in the plays they read, view, write, and perform.	
<b>17.4:</b> Identify and analyze the similarities and differences between a narrative text and its film or play version.	
<b>17.5:</b> Identify and analyze elements of setting, plot, and characterization in the plays that are read, viewed, written, and/or performed:	
<ul style="list-style-type: none"> <li>● setting (place, historical period, time of day);</li> </ul>	
<ul style="list-style-type: none"> <li>● plot (<i>exposition, conflict, rising action, falling action</i>); and</li> </ul>	
<ul style="list-style-type: none"> <li>● characterization (character motivations, actions, thoughts, development).</li> </ul>	
<b>17.6:</b> Identify and analyze the similarities and differences in the presentation of setting, character, and plot in texts, plays, and films.	
<b>17.7:</b> Identify and analyze how dramatic conventions support, interpret, and enhance dramatic text.	
<p><b>Standard 18: Dramatic Reading and Performance</b></p> <p>Students will plan and present dramatic readings, recitations, and performances that demonstrate appropriate consideration of audience and purpose.</p>	
<b>18.1:</b> Rehearse and perform stories, plays, and poems for an audience using eye contact, volume, and clear enunciation appropriate to the selection.	
<b>18.2:</b> Plan and perform readings of selected texts for an audience, using clear diction and voice quality ( <i>volume, tempo, pitch, tone</i> ) appropriate to the selection, and use teacher-developed assessment criteria to prepare presentations.	
<b>18.3:</b> Develop characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ) and self-assess using teacher-developed criteria before performing.	
<b>18.4:</b> Develop and present characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ), explain the artistic choices made, and use a scoring guide with teacher-developed categories ( <i>content, presentation style</i> ) to create scoring criteria for assessment.	



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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>18.5:</b> Develop, communicate, and sustain consistent characters in improvisational, formal, and informal productions and create scoring guides with categories and criteria for assessment of presentations.</p>	
Composition	
<p><b>Standard 19: Writing</b></p> <p>Students will write with a clear focus, coherent organization, and sufficient detail.</p>	
<p><b>19.1:</b> Draw pictures and/or use letters or phonetically spelled words to tell a story.</p>	
<p><b>19.2:</b> Dictate sentences for a story and collaborate to put the sentences in chronological sequence.</p>	
<p><b>19.3:</b> Draw pictures and/or use letters or phonetically spelled words to give others information.</p>	
<p><b>19.4:</b> Dictate sentences for a letter or directions and collaborate to put the sentences in order.</p>	
<p><b>19.5:</b> Write or dictate stories that have a beginning, middle, and end.</p>	
<p><b>19.6:</b> Write or dictate short poems.</p>	
<p><b>19.7:</b> Write or dictate letters, directions, or short accounts of personal experiences that follow a logical order.</p>	
<p><b>19.8:</b> Write or dictate research questions.</p>	
<p><b>19.9:</b> Write stories that have a beginning, middle, and end and contain details of setting.</p>	
<p><b>19.10:</b> Write short poems that contain simple sense details.</p>	
<p><b>19.11:</b> Write brief summaries of information gathered through research.</p>	
<p><b>19.12:</b> Write a brief interpretation or explanation of a literary or informational text using evidence from the text as support.</p>	
<p><b>19.13:</b> Write an account based on personal experience that has a clear focus and sufficient supporting detail.</p>	
<p><b>19.14:</b> Write stories or scripts containing the basic elements of fiction (<i>characters, dialogue, setting, plot with a clear resolution</i>).</p>	
<p><b>19.15:</b> Write poems using poetic techniques (<i>alliteration, onomatopoeia</i>), figurative language (<i>simile, metaphor</i>), and graphic elements (<i>capital letters, line length</i>).</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>19.16:</b> Write brief research reports with clear focus and supporting detail.	
<b>19.17:</b> Write a short explanation of a process that includes a topic statement, supporting details, and a conclusion.	
<b>19.18:</b> Write formal letters to correspondents such as authors, newspapers, businesses, or government officials.	
<b>19.19:</b> Write stories or scripts with well-developed characters, setting, dialogue, clear conflict and resolution, and sufficient descriptive detail.	
<b>19.20:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia, rhyme scheme</i> ), figurative language ( <i>simile, metaphor, personification</i> ), and graphic elements ( <i>capital letters, line length, word position</i> ).	
<b>19.21:</b> Write reports based on research that include quotations, footnotes or endnotes, and a bibliography.	
<b>19.22:</b> Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.	
<b>19.23:</b> Write multi-paragraph compositions that have clear topic development, logical organization, effective use of detail, and variety in sentence structure.	
<b>19.24:</b> Write well-organized stories or scripts with an explicit or implicit theme and details that contribute to a definite mood or tone.	
<b>19.25:</b> Write poems using a range of poetic techniques, forms ( <i>sonnet, ballad</i> ), and figurative language.	
<b>19.26:</b> Write well-organized essays ( <i>persuasive, literary, personal</i> ) that have a clear focus, logical development, effective use of detail, and variety in sentence structure.	
<b>19.27:</b> Write well-organized research papers that prove a thesis statement using logical organization, effective supporting evidence, and variety in sentence structure.	
<b>Standard 20: Consideration of Audience and Purpose</b>  Students will write for different audiences and purposes.	
<b>20.1:</b> Use a variety of forms or genres when writing for different purposes.	
<b>20.2:</b> Use appropriate language for different audiences and purposes.	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>20.3:</b> Make distinctions among fiction, nonfiction, dramatic literature, and poetry, and use these genres selectively when writing for different purposes.</p>	
<p><b>20.4:</b> Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.</p>	
<p><b>20.5:</b> Use different levels of formality, style, and tone when composing for different audiences.</p>	
<p><b>Standard 21: Revising</b></p> <p>Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.</p>	
<p><b>21.1:</b> After writing or dictating a composition, identify words and phrases that could be added to make the thought clearer, more logical, or more expressive.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>

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Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p>
<p><b>21.2:</b> Revise writing to improve level of detail after determining what could be added or deleted.</p>	<p><b>English</b> College Readiness Standards</p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p>
<p><b>21.3:</b> Improve word choice by using dictionaries.</p>	
<p><b>21.4:</b> Revise writing to improve level of detail and precision of language after determining where to add images and sensory detail, combine sentences, vary sentences, and rearrange text.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.5:</b> Improve word choice by using dictionaries or thesauruses.</p>	
<p><b>21.6:</b> Revise writing to improve organization and diction after checking the logic underlying the order of ideas, the precision of vocabulary used, and the economy of writing.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p>Add a sentence to introduce or conclude a fairly complex paragraph</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.7:</b> Improve word choice by using a variety of references.</p>	
<p><b>21.8:</b> Revise writing by attending to topic/idea development, organization, level of detail, language/style, sentence structure, grammar and usage, and mechanics.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p> <p>Ensure that a verb agrees with its subject when there is some text between the two</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p>Ensure that a verb agrees with its subject in unusual situations (e.g., when the subject-verb order is inverted or when the subject is an indefinite pronoun)</p> <p><b>Conventions of Punctuation:</b></p> <p>Delete commas that create basic sense problems (e.g., between verb and direct object)</p>



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p> <p>Use commas to set off simple parenthetical phrases</p> <p>Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p> <p>Use punctuation to set off complex parenthetical phrases</p> <p>Recognize and delete unnecessary commas based on a careful reading of a complicated sentence (e.g., between the elements of a compound subject or compound verb joined by <i>and</i>)</p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>Standard 22: Standard English Conventions</b></p>	
<p>Students will use knowledge of standard English conventions in their writing, revising, and editing.</p>	
<p><b>22.1:</b> Print upper- and lower-case letters of the alphabet.</p>	
<p><b>22.2:</b> Use correct standard English mechanics such as:</p>	
<ul style="list-style-type: none"> <li>● printing upper- and lower-case letters legibly and using them to make words;</li> </ul>	
<ul style="list-style-type: none"> <li>● separating words with spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● understanding and applying rules for capitalization at the beginning of a sentence, for names and places, and capitalization and commas in dates.</li> </ul>	
<ul style="list-style-type: none"> <li>● using correct spelling of sight and/or spelling words; and</li> </ul>	
<ul style="list-style-type: none"> <li>● using appropriate end marks such as periods and question marks.</li> </ul>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.3:</b> Write legibly in cursive, leaving space between letters in a word and between words in a sentence.</p>	
<p><b>22.4:</b> Use knowledge of correct mechanics (<i>end marks, commas for series, capitalization</i>), usage (<i>subject and verb agreement in a simple sentence</i>), and sentence structure (<i>elimination of fragments</i>) when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>22.5:</b> Use knowledge of letter sounds, word parts, word segmentation, and syllabication to monitor and correct spelling.</p>	
<p><b>22.6:</b> Spell most commonly used homophones correctly in their writing (<i>there, they're, their; two, too, to</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p>
<p><b>22.7:</b> Use additional knowledge of correct mechanics (apostrophes, quotation marks, comma use in compound sentences, paragraph indentations), correct sentence structure (elimination of fragments and run-ons), and correct standard English spelling (commonly used homophones) when writing, revising, and editing.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p><b>Conventions of Punctuation:</b> Use apostrophes to indicate simple possessive nouns</p>
<p><b>22.8:</b> Use knowledge of types of sentences (simple, compound, complex), correct mechanics (comma after introductory structures), correct usage (pronoun reference), sentence structure (complete sentences, properly placed modifiers), and standard English spelling when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b> Revise vague nouns and pronouns that create obvious logic problems Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b> Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p><b>Conventions of Punctuation:</b> Provide appropriate punctuation in straightforward situations (e.g., items in a series) Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>22.9:</b> Use knowledge of types of clauses (main and subordinate), verbals (gerunds, infinitives, participles), mechanics (semicolons, colons, hyphens), usage (tense consistency), sentence structure (parallel structure), and standard English spelling when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b> Use conjunctions or punctuation to join simple clauses Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use a semicolon to indicate a relationship between closely related independent clauses</p>
<p><b>Standard 23: Organizing Ideas in Writing</b></p> <p>Students will organize ideas in writing in a way that makes sense for their purpose.</p>	
<p><b>23.1:</b> Arrange events in order when writing or dictating.</p>	
<p><b>23.2:</b> Arrange ideas in a way that makes sense.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>23.3:</b> Organize plot events of a story in an order that leads to a climax.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.4:</b> Organize ideas for a brief response to a reading.</p>	
<p><b>23.5:</b> Organize ideas for an account of personal experience in a way that makes sense.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<p><b>23.6:</b> Decide on the placement of descriptive details about setting, characters, and events in stories.</p>	<p><b>English</b> College Readiness Standards <b>Organization, Unity, and Coherence:</b> Select the most logical place to add a sentence in a paragraph Decide the most logical place to add a sentence in an essay Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p>
<p><b>23.7:</b> Group related ideas and place them in logical order when writing summaries or reports.</p>	
<p><b>23.8:</b> Organize information about a topic into a coherent paragraph with a topic sentence, sufficient supporting detail, and a concluding sentence.</p>	<p><b>English</b> College Readiness Standards <b>Organization, Unity, and Coherence:</b> Select the most logical place to add a sentence in a paragraph Add a sentence that introduces a simple paragraph Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.9:</b> Integrate the use of organizing techniques that break up strict chronological order in a story (<i>starting in the middle of the action, then filling in background information using flashbacks</i>).</p>	
<p><b>23.10:</b> Organize information into a coherent essay or report with a thesis statement in the introduction, transition sentences to link paragraphs, and a conclusion.</p>	<p><b>English</b> College Readiness Standards <b>Organization, Unity, and Coherence:</b> Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>) Decide the most logical place to add a sentence in an essay Add a sentence that introduces a simple paragraph Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>) Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.11:</b> Organize ideas for writing comparison-and-contrast essays.</p>	

TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>23.12:</b> Integrate all elements of fiction to emphasize the theme and tone of the story.	
<b>23.13:</b> Organize ideas for a critical essay about literature or a research report with an original thesis statement in the introduction, well constructed paragraphs that build an effective argument, transition sentences to link paragraphs into a coherent whole, and a conclusion.	
<p><b>Standard 24: Research</b></p> <p>Students will gather information from a variety of sources, analyze and evaluate the quality of the information they obtain, and use it to answer their own questions.</p>	
<b>24.1:</b> Generate questions and gather information from several sources in a classroom, school, or public library.	
<b>24.2:</b> Identify and apply steps in conducting and reporting research:	
<ul style="list-style-type: none"> <li>● Define the need for information and formulate open-ended research questions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Initiate a plan for searching for information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Locate resources.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the relevance of the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Interpret, use, and communicate the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the research project as a whole.</li> </ul>	
<b>24.3:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual and group projects:	
<ul style="list-style-type: none"> <li>● use an expanded range of print and non-print sources (<i>atlases, data bases, electronic, on-line resources</i>);</li> </ul>	
<ul style="list-style-type: none"> <li>● follow established criteria for evaluating information;</li> </ul>	
<ul style="list-style-type: none"> <li>● locate specific information within resources by using indexes, tables of contents, electronic search key words;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grades 5–6 Learning Standards in the Composition Strand as a guide for writing; and</li> </ul>	
<ul style="list-style-type: none"> <li>● provide appropriate documentation in a consistent format.</li> </ul>	



**TABLE 1C**

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
<b>24.4:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual projects:	
<ul style="list-style-type: none"> <li>● differentiate between primary and secondary source materials;</li> </ul>	
<ul style="list-style-type: none"> <li>● differentiate between paraphrasing and using direct quotes in a report;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grade 7–8 Learning Standards in the Composition Strand as a guide for writing;</li> </ul>	
<ul style="list-style-type: none"> <li>● document information and quotations and use a consistent format for footnotes or endnotes; and</li> </ul>	
<ul style="list-style-type: none"> <li>● use standard bibliographic format to document sources.</li> </ul>	
<b>24.5:</b> Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, documenting sources in a consistent and standard format, and presenting research.	
<p><b>Standard 25: Evaluating Writing and Presentations</b></p> <p>Students will develop and use appropriate rhetorical, logical, and stylistic criteria for assessing final versions of their compositions or research projects before presenting them to varied audiences.</p>	
<b>25.1:</b> Support judgments about classroom activities or presentations.	
<b>25.2:</b> Form and explain personal standards or judgments of quality, display them in the classroom, and present them to family members.	
<b>25.3:</b> Use prescribed criteria from a scoring rubric to evaluate compositions, recitations, or performances before presenting them to an audience.	
<b>25.4:</b> As a group, develop and use scoring guides or rubrics to improve organization and presentation of written and oral projects.	
<b>25.5:</b> Use group-generated criteria for evaluating different forms of writing and explain why these are important before applying them.	



TABLE 1C

Massachusetts Grades 9-10 English Language Arts	PLAN English and/or Reading College Readiness Standards
Media	
<p><b>Standard 26: Analysis of Media</b></p> <p>Students will identify, analyze, and apply knowledge of the conventions, elements, and techniques of film, radio, video, television, multimedia productions, the Internet, and emerging technologies, and provide evidence from the works to support their understanding.</p>	
<p><b>26.1:</b> Identify techniques used in television (<i>animation, close-ups, wide-angle shots, sound effects, music, graphics</i>) and use knowledge of these techniques to distinguish between facts and misleading information.</p>	
<p><b>26.2:</b> Compare stories in print with their filmed adaptations, describing the similarities and differences in the portrayal of characters, plot, and settings.</p>	
<p><b>26.3:</b> Identify techniques used in educational reference software and websites and describe how these techniques are the same as or different from the techniques used by authors and illustrators of print materials.</p>	
<p><b>26.4:</b> Analyze the effect on the reader's or viewer's emotions of text and image in print journalism, and images, sound, and text in electronic journalism, distinguishing techniques used in each to achieve these effects.</p>	
<p><b>26.5:</b> Analyze visual or aural techniques used in a media message for a particular audience and evaluate their effectiveness.</p>	
<p><b>Standard 27: Media Production</b></p> <p>Students will design and create coherent media productions (audio, video, television, multimedia, Internet, emerging technologies) with a clear controlling idea, adequate detail, and appropriate consideration of audience, purpose, and medium.</p>	
<p><b>27.1:</b> Create radio scripts, audiotapes, or videotapes for display or transmission.</p>	
<p><b>27.2:</b> Create presentations using computer technology.</p>	
<p><b>27.3:</b> Create a media production using effective images, text, music, sound effects, or graphics.</p>	
<p><b>27.4:</b> Create media presentations and written reports on the same subject and compare the differences in effects of each medium.</p>	
<p><b>27.5:</b> Use criteria to assess the effectiveness of media presentations.</p>	
<p><b>27.6:</b> Create media presentations that effectively use graphics, images, and/or sound to present a distinctive point of view on a topic.</p>	

**TABLE 1C**

<b>Massachusetts Grades 9-10 English Language Arts</b>	<b>PLAN English and/or Reading College Readiness Standards</b>
<b>27.7:</b> Develop and apply criteria for assessing the effectiveness of the presentation, style, and content of films and other forms of electronic communication.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
Language	
<b>Standard 1: Discussion</b>	
Students will use agreed-upon rules for informal and formal discussions in small and large groups.	
1.1: Follow agreed-upon rules for discussion.	
1.3: Apply understanding of agreed-upon rules and individual roles in order to make decisions.	
1.4: Know and apply rules for formal discussions ( <i>classroom, parliamentary debate, town meeting rules</i> ).	
1.5: Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.	
1.6: Drawing on one of the widely used professional evaluation forms for group discussion, evaluate how well participants engage in discussions at a local meeting.	
<b>Standard 2: Questioning, Listening, and Contributing</b>	
Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.	
2.1: Contribute knowledge to class discussion in order to develop a topic for a class project.	
2.2: Contribute knowledge to class discussion in order to develop ideas for a class project and generate interview questions to be used as part of the project.	
2.3: Gather relevant information for a research project or composition through interviews.	
2.4: Integrate relevant information gathered from group discussions and interviews for reports.	
2.5: Summarize in a coherent and organized way information and ideas learned from a focused discussion.	
2.6: Analyze differences in responses to focused group discussion in an organized and systematic way.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>Standard 3: Oral Presentation</b>	
Students will make oral presentations that demonstrate appropriate consideration of audience, purpose, and the information to be conveyed.	
<b>3.1:</b> Give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.	
<b>3.2:</b> Maintain focus on the topic.	
<b>3.3:</b> Adapt language to persuade, to explain, or to seek information.	
<b>3.4:</b> Give oral presentations about experiences or interests using eye contact, proper place, adequate volume, and clear pronunciation.	
<b>3.5:</b> Make informal presentations that have a recognizable organization ( <i>sequencing, summarizing</i> ).	
<b>3.6:</b> Express an opinion of a literary work or film in an organized way, with supporting detail.	
<b>3.7:</b> Use teacher-developed assessment criteria to prepare their presentations.	
<b>3.8:</b> Give oral presentations for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
<b>3.9:</b> Use teacher-developed assessment criteria to prepare their presentations.	
<b>3.10:</b> Present an organized interpretation of a literary work, film, or dramatic production.	
<b>3.11:</b> Use appropriate techniques for oral persuasion.	
<b>3.12:</b> Give oral presentations to different audiences for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
<b>3.13:</b> Create a scoring guide based on categories supplied by the teacher ( <i>content, presentation style</i> ) to prepare and assess their presentations.	
<b>3.14:</b> Give formal and informal talks to various audiences and for various purposes using appropriate level of formality and rhetorical devices.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
3.15: Analyze effective speeches made for a variety of purposes and prepare and deliver a speech containing some of these features.	
3.16: Create an appropriate scoring guide to prepare, improve, and assess presentations.	
3.17: Deliver formal presentations for particular audiences using clear enunciation and appropriate organization, gestures, tone, and vocabulary.	
3.18: Create an appropriate scoring guide to evaluate final presentations.	
<b>Standard 4: Vocabulary and Concept Development</b>	
Students will understand and acquire new vocabulary and use it correctly in reading and writing.	
4.1: Identify and sort common words into various classifications.	
4.2: Describe common objects and events in general and specific language.	
4.3: Identify and sort common words into conceptual categories.	
4.4: Identify base words and their inflectional forms.	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
4.5: Identify the relevant meaning for a word with multiple meanings using its context.	<p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
4.6: Identify common antonyms and synonyms.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
4.7: Use knowledge of the meaning of individual words to predict the meaning of unknown compound words.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
4.8: Determine meanings of words by using a beginning dictionary.	
4.9: Identify the meaning of common prefixes.	
4.10: Identify the meaning of common Greek and Latin roots to determine the meaning of unfamiliar words.	
4.11: Identify the meaning of common idioms and figurative phrases.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.12:</b> Identify playful uses of language (<i>puns, jokes, palindromes</i>).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.13:</b> Determine the meaning of unknown words using their context.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.14:</b> Recognize and use words with multiple meanings and be able to determine which meaning is intended from the context of the sentence.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>4.15:</b> Determine meanings of words and alternate word choices using a dictionary or thesaurus.</p>	
<p><b>4.16:</b> Identify and apply the meaning of the terms <i>antonym</i>, <i>synonym</i>, and <i>homophone</i>.</p>	
<p><b>4.17:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.18:</b> Determine the meaning of unfamiliar words using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.19:</b> Determine pronunciations, meanings, alternate word choices, and parts of speech of words using dictionaries and thesauruses.</p>	
<p><b>4.20:</b> Determine the meaning of unfamiliar words using context clues.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.21:</b> Determine the meaning of unfamiliar words by using knowledge of common Greek and Latin roots, suffixes, and prefixes.</p>	
<p><b>4.22:</b> Determine pronunciations, meanings, alternate word choices, parts of speech, or etymologies of words using dictionaries and thesauruses.</p>	
<p><b>4.23:</b> Identify and use correctly idioms, cognates, words with literal and figurative meanings, and patterns of word changes that indicate different meanings or functions.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p><b>4.24:</b> Use knowledge of Greek, Latin, and Norse mythology, the Bible, and other works often alluded to in British and American literature to understand the meanings of new words.</p>	
<p><b>4.25:</b> Use general dictionaries, specialized dictionaries, thesauruses, or related references as needed to increase learning.</p>	
<p><b>4.26:</b> Identify and use correctly new words acquired through study of their different relationships to other words.</p>	<p style="text-align: center;"><b>Reading College Readiness Standards</b></p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>4.27:</b> Use general dictionaries, specialized dictionaries, thesauruses, histories of language, books of quotations, and other related references as needed.</p>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>Standard 5: Structure and Origins of Modern English</b>	
Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.	
<p><b>5.1:</b> Use language to express spatial and temporal relationships.</p>	<p><b>Reading</b> College Readiness Standards  <b>Sequential, Comparative, and Cause-Effect Relationships:</b>  Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages  Identify clear relationships between people, ideas, and so on in uncomplicated passages  Order sequences of events in uncomplicated passages  Understand relationships between people, ideas, and so on in uncomplicated passages  Identify clear relationships between characters, ideas, and so on in more challenging literary narratives  Order sequences of events in more challenging passages  Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>English</b> College Readiness Standards  <b>Organization, Unity, and Coherence:</b>  Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)  Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)  Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p>
<p><b>5.2:</b> Recognize that the names of things can also be the names of actions.</p>	
<p><b>5.3:</b> Identify correct capitalization for names and places, and correct capitalization and commas in dates.</p>	
<p><b>5.4:</b> Identify appropriate end marks.</p>	<p><b>English</b> College Readiness Standards  <b>Conventions of Punctuation:</b>  Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.5:</b> Recognize the subject-predicate relationship in sentences.</p>	<p><b>English</b> College Readiness Standards  <b>Sentence Structure and Formation:</b>  Use conjunctions or punctuation to join simple clauses  Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
<p><b>5.6:</b> Identify the four basic parts of speech.</p>	
<p><b>5.7:</b> Identify correct mechanics (<i>end marks, commas for series, capitalization</i>), correct usage (<i>subject and verb agreement in a simple sentence</i>), and correct sentence structure (<i>elimination of sentence fragments</i>).</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>
<p><b>5.8:</b> Identify words or word parts from other languages that have been adopted into the English language.</p>	
<p><b>5.9:</b> Identify the eight basic parts of speech (<i>noun, pronoun, verb, adverb, adjective, conjunction, preposition, interjection</i>).</p>	
<p><b>5.10:</b> Expand or reduce sentences (<i>adding or deleting modifiers, combining or decombining sentences</i>).</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
5.11: Identify verb phrases and verb tenses.	
5.12: Recognize that a word performs different functions according to its position in the sentence.	
5.13: Identify simple and compound sentences.	
5.14: Identify correct mechanics ( <i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i> ) and correct sentence structure ( <i>elimination of sentence fragments and run-ons</i> ).	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p>
5.15: Recognize the basic patterns of English sentences (noun-verb; noun-verb-noun; noun-verb-noun-noun; noun-linking verb-noun).	
5.16: Distinguish phrases from clauses.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p>5.17: Recognize the makeup and function of prepositional phrases.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p>
<p>5.18: Identify simple, compound, and complex sentences.</p>	
<p>5.19: Recognize appropriate use of pronoun reference.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p>
<p>5.20: Identify correct mechanics (comma after introductory structures), correct usage (pronoun reference), and correct sentence structure (complete sentences, properly placed modifiers).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>5.21:</b> Employ grammar and usage rhetorically by combining, including, reordering, and reducing sentences.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>
<p><b>5.22:</b> Describe the origins and meanings of common words, as well as of foreign words or phrases used frequently in written English.</p>	
<p><b>5.23:</b> Identify simple, compound, complex, and compound-complex sentences.</p>	
<p><b>5.24:</b> Identify nominalized, adjectival, and adverbial clauses.</p>	
<p><b>5.25:</b> Recognize the functions of verbals: participles, gerunds, and infinitives.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p>
<p><b>5.26:</b> Analyze the structure of a sentence (<i>traditional diagram, transformational model</i>).</p>	
<p><b>5.27:</b> Identify rhetorically functional sentence structure (<i>parallelism, properly placed modifiers</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p>
<p><b>5.28:</b> Identify correct mechanics (<i>semicolons, colons, hyphens</i>), correct usage (<i>tense consistency</i>), and correct sentence structure (<i>parallel structure</i>).</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use a semicolon to indicate a relationship between closely related independent clauses</p> <p>Use a colon to introduce an example or an elaboration</p>
<p><b>5.29:</b> Describe the origins and meanings of common words and foreign words or phrases used frequently in written English, and show their relationship to historical events or developments (<i>glasnost, coup d'état</i>).</p>	
<p><b>5.30:</b> Identify, describe, and <b>apply all conventions of standard English.</b></p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p> <p>Ensure that a verb agrees with its subject when there is some text between the two</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p>Ensure that a verb agrees with its subject in unusual situations (e.g., when the subject-verb order is inverted or when the subject is an indefinite pronoun)</p> <p><b>Conventions of Punctuation:</b></p> <p>Delete commas that create basic sense problems (e.g., between verb and direct object)</p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p> <p>Use commas to set off simple parenthetical phrases</p> <p>Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p> <p>Use punctuation to set off complex parenthetical phrases</p> <p>Recognize and delete unnecessary commas based on a careful reading of a complicated sentence (e.g., between the elements of a compound subject or compound verb joined by <i>and</i>)</p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>5.31:</b> Describe historical changes in conventions for usage and grammar.</p>	
<p><b>5.32:</b> Explain and evaluate the influence of the English language on world literature and world cultures.</p>	
<p><b>5.33:</b> Analyze and explain how the English language has developed and been influenced by other languages.</p>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>Standard 6: Formal and Informal English</b>	
Students will describe, analyze, and use appropriately formal and informal English.	
<b>6.1:</b> Identify formal and informal language in stories, poems, and plays.	<p align="center"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<b>6.2:</b> Recognize dialect in the conversational voices in American folk tales.	
<b>6.3:</b> Identify formal and informal language use in advertisements read, heard, and/or seen.	
<b>6.4:</b> Demonstrate through role-playing appropriate use of formal and informal language.	
<b>6.5:</b> Write stories using a mix of formal and informal language.	
<b>6.6:</b> Identify differences between oral and written language patterns.	
<b>6.7:</b> Analyze the language styles of different characters in literary works.	<p align="center"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<b>6.8:</b> Identify content-specific vocabulary, terminology, or jargon unique to particular social or professional groups.	<p align="center"><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
<b>6.9:</b> Identify differences between the voice, tone, diction, and syntax used in media presentations ( <i>documentary films, news broadcasts, taped interviews</i> ) and these elements in informal speech.	
<b>6.10:</b> Analyze the role and place of standard American English in speech, writing, and literature.	
<b>6.11:</b> Analyze how dialect can be a source of negative or positive stereotypes among social groups.	
Reading and Literature	
<b>Standard 7: Beginning Reading</b>	
<b>Students will understand the nature of written English</b> and the relationship of letters and spelling patterns to the sounds of speech.	
<b>7.1:</b> Demonstrate understanding of the forms and functions of written English:	
<ul style="list-style-type: none"> <li>● recognize that printed materials provide information or entertaining stories;</li> </ul>	
<ul style="list-style-type: none"> <li>● know how to handle a book and turn the pages;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the covers and title page of a book;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that, in English, print moves left to right across the page and from top to bottom;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify upper- and lower-case letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that written words are separated by spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that sentences in print are made up of separate words.</li> </ul>	
<b>7.2:</b> Demonstrate orally that phonemes exist and that they can be isolated and manipulated:	
<ul style="list-style-type: none"> <li>● understand that a sound is a phoneme, or one distinct sound;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that words are made up of one or more syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize and produce rhyming words;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the initial, medial, and final sounds of a word;</li> </ul>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<ul style="list-style-type: none"> <li>blend sounds to make words.</li> </ul>	
<b>7.3:</b> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:	
<ul style="list-style-type: none"> <li>know that there is a link between letters and sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize letter-sound matches by naming and identifying each letter of the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that written words are composed of letters that represent sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>use letter-sound matches to decode simple words.</li> </ul>	
<b>7.4:</b> Demonstrate understanding of the various features of written English:	
<ul style="list-style-type: none"> <li>know the order of the letters in the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that spoken words are represented in written English by sequences of letters;</li> </ul>	
<ul style="list-style-type: none"> <li>match oral words to printed words;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that there are correct spellings for words;</li> </ul>	
<ul style="list-style-type: none"> <li>use correct spelling of appropriate high-frequency words, whether irregularly or regularly spelled;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize the distinguishing features of a sentence and a paragraph;</li> </ul>	
<ul style="list-style-type: none"> <li>identify the author and title of a book, and use a table of contents.</li> </ul>	
<b>7.5:</b> Demonstrate orally that phonemes exist:	
<ul style="list-style-type: none"> <li>generate the sounds from all the letters and letter patterns, including consonant blends, long- and short-vowel patterns, and onsets and rimes and combine these sounds into recognizable words;</li> </ul>	
<ul style="list-style-type: none"> <li>use knowledge of vowel digraphs, vowel diphthongs, and r-controlled letter-sound associations (<i>as in star</i>) to read words.</li> </ul>	
<b>7.6:</b> Recognize common irregularly spelled words by sight.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
7.7: Use letter-sound knowledge to decode written English:	
<ul style="list-style-type: none"> <li>• decode accurately phonetically regular one-syllable and multi-syllable real words and nonsense words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read accurately many irregularly spelled words, special vowel spellings, and common word endings;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply knowledge of letter patterns to identify syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply independently the most common letter-sound correspondences, including the sounds represented by single letters, consonant blends, consonant digraphs, and vowel digraphs and diphthongs;</li> </ul>	
<ul style="list-style-type: none"> <li>• know and use more difficult word families (-<i>ought</i>) and known words to decode unknown words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read words with several syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• read aloud with fluency and comprehension at grade level.</li> </ul>	
7.8: Use letter-sound knowledge to decode written English.	
7.9: <b>Read grade-appropriate imaginative/literary and informational/expository text with comprehension.</b>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>7.10:</b> Read aloud grade-appropriate imaginative/literary and informational/expository text fluently, accurately, and with comprehension, using appropriate timing, change in voice, and expression.</p>	
<p><b>Standard 8: Understanding a Text</b></p> <p>Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.</p>	
<p><b>8.1:</b> Make predictions using prior knowledge, pictures, and text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.2:</b> Retell a main event from a story heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<p><b>8.3:</b> Ask questions about the important characters, settings, and events.</p>	
<p><b>8.4:</b> Make predictions about the content of the text using prior knowledge and text features (<i>title, captions, illustrations</i>).</p>	
<p><b>8.5:</b> Retell important facts from a text heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>
<p><b>8.6:</b> Make predictions about what will happen next in a story, and explain whether they were confirmed or disconfirmed and why.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>8.7:</b> Retell a story's beginning, middle, and end.</p>	<p><b>Reading</b> College Readiness Standards <b>Main Ideas and Author's Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p>
<p><b>8.8:</b> Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards <b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
<p><b>8.9:</b> Make predictions about the content of a text using prior knowledge and text features (<i>headings, table of contents, key words</i>), and explain whether they were confirmed or disconfirmed and why.</p>	
<p><b>8.10:</b> Restate main ideas.</p>	<p><b>Reading</b> College Readiness Standards <b>Main Ideas and Author's Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
8.11: Identify and show the relevance of foreshadowing clues.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
8.12: Identify sensory details and figurative language.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
8.13: Identify the speaker of a poem or story.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
8.14: Make judgments about setting, characters, and events and support them with evidence from the text.	
8.15: Locate facts that answer the reader's questions.	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p>8.16: Distinguish cause from effect.</p>	<p><b>Reading</b> College Readiness Standards <b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
<p>8.17: Distinguish fact from opinion or fiction.</p>	<p><b>Reading</b> College Readiness Standards <b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p>8.18: Summarize main ideas and supporting details.</p>	<p><b>Reading</b> College Readiness Standards <b>Main Ideas and Author's Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p>

TABLE 1D

<p>Massachusetts Grades 11-12 English Language Arts</p>	<p>ACT English, Reading, and/or Writing College Readiness Standards</p>
	<p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>8.19:</b> Identify and analyze sensory details and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>8.20:</b> Identify and analyze the author's use of dialogue and description.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p><b>8.21:</b> Recognize organizational structures (<i>chronological order, logical order, cause and effect, classification schemes</i>).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>8.22:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p>
<p><b>8.23:</b> Use knowledge of genre characteristics to analyze a text.</p>	
<p><b>8.24:</b> Interpret mood and tone, and give supporting evidence in a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p>8.25: Interpret a character's traits, emotions, or motivation and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p>8.26: Recognize organizational structures and use of arguments for and against an issue.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
<p><b>8.27:</b> Identify evidence used to support an argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.28:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>8.29:</b> Identify and analyze patterns of imagery or symbolism.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.30:</b> Identify and interpret themes and give supporting evidence from a text.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p>



TABLE 1D

<p>Massachusetts Grades 11-12 English Language Arts</p>	<p>ACT English, Reading, and/or Writing College Readiness Standards</p>
<p>8.31: Analyze the logic and use of evidence in an author's argument.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b>                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b>                      Recognize a clear function of a part of an uncomplicated passage                      Make simple inferences about how details are used in passages                      Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b>                      Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages                      Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages                      Draw simple generalizations and conclusions using details that support the main points of more challenging passages                      Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives                      Draw generalizations and conclusions about people, ideas, and so on in more challenging passages                      Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p>8.32: Identify and analyze the point(s) of view in a literary work.</p>	<p><b>Main Ideas and Author's Approach:</b>                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p>8.33: Analyze patterns of imagery or symbolism and connect them to themes and/or tone and mood.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b>                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages                      Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b>                      Recognize a clear function of a part of an uncomplicated passage</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>8.34:</b> Analyze and evaluate the logic and use of evidence in an author's argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>Standard 9: Making Connections</b></p> <p>Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.</p>	
<p><b>9.1:</b> Identify similarities in plot, setting, and character among the works of an author or illustrator.</p>	
<p><b>9.2:</b> Identify different interpretations of plot, setting, and character in the same work by different illustrators.</p>	
<p><b>9.3:</b> Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author's life.</p>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
9.4: Relate a literary work to information about its setting.	
9.5: Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.	
9.6: Relate a literary work to primary source documents of its literary period or historical setting.	
9.7: Relate a literary work to the seminal ideas of its time.	
<p><b>Standard 10: Genre</b></p> <p>Students will identify, analyze, and apply knowledge of the characteristics of different genres.</p>	
10.1: Identify differences among the common forms of literature: poetry, prose, fiction, nonfiction ( <i>informational and expository</i> ), and dramatic literature.	
10.2: Distinguish among forms of literature such as poetry, prose, fiction, nonfiction, and drama and apply this knowledge as a strategy for reading and writing.	
10.3: Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms with distinct characteristics and purposes.	
10.4: Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms chosen by an author to accomplish a purpose.	
10.5: Compare and contrast the presentation of a theme or topic across genres to explain how the selection of genre shapes the message.	
10.6: Identify and analyze characteristics of genres ( <i>satire, parody, allegory, pastoral</i> ) that overlap or cut across the lines of genre classifications such as poetry, prose, drama, short story, essay, and editorial.	
<p><b>Standard 11: Theme</b></p> <p>Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.</p>	
11.1: Relate themes in works of fiction and nonfiction to personal experience.	
11.2: Identify themes as lessons in folktales, fables, and Greek myths for children.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>11.3:</b> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b> Summarize basic events and ideas in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<b>11.4:</b> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic.	
<b>11.5:</b> Apply knowledge of the concept that the theme or meaning of a selection represents a view or comment on life, and provide support from the text for the identified themes.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b> Summarize basic events and ideas in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs</p>
<b>11.6:</b> Apply knowledge of the concept that a text can contain more than one theme.	
<b>11.7:</b> Analyze and compare texts that express a universal theme, and locate support in the text for the identified theme.	
<p><b>Standard 12: Fiction</b></p> <p>Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.</p>	
<b>12.1:</b> Identify the elements of plot, character, and setting in a favorite story.	
<b>12.2:</b> Identify and analyze the elements of plot, character, and setting in the stories they read and write.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b> Recognize a clear intent of an author or narrator in uncomplicated literary narratives Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>12.3:</b> Identify and analyze the elements of setting, characterization, and plot (including conflict).</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>12.4:</b> Locate and analyze elements of plot and characterization and then use an understanding of these elements to determine how qualities of the central characters influence the resolution of the conflict.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>12.5:</b> Locate and analyze such elements in fiction as point of view, foreshadowing, and irony.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Locate important details in uncomplicated passages</p> <p>Make simple inferences about how details are used in passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages</p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Identify relationships between main characters in uncomplicated literary narratives</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Order simple sequences of events in uncomplicated literary narratives</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Order sequences of events in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Order sequences of events in more challenging passages</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives</p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
<p><b>12.6:</b> Analyze, evaluate, and apply knowledge of how authors use techniques and elements in fiction for rhetorical and aesthetic purposes.</p>	<p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>Standard 13: Nonfiction</b></p> <p>Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.</p>	
<p><b>13.1:</b> Identify and use knowledge of common textual features (title, headings, captions, key words, table of contents).</p>	
<p><b>13.2:</b> Identify and use knowledge of common graphic features (illustrations, type size).</p>	
<p><b>13.3:</b> Make predictions about the content of a text using prior knowledge and text and graphic features.</p>	
<p><b>13.4:</b> Explain whether predictions about the content of a text were confirmed or disconfirmed and why.</p>	
<p><b>13.5:</b> Restate main ideas and important facts from a text heard or read.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
13.6: Identify and use knowledge of common textual features ( <i>paragraphs, topic sentences, concluding sentences, glossary</i> ).	
13.7: Identify and use knowledge of common graphic features ( <i>charts, maps, diagrams, illustrations</i> ).	
13.8: Identify and use knowledge of common organizational structures ( <i>chronological order</i> ).	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
13.9: Locate facts that answer the reader's questions.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
13.10: Distinguish cause from effect.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Recognize clear cause-effect relationships described within a single sentence in a passage</p> <p>Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives</p> <p>Identify clear cause-effect relationships in uncomplicated passages</p> <p>Understand implied or subtly stated cause-effect relationships in uncomplicated passages</p> <p>Identify clear cause-effect relationships in more challenging passages</p> <p>Understand implied or subtly stated cause-effect relationships in more challenging passages</p>
13.11: Distinguish fact from opinion or fiction.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>13.12:</b> Summarize main ideas and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>13.13:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, glossary, index).</p>	
<p><b>13.14:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams, captions, illustrations).</p>	
<p><b>13.15:</b> Identify and use knowledge of common organizational structures (chronological order, logical order, cause and effect, classification schemes).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages
<p><b>13.17:</b> Identify and analyze main ideas, supporting ideas, and supporting details.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives</p> <p>Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages</p> <p>Infer the main idea or purpose of straightforward paragraphs in more challenging passages</p> <p>Summarize basic events and ideas in more challenging passages</p> <p>Infer the main idea or purpose of more challenging passages or their paragraphs</p> <p><b>Supporting Details:</b></p> <p>Locate basic facts (e.g., names, dates, events) clearly stated in a passage</p> <p>Locate simple details at the sentence and paragraph level in uncomplicated passages</p> <p>Locate important details in uncomplicated passages</p> <p>Locate important details in more challenging passages</p> <p>Locate and interpret minor or subtly stated details in uncomplicated passages</p> <p>Locate and interpret minor or subtly stated details in more challenging passages</p>
<p><b>13.18:</b> Identify and use knowledge of common textual features (paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography).</p>	
<p><b>13.19:</b> Identify and use knowledge of common graphic features (charts, maps, diagrams).</p>	
<p><b>13.20:</b> Identify and use knowledge of common organizational structures (logical order, comparison and contrast, cause and effect relationships).</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p>
<p><b>13.21:</b> Recognize use of arguments for and against an issue.</p>	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Recognize a clear intent of an author or narrator in uncomplicated literary narratives</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.22:</b> Identify evidence used to support an argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.23:</b> Distinguish between the concepts of theme in a literary work and author’s purpose in an expository text.</p>	
<p><b>13.24:</b> Analyze the logic and use of evidence in an author’s argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author’s Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>13.25:</b> Analyze and explain the structure and elements of nonfiction works.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>13.26:</b> Analyze and evaluate the logic and use of evidence in an author's argument.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Main Ideas and Author's Approach:</b></p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages</p> <p>Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>13.27:</b> Analyze, explain, and evaluate how authors use the elements of nonfiction to achieve their purposes.</p>	<p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p>
<p><b>Standard 14: Poetry</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of poetry and provide evidence from the text to support their understanding.</p>	
<p><b>14.1:</b> Identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.</p>	
<p><b>14.2:</b> Identify rhyme and rhythm, repetition, similes, and sensory images in poems.</p>	
<p><b>14.3:</b> Respond to and analyze the effects of sound, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole); and</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length).</li> </ul>	
<p><b>14.4:</b> Respond to and analyze the effects of sound, form, figurative language, and graphics in order to uncover meaning in poetry:</p>	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, internal rhyme, rhyme scheme);</li> </ul>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<ul style="list-style-type: none"> <li>figurative language (personification, metaphor, simile, hyperbole);</li> </ul>	
<ul style="list-style-type: none"> <li>graphics (capital letters, line length, word position).</li> </ul>	
<b>14.5:</b> Identify, respond to, and analyze the effects of sound, form, figurative language, graphics, and dramatic structure of poems:	
<ul style="list-style-type: none"> <li>sound (alliteration, onomatopoeia, rhyme scheme, consonance, assonance);</li> </ul>	
<ul style="list-style-type: none"> <li>form (ballad, sonnet, heroic couplets);</li> </ul>	
<ul style="list-style-type: none"> <li>figurative language (personification, metaphor, simile, hyperbole, symbolism); and</li> </ul>	
<ul style="list-style-type: none"> <li>dramatic structure.</li> </ul>	
<b>14.6:</b> Analyze and evaluate the appropriateness of diction and imagery (controlling images, figurative language, understatement, overstatement, irony, paradox).	
<b>Standard 15: Style and Language</b>  Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone, and provide evidence from the text to support their understanding.	
<b>15.1:</b> Identify the senses implied in words appealing to the senses in literature and spoken language.	
<b>15.2:</b> Identify words appealing to the senses or involving direct comparisons in literature and spoken language.	
<b>15.3:</b> Identify imagery, figurative language, rhythm, or flow when responding to literature.	<p style="text-align: center;"><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p> <p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.4:</b> Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.5:</b> Identify and analyze imagery and figurative language.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Sequential, Comparative, and Cause-Effect Relationships:</b></p> <p>Identify clear relationships between people, ideas, and so on in uncomplicated passages</p> <p>Understand relationships between people, ideas, and so on in uncomplicated passages</p>

TABLE 1D

<p>Massachusetts Grades 11-12 English Language Arts</p>	<p>ACT English, Reading, and/or Writing College Readiness Standards</p>
	<p>Identify clear relationships between characters, ideas, and so on in more challenging literary narratives</p> <p>Understand the dynamics between people, ideas, and so on in more challenging passages</p> <p><b>Meanings of Words:</b></p> <p>Understand the implication of a familiar word or phrase and of simple descriptive language</p> <p>Use context to understand basic figurative language</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages</p> <p>Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages</p> <p>Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts</p>
<p><b>15.6:</b> Identify and analyze how an author's use of words creates tone and mood.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p> <p>Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages</p> <p><b>Generalizations and Conclusions:</b></p> <p>Draw simple generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages</p> <p>Draw simple generalizations and conclusions using details that support the main points of more challenging passages</p> <p>Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives</p> <p>Draw generalizations and conclusions about people, ideas, and so on in more challenging passages</p> <p>Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on</p>
<p><b>15.7:</b> Evaluate how an author's choice of words advances the theme or purpose of a work.</p>	<p><b>Reading</b> College Readiness Standards</p> <p><b>Supporting Details:</b></p> <p>Recognize a clear function of a part of an uncomplicated passage</p> <p>Make simple inferences about how details are used in passages</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
15.8: Identify and describe the importance of sentence variety in the overall effectiveness of an imaginary/literary or informational/expository work.	
15.9: Identify, analyze, and evaluate an author's use of rhetorical devices in persuasive argument.	<b>Supporting Details:</b> Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
15.10: Analyze and compare style and language across significant cross-cultural literary works.	
<b>Standard 16: Myth, Traditional Narrative, and Classical Literature</b>	
Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.	
16.1: Identify familiar forms of traditional literature read aloud.	
16.2: Retell or dramatize traditional literature.	
16.3: Identify and predict recurring phrases ( <i>Once upon a time</i> ) in traditional literature.	
16.4: Identify phenomena explained in origin myths.	
16.5: Identify the adventures or exploits of a character type in traditional literature.	
16.6: Acquire knowledge of culturally significant characters and events in Greek, Roman, and Norse mythology and other traditional literature.	
16.7: Compare traditional literature from different cultures.	
16.8: Identify common structures and stylistic elements in traditional literature.	
16.9: Identify conventions in epic tales.	
16.10: Identify and analyze similarities and differences in mythologies from different cultures.	
16.11: Analyze the characters, structure, and themes of classical Greek drama and epic poetry.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
16.12: Analyze the influence of mythic, traditional, or classical literature on later literature and film.	
<b>Standard 17: Dramatic Literature</b>	
Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.	
17.1: Identify the elements of dialogue and use them in informal plays.	
17.2: Identify and analyze the elements of plot and character, as presented through dialogue in scripts that are read, viewed, written, or performed.	
17.3: Identify and analyze structural elements particular to dramatic literature ( <i>scenes, acts, cast of characters, stage directions</i> ) in the plays they read, view, write, and perform.	
17.4: Identify and analyze the similarities and differences between a narrative text and its film or play version.	
17.5: Identify and analyze elements of setting, plot, and characterization in the plays that are read, viewed, written, and/or performed:	
<ul style="list-style-type: none"> <li>● setting (place, historical period, time of day);</li> </ul>	
<ul style="list-style-type: none"> <li>● plot (exposition, conflict, rising action, falling action); and</li> </ul>	
<ul style="list-style-type: none"> <li>● characterization (character motivations, actions, thoughts, development).</li> </ul>	
17.6: Identify and analyze the similarities and differences in the presentation of setting, character, and plot in texts, plays, and films.	
17.7: Identify and analyze how dramatic conventions support, interpret, and enhance dramatic text.	
17.8: Identify and analyze types of dramatic literature.	
17.9: Identify and analyze dramatic conventions ( <i>monologue, soliloquy, chorus, aside, dramatic irony</i> ).	
<b>Standard 18: Dramatic Reading and Performance</b>	
Students will plan and present dramatic readings, recitations, and performances that demonstrate appropriate consideration of audience and purpose.	
18.1: Rehearse and perform stories, plays, and poems for an audience using eye contact, volume, and clear enunciation appropriate to the selection.	



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>18.2:</b> Plan and perform readings of selected texts for an audience, using clear diction and voice quality ( <i>volume, tempo, pitch, tone</i> ) appropriate to the selection, and use teacher-developed assessment criteria to prepare presentations.	
<b>18.3:</b> Develop characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ) and self-assess using teacher-developed criteria before performing.	
<b>18.4:</b> Develop and present characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ), explain the artistic choices made, and use a scoring guide with teacher-developed categories ( <i>content, presentation style</i> ) to create scoring criteria for assessment.	
<b>18.5:</b> Develop, communicate, and sustain consistent characters in improvisational, formal, and informal productions and create scoring guides with categories and criteria for assessment of presentations.	
<b>18.6:</b> Demonstrate understanding of the functions of playwright, director, technical designer, and actor by writing, directing, designing, and/or acting in an original play.	
Composition	
<b>Standard 19: Writing</b>  Students will write with a clear focus, coherent organization, and sufficient detail.	
<b>19.1:</b> Draw pictures and/or use letters or phonetically spelled words to tell a story.	
<b>19.2:</b> Dictate sentences for a story and collaborate to put the sentences in chronological sequence.	
<b>19.3:</b> Draw pictures and/or use letters or phonetically spelled words to give others information.	
<b>19.4:</b> Dictate sentences for a letter or directions and collaborate to put the sentences in order.	
<b>19.5:</b> Write or dictate stories that have a beginning, middle, and end.	
<b>19.6:</b> Write or dictate short poems.	
<b>19.7:</b> Write or dictate letters, directions, or short accounts of personal experiences that follow a logical order.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
19.8: Write or dictate research questions.	
19.9: Write stories that have a beginning, middle, and end and contain details of setting.	
19.10: Write short poems that contain simple sense details.	
19.11: Write brief summaries of information gathered through research.	
19.12: Write a brief interpretation or explanation of a literary or informational text using evidence from the text as support.	
19.13: Write an account based on personal experience that has a clear focus and sufficient supporting detail.	
19.14: Write stories or scripts containing the basic elements of fiction ( <i>characters, dialogue, setting, plot with a clear resolution</i> ).	
19.15: Write poems using poetic techniques ( <i>alliteration, onomatopoeia</i> ), figurative language ( <i>simile, metaphor</i> ), and graphic elements ( <i>capital letters, line length</i> ).	
19.16: Write brief research reports with clear focus and supporting detail.	
19.17: Write a short explanation of a process that includes a topic statement, supporting details, and a conclusion.	
19.18: Write formal letters to correspondents such as authors, newspapers, businesses, or government officials.	
19.19: Write stories or scripts with well-developed characters, setting, dialogue, clear conflict and resolution, and sufficient descriptive detail.	
19.20: Write poems using poetic techniques (alliteration, onomatopoeia, rhyme scheme), figurative language (simile, metaphor, personification), and graphic elements (capital letters, line length, word position).	
19.21: Write reports based on research that include quotations, footnotes or endnotes, and a bibliography.	
19.22: Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p><b>19.23:</b> Write multi-paragraph compositions that have clear topic development, logical organization, effective use of detail, and variety in sentence structure.</p>	
<p><b>19.24:</b> Write well-organized stories or scripts with an explicit or implicit theme and details that contribute to a definite mood or tone.</p>	
<p><b>19.25:</b> Write poems using a range of poetic techniques, forms (sonnet, ballad), and figurative language.</p>	
<p><b>19.26:</b> Write well-organized essays (persuasive, literary, personal) that have a clear focus, logical development, effective use of detail, and variety in sentence structure.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Focusing on the Topic:</b>  Maintain a focus on discussion of the specific topic and issue in the prompt throughout the essay  Maintain a clear focus on discussion of the specific topic and issue in the prompt throughout the essay</p> <p><b>Developing a Position:</b>  Develop most ideas fully, using some specific and relevant reasons, details, and examples  Show clear movement between general and specific ideas and examples  Develop several ideas fully, using specific and relevant reasons, details, and examples  Show effective movement between general and specific ideas and examples</p> <p><b>Organizing Ideas:</b>  Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas  Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas  Present a somewhat developed introduction and conclusion  Provide unity and coherence throughout the essay, often with a logical progression of ideas  Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas  Present a well-developed introduction and conclusion</p> <p><b>Using Language:</b>  Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>19.27:</b> Write well-organized research papers that prove a thesis statement using logical organization, effective supporting evidence, and variety in sentence structure.</p>	
<p><b>19.28:</b> Write well-organized stories or scripts with an explicit or implicit theme, using a variety of literary techniques.</p>	
<p><b>19.29:</b> Write poems using a range of forms and techniques.</p>	
<p><b>19.30:</b> Write coherent compositions with a clear focus, objective presentation of alternate views, rich detail, well-developed paragraphs, and logical argumentation.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Expressing Judgments:</b></p> <p>Show understanding of the persuasive purpose of the task by taking a position on the issue in the prompt</p> <p>Show some recognition of the complexity of the issue in the prompt by</p> <ul style="list-style-type: none"> <li>• acknowledging counterarguments to the writer's position</li> <li>• providing some response to counterarguments to the writer's position</li> </ul> <p>Show clear understanding of the persuasive purpose of the task by taking a position on the specific issue in the prompt and offering a broad context for discussion</p> <p>Show recognition of the complexity of the issue in the prompt by</p> <ul style="list-style-type: none"> <li>• partially evaluating implications and/or complications of the issue, and/or</li> <li>• posing and partially responding to counterarguments to the writer's position</li> </ul> <p>Show clear understanding of the persuasive purpose of the task by taking a position on the specific issue in the prompt and offering a critical context for discussion</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Show understanding of the complexity of the issue in the prompt by</p> <ul style="list-style-type: none"> <li>• examining different perspectives, and/or</li> <li>• evaluating implications or complications of the issue, and/or</li> <li>• posing and fully discussing counterarguments to the writer's position</li> </ul> <p><b>Focusing on the Topic:</b></p> <p>Maintain a focus on discussion of the specific topic and issue in the prompt throughout the essay</p> <p>Present a thesis that establishes a focus on the writer's position on the issue</p> <p>Maintain a clear focus on discussion of the specific topic and issue in the prompt throughout the essay</p> <p>Present a critical thesis that clearly establishes the focus on the writer's position on the issue</p> <p><b>Developing a Position:</b></p> <p>Develop most ideas fully, using some specific and relevant reasons, details, and examples</p> <p>Show clear movement between general and specific ideas and examples</p> <p>Develop several ideas fully, using specific and relevant reasons, details, and examples</p> <p>Show effective movement between general and specific ideas and examples</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p>
<p><b>Standard 20: Consideration of Audience and Purpose</b></p> <p>Students will write for different audiences and purposes.</p>	
<p><b>20.1:</b> Use a variety of forms or genres when writing for different purposes.</p>	
<p><b>20.2:</b> Use appropriate language for different audiences and purposes.</p>	
<p><b>20.3:</b> Make distinctions among fiction, nonfiction, dramatic literature, and poetry, and use these genres selectively when writing for different purposes.</p>	
<p><b>20.4:</b> Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.</p>	
<p><b>20.5:</b> Use different levels of formality, style, and tone when composing for different audiences.</p>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p><b>20.6:</b> Use effective rhetorical techniques and demonstrate understanding of purpose, speaker, audience, and form when completing expressive, persuasive, or literary writing assignments.</p>	
<p><b>Standard 21: Revising</b></p> <p>Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.</p>	
<p><b>21.1:</b> After writing or dictating a composition, identify words and phrases that could be added to make the thought clearer, more logical, or more expressive.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p>Correct vague and wordy or clumsy and confusing writing containing sophisticated language</p>
<p><b>21.2:</b> Revise writing to improve level of detail after determining what could be added or deleted.</p>	<p><b>English</b> College Readiness Standards</p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p>
<p><b>21.3:</b> Improve word choice by using dictionaries.</p>	
<p><b>21.4:</b> Revise writing to improve level of detail and precision of language after determining where to add images and sensory detail, combine sentences, vary sentences, and rearrange text.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.5:</b> Improve word choice by using dictionaries or thesauruses.</p>	
<p><b>21.6:</b> Revise writing to improve organization and diction after checking the logic underlying the order of ideas, the precision of vocabulary used, and the economy of writing.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p>Add a sentence to introduce or conclude a fairly complex paragraph</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>21.7:</b> Improve word choice by using a variety of references.</p>	
<p><b>21.8:</b> Revise writing by attending to topic/idea development, organization, level of detail, language/style, sentence structure, grammar and usage, and mechanics.</p>	<p><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p> <p>Ensure that a verb agrees with its subject when there is some text between the two</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p>Ensure that a verb agrees with its subject in unusual situations (e.g., when the subject-verb order is inverted or when the subject is an indefinite pronoun)</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p><b>Conventions of Punctuation:</b></p> <p>Delete commas that create basic sense problems (e.g., between verb and direct object)</p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p> <p>Use commas to set off simple parenthetical phrases</p> <p>Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p> <p>Use punctuation to set off complex parenthetical phrases</p> <p>Recognize and delete unnecessary commas based on a careful reading of a complicated sentence (e.g., between the elements of a compound subject or compound verb joined by <i>and</i>)</p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p>
<p><b>21.9:</b> Revise writing to improve style, word choice, sentence variety, and subtlety of meaning after rethinking how well questions of purpose, audience, and genre have been addressed.</p>	<p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise sentences to correct awkward and confusing arrangements of sentence elements</p> <p>Revise vague nouns and pronouns that create obvious logic problems</p>

TABLE 1D

<b>Massachusetts Grades 11-12 English Language Arts</b>	<b>ACT English, Reading, and/or Writing College Readiness Standards</b>
	<p>Delete obviously synonymous and wordy material in a sentence</p> <p>Revise expressions that deviate from the style of an essay</p> <p>Delete redundant material when information is repeated in different parts of speech (e.g., “alarmingly startled”)</p> <p>Use the word or phrase most consistent with the style and tone of a fairly straightforward essay</p> <p>Determine the clearest and most logical conjunction to link clauses</p> <p>Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence</p> <p>Identify and correct ambiguous pronoun references</p> <p>Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay</p>
<p><b>Standard 22: Standard English Conventions</b></p>	
<p>Students will use knowledge of standard English conventions in their writing, revising, and editing.</p>	
<p><b>22.1:</b> Print upper- and lower-case letters of the alphabet.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>

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<b>Massachusetts Grades 11-12 English Language Arts</b>	<b>ACT English, Reading, and/or Writing College Readiness Standards</b>
<p><b>22.2:</b> Use correct standard English mechanics such as:</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<ul style="list-style-type: none"> <li>• printing upper- and lower-case letters legibly and using them to make words;</li> </ul>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>using precise and varied vocabulary</li> <li>using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<ul style="list-style-type: none"> <li>separating words with spaces;</li> </ul>	<p><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>using appropriate vocabulary</li> <li>using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>using some precise and varied vocabulary</li> <li>using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>using precise and varied vocabulary</li> <li>using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<ul style="list-style-type: none"> <li>understanding and applying rules for capitalization at the beginning of a sentence, for names and places, and capitalization and commas in dates.</li> </ul>	<p><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>using appropriate vocabulary</li> <li>using some varied kinds of sentence structures to vary pace</li> </ul>



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	<p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<ul style="list-style-type: none"> <li>• using correct spelling of sight and/or spelling words; and</li> </ul>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<ul style="list-style-type: none"> <li>• using appropriate end marks such as periods and question marks.</li> </ul>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.3:</b> Write legibly in cursive, leaving space between letters in a word and between words in a sentence.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul>

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<p>Massachusetts Grades 11-12 English Language Arts</p>	<p>ACT English, Reading, and/or Writing College Readiness Standards</p>
	<p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.4:</b> Use knowledge of correct mechanics (end marks, commas for series, capitalization), usage (subject and verb agreement in a simple sentence), and sentence structure (elimination of fragments) when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.5:</b> Use knowledge of letter sounds, word parts, word segmentation, and syllabication to monitor and correct spelling.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.6:</b> Spell most commonly used homophones correctly in their writing (<i>there, they're, their; two, too, to</i>).</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> </ul>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<ul style="list-style-type: none"> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.7:</b> Use additional knowledge of correct mechanics (apostrophes, quotation marks, comma use in compound sentences, paragraph indentations), correct sentence structure (elimination of fragments and run-ons), and correct standard English spelling (commonly used homophones) when writing, revising, and editing.</p>	<p style="text-align: center;"><b>English College Readiness Standards</b></p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p><b>Conventions of Usage:</b></p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Use apostrophes to indicate simple possessive nouns</p>

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<p>Massachusetts Grades 11-12 English Language Arts</p>	<p>ACT English, Reading, and/or Writing College Readiness Standards</p>
	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.8:</b> Use knowledge of types of sentences (<i>simple, compound, complex</i>), correct mechanics (<i>comma after introductory structures</i>), correct usage (<i>pronoun reference</i>), sentence structure (<i>complete sentences, properly placed modifiers</i>), and standard English spelling when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Word Choice in Terms of Style, Tone, Clarity, and Economy:</b></p> <p>Revise vague nouns and pronouns that create obvious logic problems</p> <p>Identify and correct ambiguous pronoun references</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p><b>Conventions of Usage:</b></p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p><b>Conventions of Punctuation:</b></p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>
<p><b>22.9:</b> Use knowledge of types of clauses (<i>main and subordinate</i>), verbals (<i>gerunds, infinitives, participles</i>), mechanics (<i>semicolons, colons, hyphens</i>), usage (<i>tense consistency</i>), sentence structure (<i>parallel structure</i>), and standard English spelling when writing and editing.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Punctuation:</b></p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use a semicolon to indicate a relationship between closely related independent clauses</p> <p>Use a colon to introduce an example or an elaboration</p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p><b>22.10:</b> Use all conventions of standard English when writing and editing.</p>	<p><b>Sentence Structure and Formation:</b></p> <p>Use conjunctions or punctuation to join simple clauses</p> <p>Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences</p> <p>Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences</p> <p>Decide the appropriate verb tense and voice by considering the meaning of the entire sentence</p> <p>Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)</p> <p>Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems</p> <p>Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence</p> <p>Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs</p> <p>Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole</p> <p><b>Conventions of Usage:</b></p> <p>Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives</p> <p>Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts</p> <p>Recognize and use the appropriate word in frequently confused pairs such as <i>there</i> and <i>their</i>, <i>past</i> and <i>passed</i>, and <i>led</i> and <i>lead</i></p> <p>Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., <i>long for</i>, <i>appeal to</i>)</p> <p>Ensure that a verb agrees with its subject when there is some text between the two</p> <p>Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences</p> <p>Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using <i>have</i> rather than <i>of</i></p> <p>Correctly use reflexive pronouns, the possessive pronouns <i>its</i> and <i>your</i>, and the relative pronouns <i>who</i> and <i>whom</i></p> <p>Ensure that a verb agrees with its subject in unusual situations (e.g., when the subject-verb order is inverted or when the subject is an indefinite pronoun)</p>



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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p><b>Conventions of Punctuation:</b></p> <p>Delete commas that create basic sense problems (e.g., between verb and direct object)</p> <p>Provide appropriate punctuation in straightforward situations (e.g., items in a series)</p> <p>Delete commas that disturb the sentence flow (e.g., between modifier and modified element)</p> <p>Use commas to set off simple parenthetical phrases</p> <p>Delete unnecessary commas when an incorrect reading of the sentence suggests a pause that should be punctuated (e.g., between verb and direct object clause)</p> <p>Use punctuation to set off complex parenthetical phrases</p> <p>Recognize and delete unnecessary commas based on a careful reading of a complicated sentence (e.g., between the elements of a compound subject or compound verb joined by <i>and</i>)</p> <p>Use apostrophes to indicate simple possessive nouns</p> <p>Recognize inappropriate uses of colons and semicolons</p> <p>Use commas to set off a nonessential/nonrestrictive appositive or clause</p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Using Language:</b></p> <p>Show adequate use of language to communicate by</p> <ul style="list-style-type: none"> <li>• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding</li> <li>• using appropriate vocabulary</li> <li>• using some varied kinds of sentence structures to vary pace</li> </ul> <p>Show competent use of language to communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding</li> <li>• using some precise and varied vocabulary</li> <li>• using several kinds of sentence structures to vary pace and to support meaning</li> </ul> <p>Show effective use of language to clearly communicate ideas by</p> <ul style="list-style-type: none"> <li>• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors</li> <li>• using precise and varied vocabulary</li> <li>• using a variety of kinds of sentence structures to vary pace and to support meaning</li> </ul>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>Standard 23: Organizing Ideas in Writing</b>	
Students will organize ideas in writing in a way that makes sense for their purpose.	
23.1: Arrange events in order when writing or dictating.	
23.2: Arrange ideas in a way that makes sense.	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p><b>Writing</b> College Readiness Standards</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas</p> <p>Present a somewhat developed introduction and conclusion</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p> <p>Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas</p> <p>Present a well-developed introduction and conclusion</p>
23.3: Organize plot events of a story in an order that leads to a climax.	<p><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.4:</b> Organize ideas for a brief response to a reading.</p>	
<p><b>23.5:</b> Organize ideas for an account of personal experience in a way that makes sense.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.6:</b> Decide on the placement of descriptive details about setting, characters, and events in stories.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p>

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Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<p><b>23.7:</b> Group related ideas and place them in logical order when writing summaries or reports.</p>	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas</p> <p>Present a somewhat developed introduction and conclusion</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p> <p>Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas</p> <p>Present a well-developed introduction and conclusion</p>
<p><b>23.8:</b> Organize information about a topic into a coherent paragraph with a topic sentence, sufficient supporting detail, and a concluding sentence.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>
<p><b>23.9:</b> Integrate the use of organizing techniques that break up strict chronological order in a story (<i>starting in the middle of the action, then filling in background information using flashbacks</i>).</p>	
<p><b>23.10:</b> Organize information into a coherent essay or report with a thesis statement in the introduction, transition sentences to link paragraphs, and a conclusion.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas</p> <p>Present a somewhat developed introduction and conclusion</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p> <p>Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas</p> <p>Present a well-developed introduction and conclusion</p>
<p><b>23.11:</b> Organize ideas for writing comparison-and-contrast essays.</p>	
<p><b>23.12:</b> Integrate all elements of fiction to emphasize the theme and tone of the story.</p>	
<p><b>23.13:</b> Organize ideas for a critical essay about literature or a research report with an original thesis statement in the introduction, well constructed paragraphs that build an effective argument, transition sentences to link paragraphs into a coherent whole, and a conclusion.</p>	
<p><b>23.14:</b> Organize ideas for emphasis in a way that suits the purpose of the writer.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p> <p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas</p> <p>Present a somewhat developed introduction and conclusion</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p> <p>Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas</p> <p>Present a well-developed introduction and conclusion</p>
<p><b>23.15:</b> Craft sentences in a way that supports the underlying logic of the ideas.</p>	<p style="text-align: center;"><b>English</b> College Readiness Standards</p> <p><b>Topic Development in Terms of Purpose and Focus:</b></p> <p>Identify the basic purpose or role of a specified phrase or sentence</p> <p>Delete a clause or sentence because it is obviously irrelevant to the essay</p> <p>Identify the central idea or main topic of a straightforward piece of writing</p> <p>Determine relevancy when presented with a variety of sentence-level details</p> <p>Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal</p> <p>Delete material primarily because it disturbs the flow and development of the paragraph</p> <p>Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement</p> <p>Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material</p> <p>Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation</p> <p><b>Organization, Unity, and Coherence:</b></p> <p>Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., <i>then, this time</i>)</p> <p>Select the most logical place to add a sentence in a paragraph</p> <p>Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., <i>first, afterward, in response</i>)</p> <p>Decide the most logical place to add a sentence in an essay</p> <p>Add a sentence that introduces a simple paragraph</p>

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	<p>Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., <i>therefore, however, in addition</i>)</p> <p>Rearrange the sentences in a fairly uncomplicated paragraph for the sake of logic</p> <p>Add a sentence to introduce or conclude the essay or to provide a transition between paragraphs when the essay is fairly straightforward</p> <p style="text-align: center;"><b>Writing</b> College Readiness Standards</p> <p><b>Organizing Ideas:</b></p> <p>Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas</p> <p>Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas</p> <p>Present a somewhat developed introduction and conclusion</p> <p>Provide unity and coherence throughout the essay, often with a logical progression of ideas</p> <p>Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas</p> <p>Present a well-developed introduction and conclusion</p>
<b>Standard 24: Research</b>	
Students will gather information from a variety of sources, analyze and evaluate the quality of the information they obtain, and use it to answer their own questions.	
<b>24.1:</b> Generate questions and gather information from several sources in a classroom, school, or public library.	
<b>24.2:</b> Identify and apply steps in conducting and reporting research:	
<ul style="list-style-type: none"> <li>● Define the need for information and formulate open-ended research questions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Initiate a plan for searching for information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Locate resources.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the relevance of the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Interpret, use, and communicate the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the research project as a whole.</li> </ul>	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>24.3:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual and group projects:	
<ul style="list-style-type: none"> <li>● use an expanded range of print and non-print sources (<i>atlases, data bases, electronic, on-line resources</i>);</li> </ul>	
<ul style="list-style-type: none"> <li>● follow established criteria for evaluating information;</li> </ul>	
<ul style="list-style-type: none"> <li>● locate specific information within resources by using indexes, tables of contents, electronic search key words;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grades 5–6 Learning Standards in the Composition Strand as a guide for writing; and</li> </ul>	
<ul style="list-style-type: none"> <li>● provide appropriate documentation in a consistent format.</li> </ul>	
<b>24.4:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual projects:	
<ul style="list-style-type: none"> <li>● differentiate between primary and secondary source materials;</li> </ul>	
<ul style="list-style-type: none"> <li>● differentiate between paraphrasing and using direct quotes in a report;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grade 7–8 Learning Standards in the Composition Strand as a guide for writing;</li> </ul>	
<ul style="list-style-type: none"> <li>● document information and quotations and use a consistent format for footnotes or endnotes; and</li> </ul>	
<ul style="list-style-type: none"> <li>● use standard bibliographic format to document sources.</li> </ul>	
<b>24.5:</b> Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, documenting sources in a consistent and standard format, and presenting research.	
<b>24.6:</b> Formulate original, open-ended questions to explore a topic of interest, design and carry out research, and evaluate the quality of the research paper in terms of the adequacy of its questions, materials, approach, and documentation of sources.	



TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>Standard 25: Evaluating Writing and Presentations</b>	
Students will develop and use appropriate rhetorical, logical, and stylistic criteria for assessing final versions of their compositions or research projects before presenting them to varied audiences.	
<b>25.1:</b> Support judgments about classroom activities or presentations.	
<b>25.2:</b> Form and explain personal standards or judgments of quality, display them in the classroom, and present them to family members.	
<b>25.3:</b> Use prescribed criteria from a scoring rubric to evaluate compositions, recitations, or performances before presenting them to an audience.	
<b>25.4:</b> As a group, develop and use scoring guides or rubrics to improve organization and presentation of written and oral projects.	
<b>25.5:</b> Use group-generated criteria for evaluating different forms of writing and explain why these are important before applying them.	
<b>25.6:</b> Individually develop and use criteria for assessing work across the curriculum, explaining why the criteria are appropriate before applying them.	
Media	
<b>Standard 26: Analysis of Media</b>	
Students will identify, analyze, and apply knowledge of the conventions, elements, and techniques of film, radio, video, television, multimedia productions, the Internet, and emerging technologies, and provide evidence from the works to support their understanding.	
<b>26.1:</b> Identify techniques used in television ( <i>animation, close-ups, wide-angle shots, sound effects, music, graphics</i> ) and use knowledge of these techniques to distinguish between facts and misleading information.	
<b>26.2:</b> Compare stories in print with their filmed adaptations, describing the similarities and differences in the portrayal of characters, plot, and settings.	
<b>26.3:</b> Identify techniques used in educational reference software and websites and describe how these techniques are the same as or different from the techniques used by authors and illustrators of print materials.	

TABLE 1D

Massachusetts Grades 11-12 English Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
<b>26.4:</b> Analyze the effect on the reader's or viewer's emotions of text and image in print journalism, and images, sound, and text in electronic journalism, distinguishing techniques used in each to achieve these effects.	
<b>26.5:</b> Analyze visual or aural techniques used in a media message for a particular audience and evaluate their effectiveness.	
<b>26.6:</b> Identify the aesthetic effects of a media presentation and identify and evaluate the techniques used to create them.	
<p><b>Standard 27: Media Production</b></p> <p>Students will design and create coherent media productions (audio, video, television, multimedia, Internet, emerging technologies) with a clear controlling idea, adequate detail, and appropriate consideration of audience, purpose, and medium.</p>	
<b>27.1:</b> Create radio scripts, audiotapes, or videotapes for display or transmission.	
<b>27.2:</b> Create presentations using computer technology.	
<b>27.3:</b> Create a media production using effective images, text, music, sound effects, or graphics.	
<b>27.4:</b> Create media presentations and written reports on the same subject and compare the differences in effects of each medium.	
<b>27.5:</b> Use criteria to assess the effectiveness of media presentations.	
<b>27.6:</b> Create media presentations that effectively use graphics, images, and/or sound to present a distinctive point of view on a topic.	
<b>27.7:</b> Develop and apply criteria for assessing the effectiveness of the presentation, style, and content of films and other forms of electronic communication.	
<b>27.8:</b> Create coherent media productions that synthesize information from several sources.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
Language	
<b>Standard 1: Discussion</b>	
Students will use agreed-upon rules for informal and formal discussions in small and large groups.	
1.1: Follow agreed-upon rules for discussion.	
1.3: Apply understanding of agreed-upon rules and individual roles in order to make decisions.	
1.4: Know and apply rules for formal discussions ( <i>classroom, parliamentary debate, town meeting rules</i> ).	
1.5: Identify and practice techniques such as setting time limits for speakers and deadlines for decision-making to improve productivity of group discussions.	
1.6: Drawing on one of the widely used professional evaluation forms for group discussion, evaluate how well participants engage in discussions at a local meeting.	
<b>Standard 2: Questioning, Listening, and Contributing</b>	
Students will pose questions, listen to the ideas of others, and contribute their own information or ideas in group discussions or interviews in order to acquire new knowledge.	
2.1: Contribute knowledge to class discussion in order to develop a topic for a class project.	
2.2: Contribute knowledge to class discussion in order to develop ideas for a class project and generate interview questions to be used as part of the project.	
2.3: Gather relevant information for a research project or composition through interviews.	
2.4: Integrate relevant information gathered from group discussions and interviews for reports.	
2.5: Summarize in a coherent and organized way information and ideas learned from a focused discussion.	
2.6: Analyze differences in responses to focused group discussion in an organized and systematic way.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>Standard 3: Oral Presentation</b>	
Students will make oral presentations that demonstrate appropriate consideration of audience, purpose, and the information to be conveyed.	
<b>3.1:</b> Give oral presentations about personal experiences or interests, using clear enunciation and adequate volume.	
<b>3.2:</b> Maintain focus on the topic.	
<b>3.3:</b> Adapt language to persuade, to explain, or to seek information.	
<b>3.4:</b> Give oral presentations about experiences or interests using eye contact, proper place, adequate volume, and clear pronunciation.	
<b>3.5:</b> Make informal presentations that have a recognizable organization ( <i>sequencing, summarizing</i> ).	
<b>3.6:</b> Express an opinion of a literary work or film in an organized way, with supporting detail.	
<b>3.7:</b> Use teacher-developed assessment criteria to prepare their presentations.	
<b>3.8:</b> Give oral presentations for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
<b>3.9:</b> Use teacher-developed assessment criteria to prepare their presentations.	
<b>3.10:</b> Present an organized interpretation of a literary work, film, or dramatic production.	
<b>3.11:</b> Use appropriate techniques for oral persuasion.	
<b>3.12:</b> Give oral presentations to different audiences for various purposes, showing appropriate changes in delivery ( <i>gestures, vocabulary, pace, visuals</i> ) and using language for dramatic effect.	
<b>3.13:</b> Create a scoring guide based on categories supplied by the teacher ( <i>content, presentation style</i> ) to prepare and assess their presentations.	
<b>3.14:</b> Give formal and informal talks to various audiences and for various purposes using appropriate level of formality and rhetorical devices.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
3.15: Analyze effective speeches made for a variety of purposes and prepare and deliver a speech containing some of these features.	
3.16: Create an appropriate scoring guide to prepare, improve, and assess presentations.	
3.17: Deliver formal presentations for particular audiences using clear enunciation and appropriate organization, gestures, tone, and vocabulary.	
3.18: Create an appropriate scoring guide to evaluate final presentations.	
<b>Standard 4: Vocabulary and Concept Development</b>	
Students will understand and acquire new vocabulary and use it correctly in reading and writing.	
4.1: Identify and sort common words into various classifications.	Choose the correct meaning of common, everyday and workplace words
4.2: Describe common objects and events in general and specific language.	
4.3: Identify and sort common words into conceptual categories.	Choose the correct meaning of common, everyday and workplace words
4.4: Identify base words and their inflectional forms.	
4.5: Identify the relevant meaning for a word with multiple meanings using its context.	Use the reading material to figure out the meaning of words that are not defined Figure out the correct meaning of a word based on how the word is used Figure out the less common meaning of a word based on the context Figure out the definitions of difficult, uncommon words based on how they are used
4.6: Identify common antonyms and synonyms.	
4.7: Use knowledge of the meaning of individual words to predict the meaning of unknown compound words.	
4.8: Determine meanings of words by using a beginning dictionary.	
4.9: Identify the meaning of common prefixes.	
4.10: Identify the meaning of common Greek and Latin roots to determine the meaning of unfamiliar words.	
4.11: Identify the meaning of common idioms and figurative phrases.	
4.12: Identify playful uses of language ( <i>puns, jokes, palindromes</i> ).	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>4.13:</b> Determine the meaning of unknown words using their context.	Use the reading material to figure out the meaning of words that are not defined Figure out the correct meaning of a word based on how the word is used Figure out the less common meaning of a word based on the context Figure out the definitions of difficult, uncommon words based on how they are used
<b>4.14:</b> Recognize and use words with multiple meanings and be able to determine which meaning is intended from the context of the sentence.	Use the reading material to figure out the meaning of words that are not defined Figure out the correct meaning of a word based on how the word is used Figure out the less common meaning of a word based on the context Figure out the definitions of difficult, uncommon words based on how they are used
<b>4.15:</b> Determine meanings of words and alternate word choices using a dictionary or thesaurus.	
<b>4.16:</b> Identify and apply the meaning of the terms <i>antonym</i> , <i>synonym</i> , and <i>homophone</i> .	
<b>4.17:</b> Determine the meaning of unfamiliar words using context clues.	Use the reading material to figure out the meaning of words that are not defined Figure out the correct meaning of a word based on how the word is used Figure out the less common meaning of a word based on the context Figure out the definitions of difficult, uncommon words based on how they are used
<b>4.18:</b> Determine the meaning of unfamiliar words using knowledge of common Greek and Latin roots, suffixes, and prefixes.	
<b>4.19:</b> Determine pronunciations, meanings, alternate word choices, and parts of speech of words using dictionaries and thesauruses.	
<b>4.20:</b> Determine the meaning of unfamiliar words using context clues.	Use the reading material to figure out the meaning of words that are not defined Figure out the correct meaning of a word based on how the word is used Figure out the less common meaning of a word based on the context Figure out the definitions of difficult, uncommon words based on how they are used
<b>4.21:</b> Determine the meaning of unfamiliar words by using knowledge of common Greek and Latin roots, suffixes, and prefixes.	
<b>4.22:</b> Determine pronunciations, meanings, alternate word choices, parts of speech, or etymologies of words using dictionaries and thesauruses.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>4.23:</b> Identify and use correctly idioms, cognates, words with literal and figurative meanings, and patterns of word changes that indicate different meanings or functions.	
<b>4.24:</b> Use knowledge of Greek, Latin, and Norse mythology, the Bible, and other works often alluded to in British and American literature to understand the meanings of new words.	
<b>4.25:</b> Use general dictionaries, specialized dictionaries, thesauruses, or related references as needed to increase learning.	
<b>4.26:</b> Identify and use correctly new words acquired through study of their different relationships to other words.	
<b>4.27:</b> Use general dictionaries, specialized dictionaries, thesauruses, histories of language, books of quotations, and other related references as needed.	
<b>Standard 5: Structure and Origins of Modern English</b>	
Students will analyze standard English grammar and usage and recognize how its vocabulary has developed and been influenced by other languages.	
<b>5.1:</b> Use language to express spatial and temporal relationships.	
<b>5.2:</b> Recognize that the names of things can also be the names of actions.	
<b>5.3:</b> Identify correct capitalization for names and places, and correct capitalization and commas in dates.	
<b>5.4:</b> Identify appropriate end marks.	
<b>5.5:</b> Recognize the subject-predicate relationship in sentences.	
<b>5.6:</b> Identify the four basic parts of speech.	
<b>5.7:</b> Identify correct mechanics ( <i>end marks, commas for series, capitalization</i> ), correct usage ( <i>subject and verb agreement in a simple sentence</i> ), and correct sentence structure ( <i>elimination of sentence fragments</i> ).	
<b>5.8:</b> Identify words or word parts from other languages that have been adopted into the English language.	
<b>5.9:</b> Identify the eight basic parts of speech ( <i>noun, pronoun, verb, adverb, adjective, conjunction, preposition, interjection</i> ).	

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Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>5.10:</b> Expand or reduce sentences ( <i>adding or deleting modifiers, combining or decombining sentences</i> ).	
<b>5.11:</b> Identify verb phrases and verb tenses.	
<b>5.12:</b> Recognize that a word performs different functions according to its position in the sentence.	
<b>5.13:</b> Identify simple and compound sentences.	
<b>5.14:</b> Identify correct mechanics ( <i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i> ) and correct sentence structure ( <i>elimination of sentence fragments and run-ons</i> ).	
<b>5.15:</b> Recognize the basic patterns of English sentences ( <i>noun-verb; noun-verb-noun; noun-verb-noun-noun; noun-linking verb-noun</i> ).	
<b>5.16:</b> Distinguish phrases from clauses.	
<b>5.17:</b> Recognize the makeup and function of prepositional phrases.	
<b>5.18:</b> Identify simple, compound, and complex sentences.	
<b>5.19:</b> Recognize appropriate use of pronoun reference.	
<b>5.20:</b> Identify correct mechanics ( <i>comma after introductory structures</i> ), correct usage ( <i>pronoun reference</i> ), and correct sentence structure ( <i>complete sentences, properly placed modifiers</i> ).	
<b>5.21:</b> Employ grammar and usage rhetorically by combining, including, reordering, and reducing sentences.	
<b>5.22:</b> Describe the origins and meanings of common words, as well as of foreign words or phrases used frequently in written English.	
<b>5.23:</b> Identify simple, compound, complex, and compound-complex sentences.	
<b>5.24:</b> Identify nominalized, adjectival, and adverbial clauses.	
<b>5.25:</b> Recognize the functions of verbals: participles, gerunds, and infinitives.	
<b>5.26:</b> Analyze the structure of a sentence ( <i>traditional diagram, transformational model</i> ).	
<b>5.27:</b> Identify rhetorically functional sentence structure ( <i>parallelism, properly placed modifiers</i> ).	



TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>5.28:</b> Identify correct mechanics ( <i>semicolons, colons, hyphens</i> ), correct usage ( <i>tense consistency</i> ), and correct sentence structure ( <i>parallel structure</i> ).	
<b>5.29:</b> Describe the origins and meanings of common words and foreign words or phrases used frequently in written English, and show their relationship to historical events or developments ( <i>glasnost, coup d'état</i> ).	
<b>5.30:</b> Identify, describe, and apply all conventions of standard English.	
<b>5.31:</b> Describe historical changes in conventions for usage and grammar.	
<b>5.32:</b> Explain and evaluate the influence of the English language on world literature and world cultures.	
<b>5.33:</b> Analyze and explain how the English language has developed and been influenced by other languages.	
<b>Standard 6: Formal and Informal English</b>	
Students will describe, analyze, and use appropriately formal and informal English.	
<b>6.1:</b> Identify formal and informal language in stories, poems, and plays.	
<b>6.2:</b> Recognize dialect in the conversational voices in American folk tales.	
<b>6.3:</b> Identify formal and informal language use in advertisements read, heard, and/or seen.	
<b>6.4:</b> Demonstrate through role-playing appropriate use of formal and informal language.	
<b>6.5:</b> Write stories using a mix of formal and informal language.	
<b>6.6:</b> Identify differences between oral and written language patterns.	
<b>6.7:</b> Analyze the language styles of different characters in literary works.	
<b>6.8:</b> Identify content-specific vocabulary, terminology, or jargon unique to particular social or professional groups.	
<b>6.9:</b> Identify differences between the voice, tone, diction, and syntax used in media presentations ( <i>documentary films, news broadcasts, taped interviews</i> ) and these elements in informal speech.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<p><b>6.10:</b> Analyze the role and place of standard American English in speech, writing, and literature.</p>	
<p><b>6.11:</b> Analyze how dialect can be a source of negative or positive stereotypes among social groups.</p>	
<p>Reading and Literature</p>	
<p><b>Standard 7: Beginning Reading</b></p> <p>Students will understand the nature of written English and the relationship of letters and spelling patterns to the sounds of speech.</p>	
<p><b>7.1:</b> Demonstrate understanding of the forms and functions of written English:</p>	
<ul style="list-style-type: none"> <li>● recognize that printed materials provide information or entertaining stories;</li> </ul>	
<ul style="list-style-type: none"> <li>● know how to handle a book and turn the pages;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the covers and title page of a book;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that, in English, print moves left to right across the page and from top to bottom;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify upper- and lower-case letters;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that written words are separated by spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize that sentences in print are made up of separate words.</li> </ul>	
<p><b>7.2:</b> Demonstrate orally that phonemes exist and that they can be isolated and manipulated:</p>	
<ul style="list-style-type: none"> <li>● understand that a sound is a phoneme, or one distinct sound;</li> </ul>	
<ul style="list-style-type: none"> <li>● understand that words are made up of one or more syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>● recognize and produce rhyming words;</li> </ul>	
<ul style="list-style-type: none"> <li>● identify the initial, medial, and final sounds of a word;</li> </ul>	
<ul style="list-style-type: none"> <li>● blend sounds to make words.</li> </ul>	
<p><b>7.3:</b> Use letter-sound knowledge to identify unfamiliar words in print and gain meaning:</p>	
<ul style="list-style-type: none"> <li>● know that there is a link between letters and sounds;</li> </ul>	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<ul style="list-style-type: none"> <li>recognize letter-sound matches by naming and identifying each letter of the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that written words are composed of letters that represent sounds;</li> </ul>	
<ul style="list-style-type: none"> <li>use letter-sound matches to decode simple words.</li> </ul>	
<b>7.4:</b> Demonstrate understanding of the various features of written English:	
<ul style="list-style-type: none"> <li>know the order of the letters in the alphabet;</li> </ul>	
<ul style="list-style-type: none"> <li>understand that spoken words are represented in written English by sequences of letters;</li> </ul>	
<ul style="list-style-type: none"> <li>match oral words to printed words;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize that there are correct spellings for words;</li> </ul>	
<ul style="list-style-type: none"> <li>use correct spelling of appropriate high-frequency words, whether irregularly or regularly spelled;</li> </ul>	
<ul style="list-style-type: none"> <li>recognize the distinguishing features of a sentence and a paragraph;</li> </ul>	
<ul style="list-style-type: none"> <li>identify the author and title of a book, and use a table of contents.</li> </ul>	
<b>7.5:</b> Demonstrate orally that phonemes exist:	
<ul style="list-style-type: none"> <li>generate the sounds from all the letters and letter patterns, including consonant blends, long- and short-vowel patterns, and onsets and rimes and combine these sounds into recognizable words;</li> </ul>	
<ul style="list-style-type: none"> <li>use knowledge of vowel digraphs, vowel diphthongs, and r-controlled letter-sound associations (<i>as in star</i>) to read words.</li> </ul>	
<b>7.6:</b> Recognize common irregularly spelled words by sight.	
<b>7.7:</b> Use letter-sound knowledge to decode written English:	
<ul style="list-style-type: none"> <li>decode accurately phonetically regular one-syllable and multi-syllable real words and nonsense words;</li> </ul>	

TABLE 1E

<b>Massachusetts Grades 11-12 English Language Arts</b>	<b>WorkKeys Reading for Information Skills</b>
<ul style="list-style-type: none"> <li>• read accurately many irregularly spelled words, special vowel spellings, and common word endings;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply knowledge of letter patterns to identify syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• apply independently the most common letter-sound correspondences, including the sounds represented by single letters, consonant blends, consonant digraphs, and vowel digraphs and diphthongs;</li> </ul>	
<ul style="list-style-type: none"> <li>• know and use more difficult word families (-<i>ought</i>) and known words to decode unknown words;</li> </ul>	
<ul style="list-style-type: none"> <li>• read words with several syllables;</li> </ul>	
<ul style="list-style-type: none"> <li>• read aloud with fluency and comprehension at grade level.</li> </ul>	
<b>7.8:</b> Use letter-sound knowledge to decode written English.	
<b>7.9:</b> Read grade-appropriate imaginative/literary and informational/expository text with comprehension.	
<b>7.10:</b> Read aloud grade-appropriate imaginative/literary and informational/expository text fluently, accurately, and with comprehension, using appropriate timing, change in voice, and expression.	
<b>Standard 8: Understanding a Text</b> Students will identify the basic facts and main ideas in a text and use them as the basis for interpretation.	
<b>8.1:</b> Make predictions using prior knowledge, pictures, and text.	
<b>8.2:</b> Retell a main event from a story heard or read.	
<b>8.3:</b> Ask questions about the important characters, settings, and events.	
<b>8.4:</b> Make predictions about the content of the text using prior knowledge and text features ( <i>title, captions, illustrations</i> ).	
<b>8.5:</b> Retell important facts from a text heard or read.	
<b>8.6:</b> Make predictions about what will happen next in a story, and explain whether they were confirmed or disconfirmed and why.	
<b>8.7:</b> Retell a story's beginning, middle, and end.	

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Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
8.8: Distinguish cause from effect.	
8.9: Make predictions about the content of a text using prior knowledge and text features ( <i>headings, table of contents, key words</i> ), and explain whether they were confirmed or disconfirmed and why.	
8.10: <b>Restate main ideas.</b>	Identify main ideas and clearly stated details
8.11: Identify and show the relevance of foreshadowing clues.	
8.12: Identify sensory details and figurative language.	
8.13: Identify the speaker of a poem or story.	
8.14: Make judgments about setting, characters, and events and support them with evidence from the text.	
8.15: Locate facts that answer the reader's questions.	
8.16: Distinguish cause from effect.	
8.17: Distinguish fact from opinion or fiction.	
8.18: <b>Summarize main ideas and supporting details.</b>	Identify main ideas and clearly stated details Identify important details that may not be clearly stated
8.19: Identify and analyze sensory details and figurative language.	
8.20: Identify and analyze the author's use of dialogue and description.	
8.21: Recognize organizational structures ( <i>chronological order, logical order, cause and effect, classification schemes</i> ).	
8.22: <b>Identify and analyze main ideas, supporting ideas, and supporting details.</b>	Identify main ideas and clearly stated details Identify important details that may not be clearly stated
8.23: Use knowledge of genre characteristics to analyze a text.	
8.24: Interpret mood and tone, and give supporting evidence in a text.	
8.25: Interpret a character's traits, emotions, or motivation and give supporting evidence from a text.	
8.26: Recognize organizational structures and use of arguments for and against an issue.	
8.27: Identify evidence used to support an argument.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>8.28:</b> Distinguish between the concepts of theme in a literary work and author's purpose in an expository text.	
<b>8.29:</b> Identify and analyze patterns of imagery or symbolism.	
<b>8.30:</b> Identify and interpret themes and give supporting evidence from a text.	
<b>8.31:</b> Analyze the logic and use of evidence in an author's argument.	
<b>8.32:</b> Identify and analyze the point(s) of view in a literary work.	
<b>8.33:</b> Analyze patterns of imagery or symbolism and connect them to themes and/or tone and mood.	
<b>8.34:</b> Analyze and evaluate the logic and use of evidence in an author's argument.	
<p><b>Standard 9: Making Connections</b></p> <p>Students will deepen their understanding of a literary or non-literary work by relating it to its contemporary context or historical background.</p>	
<b>9.1:</b> Identify similarities in plot, setting, and character among the works of an author or illustrator.	
<b>9.2:</b> Identify different interpretations of plot, setting, and character in the same work by different illustrators.	
<b>9.3:</b> Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author's life.	
<b>9.4:</b> Relate a literary work to information about its setting.	
<b>9.5:</b> Relate a literary work to artifacts, artistic creations, or historical sites of the period of its setting.	
<b>9.6:</b> Relate a literary work to primary source documents of its literary period or historical setting.	
<b>9.7:</b> Relate a literary work to the seminal ideas of its time.	
<p><b>Standard 10: Genre</b></p> <p>Students will identify, analyze, and apply knowledge of the characteristics of different genres.</p>	
<b>10.1:</b> Identify differences among the common forms of literature: poetry, prose, fiction, nonfiction ( <i>informational and expository</i> ), and dramatic literature.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>10.2:</b> Distinguish among forms of literature such as poetry, prose, fiction, nonfiction, and drama and apply this knowledge as a strategy for reading and writing.	
<b>10.3:</b> Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms with distinct characteristics and purposes.	
<b>10.4:</b> Identify and analyze the characteristics of various genres ( <i>poetry, fiction, nonfiction, short story, dramatic literature</i> ) as forms chosen by an author to accomplish a purpose.	
<b>10.5:</b> Compare and contrast the presentation of a theme or topic across genres to explain how the selection of genre shapes the message.	
<b>10.6:</b> Identify and analyze characteristics of genres ( <i>satire, parody, allegory, pastoral</i> ) that overlap or cut across the lines of genre classifications such as poetry, prose, drama, short story, essay, and editorial.	
<p><b>Standard 11: Theme</b></p> <p>Students will identify, analyze, and apply knowledge of theme in a literary work and provide evidence from the text to support their understanding.</p>	
<b>11.1:</b> Relate themes in works of fiction and nonfiction to personal experience.	
<b>11.2:</b> Identify themes as lessons in folktales, fables, and Greek myths for children.	
<b>11.3:</b> Apply knowledge of the concept that theme refers to the main idea and meaning of a selection, whether it is implied or stated.	
<b>11.4:</b> Analyze and evaluate similar themes across a variety of selections, distinguishing theme from topic.	
<b>11.5:</b> Apply knowledge of the concept that the theme or meaning of a selection represents a view or comment on life, and provide support from the text for the identified themes.	
<b>11.6:</b> Apply knowledge of the concept that a text can contain more than one theme.	
<b>11.7:</b> Analyze and compare texts that express a universal theme, and locate support in the text for the identified theme.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>Standard 12: Fiction</b>	
Students will identify, analyze, and apply knowledge of the structure and elements of fiction and provide evidence from the text to support their understanding.	
<b>12.1:</b> Identify the elements of plot, character, and setting in a favorite story.	
<b>12.2:</b> Identify and analyze the elements of plot, character, and setting in the stories they read and write.	
<b>12.3:</b> Identify and analyze the elements of setting, characterization, and plot (including conflict).	
<b>12.4:</b> Locate and analyze elements of plot and characterization and then use an understanding of these elements to determine how qualities of the central characters influence the resolution of the conflict.	
<b>12.5:</b> Locate and analyze such elements in fiction as point of view, foreshadowing, and irony.	
<b>12.6:</b> Analyze, evaluate, and apply knowledge of how authors use techniques and elements in fiction for rhetorical and aesthetic purposes.	
<b>Standard 13: Nonfiction</b>	
Students will identify, analyze, and apply knowledge of the purpose, structure, and elements of nonfiction or informational materials and provide evidence from the text to support their understanding.	
<b>13.1:</b> Identify and use knowledge of common textual features (title, headings, captions, key words, table of contents).	
<b>13.2:</b> Identify and use knowledge of common graphic features (illustrations, type size).	
<b>13.3:</b> Make predictions about the content of a text using prior knowledge and text and graphic features.	
<b>13.4:</b> Explain whether predictions about the content of a text were confirmed or disconfirmed and why.	
<b>13.5:</b> <b>Restate main ideas and important facts from a text heard or read.</b>	Identify main ideas and clearly stated details Identify important details that may not be clearly stated
<b>13.6:</b> Identify and use knowledge of common textual features ( <i>paragraphs, topic sentences, concluding sentences, glossary</i> ).	
<b>13.7:</b> Identify and use knowledge of common graphic features ( <i>charts, maps, diagrams, illustrations</i> ).	



TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>13.8:</b> Identify and use knowledge of common organizational structures ( <i>chronological order</i> ).	
<b>13.9:</b> Locate facts that answer the reader's questions.	
<b>13.10:</b> Distinguish cause from effect.	
<b>13.11:</b> Distinguish fact from opinion or fiction.	
<b>13.12:</b> Summarize main ideas and supporting details.	Identify main ideas and clearly stated details Identify important details that may not be clearly stated
<b>13.13:</b> Identify and use knowledge of common textual features ( <i>paragraphs, topic sentences, concluding sentences, glossary, index</i> ).	
<b>13.14:</b> Identify and use knowledge of common graphic features ( <i>charts, maps, diagrams, captions, illustrations</i> ).	
<b>13.15:</b> Identify and use knowledge of common organizational structures ( <i>chronological order, logical order, cause and effect, classification schemes</i> ).	
<b>13.17:</b> Identify and analyze main ideas, supporting ideas, and supporting details.	Identify main ideas and clearly stated details Identify important details that may not be clearly stated
<b>13.18:</b> Identify and use knowledge of common textual features ( <i>paragraphs, topic sentences, concluding sentences, introduction, conclusion, footnotes, index, bibliography</i> ).	
<b>13.19:</b> Identify and use knowledge of common graphic features ( <i>charts, maps, diagrams</i> ).	
<b>13.20:</b> Identify and use knowledge of common organizational structures ( <i>logical order, comparison and contrast, cause and effect relationships</i> ).	
<b>13.21:</b> Recognize use of arguments for and against an issue.	
<b>13.22:</b> Identify evidence used to support an argument.	
<b>13.23:</b> Distinguish between the concepts of theme in a literary work and author's purpose in an expository text.	
<b>13.24:</b> Analyze the logic and use of evidence in an author's argument.	
<b>13.25:</b> Analyze and explain the structure and elements of nonfiction works.	
<b>13.26:</b> Analyze and evaluate the logic and use of evidence in an author's argument.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
13.27: Analyze, explain, and evaluate how authors use the elements of nonfiction to achieve their purposes.	
<p><b>Standard 14: Poetry</b></p> <p>Students will identify, analyze, and apply knowledge of the themes, structure, and elements of poetry and provide evidence from the text to support their understanding.</p>	
14.1: Identify a regular beat and similarities of sounds in words in responding to rhythm and rhyme in poetry.	
14.2: Identify rhyme and rhythm, repetition, similes, and sensory images in poems.	
14.3: Respond to and analyze the effects of sound, figurative language, and graphics in order to uncover meaning in poetry:	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole); and</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length).</li> </ul>	
14.4: Respond to and analyze the effects of sound, form, figurative language, and graphics in order to uncover meaning in poetry:	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, internal rhyme, rhyme scheme);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole);</li> </ul>	
<ul style="list-style-type: none"> <li>● graphics (capital letters, line length, word position).</li> </ul>	
14.5: Identify, respond to, and analyze the effects of sound, form, figurative language, graphics, and dramatic structure of poems:	
<ul style="list-style-type: none"> <li>● sound (alliteration, onomatopoeia, rhyme scheme, consonance, assonance);</li> </ul>	
<ul style="list-style-type: none"> <li>● form (ballad, sonnet, heroic couplets);</li> </ul>	
<ul style="list-style-type: none"> <li>● figurative language (personification, metaphor, simile, hyperbole, symbolism); and</li> </ul>	
<ul style="list-style-type: none"> <li>● dramatic structure.</li> </ul>	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>14.6:</b> Analyze and evaluate the appropriateness of diction and imagery (controlling images, figurative language, understatement, overstatement, irony, paradox).	
<b>Standard 15: Style and Language</b>  Students will identify and analyze how an author's words appeal to the senses, create imagery, suggest mood, and set tone, and provide evidence from the text to support their understanding.	
<b>15.1:</b> Identify the senses implied in words appealing to the senses in literature and spoken language.	
<b>15.2:</b> Identify words appealing to the senses or involving direct comparisons in literature and spoken language.	
<b>15.3:</b> Identify imagery, figurative language, rhythm, or flow when responding to literature.	
<b>15.4:</b> Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.	
<b>15.5:</b> Identify and analyze imagery and figurative language.	
<b>15.6:</b> Identify and analyze how an author's use of words creates tone and mood.	
<b>15.7:</b> Evaluate how an author's choice of words advances the theme or purpose of a work.	
<b>15.8:</b> Identify and describe the importance of sentence variety in the overall effectiveness of an imaginary/literary or informational/expository work.	
<b>15.9:</b> Identify, analyze, and evaluate an author's use of rhetorical devices in persuasive argument.	
<b>15.10:</b> Analyze and compare style and language across significant cross-cultural literary works.	
<b>Standard 16: Myth, Traditional Narrative, and Classical Literature</b>  Students will identify, analyze, and apply knowledge of the themes, structure, and elements of myths, traditional narratives, and classical literature and provide evidence from the text to support their understanding.	
<b>16.1:</b> Identify familiar forms of traditional literature read aloud.	
<b>16.2:</b> Retell or dramatize traditional literature.	
<b>16.3:</b> Identify and predict recurring phrases ( <i>Once upon a time</i> ) in traditional literature.	

TABLE 1E

<b>Massachusetts Grades 11-12 English Language Arts</b>	<b>WorkKeys Reading for Information Skills</b>
<b>16.4:</b> Identify phenomena explained in origin myths.	
<b>16.5:</b> Identify the adventures or exploits of a character type in traditional literature.	
<b>16.6:</b> Acquire knowledge of culturally significant characters and events in Greek, Roman, and Norse mythology and other traditional literature.	
<b>16.7:</b> Compare traditional literature from different cultures.	
<b>16.8:</b> Identify common structures and stylistic elements in traditional literature.	
<b>16.9:</b> Identify conventions in epic tales.	
<b>16.10:</b> Identify and analyze similarities and differences in mythologies from different cultures.	
<b>16.11:</b> Analyze the characters, structure, and themes of classical Greek drama and epic poetry.	
<b>16.12:</b> Analyze the influence of mythic, traditional, or classical literature on later literature and film.	
<b>Standard 17: Dramatic Literature</b>	
Students will identify, analyze, and apply knowledge of the themes, structure, and elements of drama and provide evidence from the text to support their understanding.	
<b>17.1:</b> Identify the elements of dialogue and use them in informal plays.	
<b>17.2:</b> Identify and analyze the elements of plot and character, as presented through dialogue in scripts that are read, viewed, written, or performed.	
<b>17.3:</b> Identify and analyze structural elements particular to dramatic literature ( <i>scenes, acts, cast of characters, stage directions</i> ) in the plays they read, view, write, and perform.	
<b>17.4:</b> Identify and analyze the similarities and differences between a narrative text and its film or play version.	
<b>17.5:</b> Identify and analyze elements of setting, plot, and characterization in the plays that are read, viewed, written, and/or performed:	
<ul style="list-style-type: none"> <li>● setting (place, historical period, time of day);</li> </ul>	
<ul style="list-style-type: none"> <li>● plot (exposition, conflict, rising action, falling action); and</li> </ul>	
<ul style="list-style-type: none"> <li>● characterization (character motivations, actions, thoughts, development).</li> </ul>	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>17.6:</b> Identify and analyze the similarities and differences in the presentation of setting, character, and plot in texts, plays, and films.	
<b>17.7:</b> Identify and analyze how dramatic conventions support, interpret, and enhance dramatic text.	
<b>17.8:</b> Identify and analyze types of dramatic literature.	
<b>17.9:</b> Identify and analyze dramatic conventions ( <i>monologue, soliloquy, chorus, aside, dramatic irony</i> ).	
<p><b>Standard 18: Dramatic Reading and Performance</b></p> <p>Students will plan and present dramatic readings, recitations, and performances that demonstrate appropriate consideration of audience and purpose.</p>	
<b>18.1:</b> Rehearse and perform stories, plays, and poems for an audience using eye contact, volume, and clear enunciation appropriate to the selection.	
<b>18.2:</b> Plan and perform readings of selected texts for an audience, using clear diction and voice quality ( <i>volume, tempo, pitch, tone</i> ) appropriate to the selection, and use teacher-developed assessment criteria to prepare presentations.	
<b>18.3:</b> Develop characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ) and self-assess using teacher-developed criteria before performing.	
<b>18.4:</b> Develop and present characters through the use of basic acting skills ( <i>memorization, sensory recall, concentration, diction, body alignment, expressive detail</i> ), explain the artistic choices made, and use a scoring guide with teacher-developed categories ( <i>content, presentation style</i> ) to create scoring criteria for assessment.	
<b>18.5:</b> Develop, communicate, and sustain consistent characters in improvisational, formal, and informal productions and create scoring guides with categories and criteria for assessment of presentations.	
<b>18.6:</b> Demonstrate understanding of the functions of playwright, director, technical designer, and actor by writing, directing, designing, and/or acting in an original play.	

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Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
Composition	
<b>Standard 19: Writing</b>	
Students will write with a clear focus, coherent organization, and sufficient detail.	
<b>19.1:</b> Draw pictures and/or use letters or phonetically spelled words to tell a story.	
<b>19.2:</b> Dictate sentences for a story and collaborate to put the sentences in chronological sequence.	
<b>19.3:</b> Draw pictures and/or use letters or phonetically spelled words to give others information.	
<b>19.4:</b> Dictate sentences for a letter or directions and collaborate to put the sentences in order.	
<b>19.5:</b> Write or dictate stories that have a beginning, middle, and end.	
<b>19.6:</b> Write or dictate short poems.	
<b>19.7:</b> Write or dictate letters, directions, or short accounts of personal experiences that follow a logical order.	
<b>19.8:</b> Write or dictate research questions.	
<b>19.9:</b> Write stories that have a beginning, middle, and end and contain details of setting.	
<b>19.10:</b> Write short poems that contain simple sense details.	
<b>19.11:</b> Write brief summaries of information gathered through research.	
<b>19.12:</b> Write a brief interpretation or explanation of a literary or informational text using evidence from the text as support.	
<b>19.13:</b> Write an account based on personal experience that has a clear focus and sufficient supporting detail.	
<b>19.14:</b> Write stories or scripts containing the basic elements of fiction ( <i>characters, dialogue, setting, plot with a clear resolution</i> ).	
<b>19.15:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia</i> ), figurative language ( <i>simile, metaphor</i> ), and graphic elements ( <i>capital letters, line length</i> ).	
<b>19.16:</b> Write brief research reports with clear focus and supporting detail.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>19.17:</b> Write a short explanation of a process that includes a topic statement, supporting details, and a conclusion.	
<b>19.18:</b> Write formal letters to correspondents such as authors, newspapers, businesses, or government officials.	
<b>19.19:</b> Write stories or scripts with well-developed characters, setting, dialogue, clear conflict and resolution, and sufficient descriptive detail.	
<b>19.20:</b> Write poems using poetic techniques ( <i>alliteration, onomatopoeia, rhyme scheme</i> ), figurative language ( <i>simile, metaphor, personification</i> ), and graphic elements ( <i>capital letters, line length, word position</i> ).	
<b>19.21:</b> Write reports based on research that include quotations, footnotes or endnotes, and a bibliography.	
<b>19.22:</b> Write and justify a personal interpretation of literary, informational, or expository reading that includes a topic statement, supporting details from the literature, and a conclusion.	
<b>19.23:</b> Write multi-paragraph compositions that have clear topic development, logical organization, effective use of detail, and variety in sentence structure.	
<b>19.24:</b> Write well-organized stories or scripts with an explicit or implicit theme and details that contribute to a definite mood or tone.	
<b>19.25:</b> Write poems using a range of poetic techniques, forms ( <i>sonnet, ballad</i> ), and figurative language.	
<b>19.26:</b> Write well-organized essays ( <i>persuasive, literary, personal</i> ) that have a clear focus, logical development, effective use of detail, and variety in sentence structure.	
<b>19.27:</b> Write well-organized research papers that prove a thesis statement using logical organization, effective supporting evidence, and variety in sentence structure.	
<b>19.28:</b> Write well-organized stories or scripts with an explicit or implicit theme, using a variety of literary techniques.	
<b>19.29:</b> Write poems using a range of forms and techniques.	
<b>19.30:</b> Write coherent compositions with a clear focus, objective presentation of alternate views, rich detail, well-developed paragraphs, and logical argumentation.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>Standard 20: Consideration of Audience and Purpose</b>	
Students will write for different audiences and purposes.	
<b>20.1:</b> Use a variety of forms or genres when writing for different purposes.	
<b>20.2:</b> Use appropriate language for different audiences and purposes.	
<b>20.3:</b> Make distinctions among fiction, nonfiction, dramatic literature, and poetry, and use these genres selectively when writing for different purposes.	
<b>20.4:</b> Select and use appropriate rhetorical techniques for a variety of purposes, such as to convince or entertain the reader.	
<b>20.5:</b> Use different levels of formality, style, and tone when composing for different audiences.	
<b>20.6:</b> Use effective rhetorical techniques and demonstrate understanding of purpose, speaker, audience, and form when completing expressive, persuasive, or literary writing assignments.	
<b>Standard 21: Revising</b>	
Students will demonstrate improvement in organization, content, paragraph development, level of detail, style, tone, and word choice (diction) in their compositions after revising them.	
<b>21.1:</b> After writing or dictating a composition, identify words and phrases that could be added to make the thought clearer, more logical, or more expressive.	
<b>21.2:</b> Revise writing to improve level of detail after determining what could be added or deleted.	
<b>21.3:</b> Improve word choice by using dictionaries.	
<b>21.4:</b> Revise writing to improve level of detail and precision of language after determining where to add images and sensory detail, combine sentences, vary sentences, and rearrange text.	
<b>21.5:</b> Improve word choice by using dictionaries or thesauruses.	
<b>21.6:</b> Revise writing to improve organization and diction after checking the logic underlying the order of ideas, the precision of vocabulary used, and the economy of writing.	
<b>21.7:</b> Improve word choice by using a variety of references.	



TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>21.8:</b> Revise writing by attending to topic/idea development, organization, level of detail, language/style, sentence structure, grammar and usage, and mechanics.	
<b>21.9:</b> Revise writing to improve style, word choice, sentence variety, and subtlety of meaning after rethinking how well questions of purpose, audience, and genre have been addressed.	
<p><b>Standard 22: Standard English Conventions</b></p> <p>Students will use knowledge of standard English conventions in their writing, revising, and editing.</p>	
<b>22.1:</b> Print upper- and lower-case letters of the alphabet.	
<b>22.2:</b> Use correct standard English mechanics such as:	
<ul style="list-style-type: none"> <li>● printing upper- and lower-case letters legibly and using them to make words;</li> </ul>	
<ul style="list-style-type: none"> <li>● separating words with spaces;</li> </ul>	
<ul style="list-style-type: none"> <li>● understanding and applying rules for capitalization at the beginning of a sentence, for names and places, and capitalization and commas in dates.</li> </ul>	
<ul style="list-style-type: none"> <li>● using correct spelling of sight and/or spelling words; and</li> </ul>	
<ul style="list-style-type: none"> <li>● using appropriate end marks such as periods and question marks.</li> </ul>	
<b>22.3:</b> Write legibly in cursive, leaving space between letters in a word and between words in a sentence.	
<b>22.4:</b> Use knowledge of correct mechanics (end marks, commas for series, capitalization), usage (subject and verb agreement in a simple sentence), and sentence structure (elimination of fragments) when writing and editing.	
<b>22.5:</b> Use knowledge of letter sounds, word parts, word segmentation, and syllabication to monitor and correct spelling.	
<b>22.6:</b> Spell most commonly used homophones correctly in their writing ( <i>there, they're, their; two, too, to</i> ).	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<p><b>22.7:</b> Use additional knowledge of correct mechanics (<i>apostrophes, quotation marks, comma use in compound sentences, paragraph indentations</i>), correct sentence structure (<i>elimination of fragments and run-ons</i>), and correct standard English spelling (<i>commonly used homophones</i>) when writing, revising, and editing.</p>	
<p><b>22.8:</b> Use knowledge of types of sentences (<i>simple, compound, complex</i>), correct mechanics (<i>comma after introductory structures</i>), correct usage (<i>pronoun reference</i>), sentence structure (<i>complete sentences, properly placed modifiers</i>), and standard English spelling when writing and editing.</p>	
<p><b>22.9:</b> Use knowledge of types of clauses (<i>main and subordinate</i>), verbals (<i>gerunds, infinitives, participles</i>), mechanics (<i>semicolons, colons, hyphens</i>), usage (<i>tense consistency</i>), sentence structure (<i>parallel structure</i>), and standard English spelling when writing and editing.</p>	
<p><b>22.10:</b> Use all conventions of standard English when writing and editing.</p>	
<p><b>Standard 23: Organizing Ideas in Writing</b></p> <p>Students will organize ideas in writing in a way that makes sense for their purpose.</p>	
<p><b>23.1:</b> Arrange events in order when writing or dictating.</p>	
<p><b>23.2:</b> Arrange ideas in a way that makes sense.</p>	
<p><b>23.3:</b> Organize plot events of a story in an order that leads to a climax.</p>	
<p><b>23.4:</b> Organize ideas for a brief response to a reading.</p>	
<p><b>23.5:</b> Organize ideas for an account of personal experience in a way that makes sense.</p>	
<p><b>23.6:</b> Decide on the placement of descriptive details about setting, characters, and events in stories.</p>	
<p><b>23.7:</b> Group related ideas and place them in logical order when writing summaries or reports.</p>	
<p><b>23.8:</b> Organize information about a topic into a coherent paragraph with a topic sentence, sufficient supporting detail, and a concluding sentence.</p>	
<p><b>23.9:</b> Integrate the use of organizing techniques that break up strict chronological order in a story (<i>starting in the middle of the action, then filling in background information using flashbacks</i>).</p>	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>23.10:</b> Organize information into a coherent essay or report with a thesis statement in the introduction, transition sentences to link paragraphs, and a conclusion.	
<b>23.11:</b> Organize ideas for writing comparison-and-contrast essays.	
<b>23.12:</b> Integrate all elements of fiction to emphasize the theme and tone of the story.	
<b>23.13:</b> Organize ideas for a critical essay about literature or a research report with an original thesis statement in the introduction, well constructed paragraphs that build an effective argument, transition sentences to link paragraphs into a coherent whole, and a conclusion.	
<b>23.14:</b> Organize ideas for emphasis in a way that suits the purpose of the writer.	
<b>23.15:</b> Craft sentences in a way that supports the underlying logic of the ideas.	
<p><b>Standard 24: Research</b></p> <p>Students will gather information from a variety of sources, analyze and evaluate the quality of the information they obtain, and use it to answer their own questions.</p>	
<b>24.1:</b> Generate questions and gather information from several sources in a classroom, school, or public library.	
<b>24.2:</b> Identify and apply steps in conducting and reporting research:	
<ul style="list-style-type: none"> <li>● Define the need for information and formulate open-ended research questions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Initiate a plan for searching for information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Locate resources.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the relevance of the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Interpret, use, and communicate the information.</li> </ul>	
<ul style="list-style-type: none"> <li>● Evaluate the research project as a whole.</li> </ul>	
<b>24.3:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual and group projects:	
<ul style="list-style-type: none"> <li>● use an expanded range of print and non-print sources (<i>atlases, data bases, electronic, on-line resources</i>);</li> </ul>	

TABLE 1E

<b>Massachusetts Grades 11-12 English Language Arts</b>	<b>WorkKeys Reading for Information Skills</b>
<ul style="list-style-type: none"> <li>● follow established criteria for evaluating information;</li> </ul>	
<ul style="list-style-type: none"> <li>● locate specific information within resources by using indexes, tables of contents, electronic search key words;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grades 5–6 Learning Standards in the Composition Strand as a guide for writing; and</li> </ul>	
<ul style="list-style-type: none"> <li>● provide appropriate documentation in a consistent format.</li> </ul>	
<p><b>24.4:</b> Apply steps for obtaining information from a variety of sources, organizing information, documenting sources, and presenting research in individual projects:</p>	
<ul style="list-style-type: none"> <li>● differentiate between primary and secondary source materials;</li> </ul>	
<ul style="list-style-type: none"> <li>● differentiate between paraphrasing and using direct quotes in a report;</li> </ul>	
<ul style="list-style-type: none"> <li>● organize and present research using the grade 7–8 Learning Standards in the Composition Strand as a guide for writing;</li> </ul>	
<ul style="list-style-type: none"> <li>● document information and quotations and use a consistent format for footnotes or endnotes; and</li> </ul>	
<ul style="list-style-type: none"> <li>● use standard bibliographic format to document sources.</li> </ul>	
<p><b>24.5:</b> Formulate open-ended research questions and apply steps for obtaining and evaluating information from a variety of sources, organizing information, documenting sources in a consistent and standard format, and presenting research.</p>	
<p><b>24.6:</b> Formulate original, open-ended questions to explore a topic of interest, design and carry out research, and evaluate the quality of the research paper in terms of the adequacy of its questions, materials, approach, and documentation of sources.</p>	
<p><b>Standard 25: Evaluating Writing and Presentations</b></p> <p>Students will develop and use appropriate rhetorical, logical, and stylistic criteria for assessing final versions of their compositions or research projects before presenting them to varied audiences.</p>	
<p><b>25.1:</b> Support judgments about classroom activities or presentations.</p>	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>25.2:</b> Form and explain personal standards or judgments of quality, display them in the classroom, and present them to family members.	
<b>25.3:</b> Use prescribed criteria from a scoring rubric to evaluate compositions, recitations, or performances before presenting them to an audience.	
<b>25.4:</b> As a group, develop and use scoring guides or rubrics to improve organization and presentation of written and oral projects.	
<b>25.5:</b> Use group-generated criteria for evaluating different forms of writing and explain why these are important before applying them.	
<b>25.6:</b> Individually develop and use criteria for assessing work across the curriculum, explaining why the criteria are appropriate before applying them.	
Media	
<p><b>Standard 26: Analysis of Media</b></p> <p>Students will identify, analyze, and apply knowledge of the conventions, elements, and techniques of film, radio, video, television, multimedia productions, the Internet, and emerging technologies, and provide evidence from the works to support their understanding.</p>	
<b>26.1:</b> Identify techniques used in television ( <i>animation, close-ups, wide-angle shots, sound effects, music, graphics</i> ) and use knowledge of these techniques to distinguish between facts and misleading information.	
<b>26.2:</b> Compare stories in print with their filmed adaptations, describing the similarities and differences in the portrayal of characters, plot, and settings.	
<b>26.3:</b> Identify techniques used in educational reference software and websites and describe how these techniques are the same as or different from the techniques used by authors and illustrators of print materials.	
<b>26.4:</b> Analyze the effect on the reader's or viewer's emotions of text and image in print journalism, and images, sound, and text in electronic journalism, distinguishing techniques used in each to achieve these effects.	
<b>26.5:</b> Analyze visual or aural techniques used in a media message for a particular audience and evaluate their effectiveness.	

TABLE 1E

Massachusetts Grades 11-12 English Language Arts	WorkKeys Reading for Information Skills
<b>26.6:</b> Identify the aesthetic effects of a media presentation and identify and evaluate the techniques used to create them.	
<b>Standard 27: Media Production</b>  Students will design and create coherent media productions (audio, video, television, multimedia, Internet, emerging technologies) with a clear controlling idea, adequate detail, and appropriate consideration of audience, purpose, and medium.	
<b>27.1:</b> Create radio scripts, audiotapes, or videotapes for display or transmission.	
<b>27.2:</b> Create presentations using computer technology.	
<b>27.3:</b> Create a media production using effective images, text, music, sound effects, or graphics.	
<b>27.4:</b> Create media presentations and written reports on the same subject and compare the differences in effects of each medium.	
<b>27.5:</b> Use criteria to assess the effectiveness of media presentations.	
<b>27.6:</b> Create media presentations that effectively use graphics, images, and/or sound to present a distinctive point of view on a topic.	
<b>27.7:</b> Develop and apply criteria for assessing the effectiveness of the presentation, style, and content of films and other forms of electronic communication.	
<b>27.8:</b> Create coherent media productions that synthesize information from several sources.	

**SUPPLEMENT  
TABLES 2A–2Q:  
MATHEMATICS**

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<b>8.N.1</b> Compare, order, estimate, and translate among integers, fractions and mixed numbers (i.e., rational numbers), decimals, and percents.	<b>Basic Operations &amp; Applications:</b> Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems <b>Numbers: Concepts &amp; Properties:</b> Recognize equivalent fractions and fractions in lowest terms Recognize one-digit factors of a number Identify a digit's place value Order fractions
<b>8.N.2</b> Define, compare, order, and apply frequently used irrational numbers, such as $\sqrt{2}$ and $\pi$ .	<b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
<b>8.N.3</b> Use ratios and proportions in the solution of problems, in particular, problems involving unit rates, scale factors, and rate of change.	<b>Basic Operations &amp; Applications:</b> Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Perform common conversions (e.g., inches to feet or hours to minutes) Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)
<b>8.N.4</b> Represent numbers in scientific notation, and use them in calculations and problem situations.	<b>Numbers: Concepts &amp; Properties:</b> Order fractions
<b>8.N.5</b> Apply number theory concepts, including prime factorization and relatively prime numbers, to the solution of problems.	<b>Numbers: Concepts &amp; Properties:</b> Recognize one-digit factors of a number



TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
	<p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Find and use the least common multiple</p> <p>Work with numerical factors</p>
<p><b>8.N.6</b> Demonstrate an understanding of absolute value, e.g., <math> -3  =  3  = 3</math>.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>8.N.7</b> Apply the rules of powers and roots to the solution of problems. Extend the Order of Operations to include positive integer exponents and square roots.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p>
<p><b>8.N.8</b> Demonstrate an understanding of the properties of arithmetic operations on rational numbers. Use the associative, commutative, and distributive properties; properties of the identity and inverse elements (e.g., <math>-7 + 7 = 0</math>; <math>\frac{3}{4} \times \frac{4}{3} = 1</math>); and the notion of closure of a subset of the rational numbers under an operation (e.g., the set of odd integers is closed under multiplication but not under addition).</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>8.N.9</b> Use the inverse relationships of addition and subtraction, multiplication and division, and squaring and finding square roots to simplify computations and solve problems, e.g. multiplying by <math>\frac{1}{2}</math> or 0.5 is the same as dividing by 2.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<p><b>8.N.10</b> Estimate and compute with fractions (including simplification of fractions), integers, decimals, and percents (including those greater than 100 and less than 1).</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Recognize equivalent fractions and fractions in lowest terms</p> <p>Recognize one-digit factors of a number</p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>8.N.11</b> Determine when an estimate rather than an exact answer is appropriate and apply in problem situations.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>8.N.12</b> Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents—to solve problems with rational numbers (including negatives).</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<b>Patterns, Relations, and Algebra</b>	
Understand patterns, relations, and functions	
Represent and analyze mathematical situations and structures using algebraic symbols	
Use mathematical models to represent and understand quantitative relationships	
Analyze change in various contexts	
<p><b>8.P.1</b> Extend, represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic expressions. Include arithmetic and geometric progressions, e.g., compounding.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p><b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Exhibit knowledge of basic expressions (e.g., identify an expression for a total as <math>b + g</math>) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>
<p><b>8.P.2</b> Evaluate simple algebraic expressions for given variable values, e.g., <math>3a^2 - b</math> for <math>a = 3</math> and <math>b = 7</math>.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Substitute whole numbers for unknown quantities to evaluate expressions</p>
<p><b>8.P.3</b> Demonstrate an understanding of the identity <math>(-x)(-y) = xy</math>. Use this identity to simplify algebraic expressions, e.g., <math>(-2)(-x + 2) = 2x - 4</math>.</p>	
<p><b>8.P.4</b> Create and use symbolic expressions and relate them to verbal, tabular, and graphical representations.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Exhibit knowledge of basic expressions (e.g., identify an expression for a total as <math>b + g</math>) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>
<p><b>8.P.5</b> Identify the slope of a line as a measure of its steepness and as a constant rate of change from its table of values, equation, or graph. Apply the concept of slope to the solution of problems.</p>	<p><b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<b>8.P.6</b> Identify the roles of variables within an equation, e.g., $y = mx + b$ , expressing $y$ as a function of $x$ with parameters $m$ and $b$ .	
<b>8.P.7</b> Set up and solve linear equations and inequalities with one or two variables, using algebraic methods, models, and/or graphs.	<b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form $x + a = b$ , where $a$ and $b$ are whole numbers or decimals Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations
<b>8.P.8</b> Explain and analyze—both quantitatively and qualitatively, using pictures, graphs, charts, or equations—how a change in one variable results in a change in another variable in functional relationships, e.g., $C = \pi d$ , $A = \pi r^2$ ( $A$ as a function of $r$ ), $A_{\text{rectangle}} = lw$ ( $A_{\text{rectangle}}$ as a function of $l$ and $w$ ).	<b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)
<b>8.P.9</b> Use linear equations to model and analyze problems involving proportional relationships. Use technology as appropriate.	<b>Expressions, Equations, &amp; Inequalities:</b> Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$ ) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)
<b>8.P.10</b> Use tables and graphs to represent and compare linear growth patterns. In particular, compare rates of change and $x$ - and $y$ -intercepts of different linear patterns.	<b>Probability, Statistics, &amp; Data Analysis:</b> Translate from one representation of data to another (e.g., a bar graph to a circle graph)
<b>Geometry</b>  Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships  Specify locations and describe spatial relationships using coordinate geometry and other representational systems  Apply transformations and use symmetry to analyze mathematical situations  Use visualization, spatial reasoning, and geometric modeling to solve problems	
<b>8.G.1</b> Analyze, apply, and explain the relationship between the number of sides and the sums of the interior and exterior angle measures of polygons.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ )
<b>8.G.2</b> Classify figures in terms of congruence and similarity, and apply these relationships to the solution of problems.	

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<p><b>8.G.3</b> Demonstrate an understanding of the relationships of angles formed by intersecting lines, including parallel lines cut by a transversal.</p>	<p><b>Properties of Plane Figures:</b>                      Exhibit some knowledge of the angles associated with parallel lines                      Find the measure of an angle using properties of parallel lines                      Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)                      Use several angle properties to find an unknown angle measure</p>
<p><b>8.G.4</b> Demonstrate an understanding of the Pythagorean theorem. Apply the theorem to the solution of problems.</p>	
<p><b>8.G.5</b> Use a straightedge, compass, or other tools to formulate and test conjectures, and to draw geometric figures.</p>	
<p><b>8.G.6</b> Predict the results of transformations on unmarked or coordinate planes and draw the transformed figure, e.g., predict how tessellations transform under translations, reflections, and rotations.</p>	
<p><b>8.G.7</b> Identify three-dimensional figures (e.g., prisms, pyramids) by their physical appearance, distinguishing attributes, and spatial relationships such as parallel faces.</p>	
<p><b>8.G.8</b> Recognize and draw two-dimensional representations of three-dimensional objects, e.g., nets, projections, and perspective drawings.</p>	
<p><b>Measurement</b></p> <p>Understand measurable attributes of objects and the units, systems, and processes of measurement</p> <p>Apply appropriate techniques, tools, and formulas to determine measurements</p>	
<p><b>8.M.1</b> Select, convert (within the same system of measurement), and use appropriate units of measurement or scale.</p>	<p><b>Basic Operations &amp; Applications:</b>                      Perform common conversions (e.g., inches to feet or hours to minutes)                      Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>8.M.2</b> Given the formulas, convert from one system of measurement to another. Use technology as appropriate.</p>	<p><b>Basic Operations &amp; Applications:</b>                      Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<p><b>8.M.3</b> Demonstrate an understanding of the concepts and apply formulas and procedures for determining measures, including those of area and perimeter/circumference of parallelograms, trapezoids, and circles. Given the formulas, determine the surface area and volume of rectangular prisms, cylinders, and spheres. Use technology as appropriate.</p>	<p><b>Measurement:</b></p> <p>Compute the perimeter of polygons when all side lengths are given</p> <p>Compute the area of rectangles when whole number dimensions are given</p> <p>Compute the area and perimeter of triangles and rectangles in simple problems</p> <p>Use geometric formulas when all necessary information is given</p> <p>Compute the area of triangles and rectangles when one or more additional simple steps are required</p> <p>Compute the area and circumference of circles after identifying necessary information</p>
<p><b>8.M.4</b> Use ratio and proportion (including scale factors) in the solution of problems, including problems involving similar plane figures and indirect measurement.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Measurement:</b></p> <p>Compute the area of triangles and rectangles when one or more additional simple steps are required</p> <p>Compute the area and circumference of circles after identifying necessary information</p>
<p><b>8.M.5</b> Use models, graphs, and formulas to solve simple problems involving rates, e.g., velocity and density.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Solve real-world problems using first-degree equations</p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>

TABLE 2A

Massachusetts Grade 8 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, <b>organize</b>, and display <b>relevant data to answer them</b></p> <p><b>Select and use appropriate statistical methods to analyze data</b></p> <p><b>Develop and evaluate inferences and predictions that are based on data</b></p> <p><b>Understand and apply basic concepts of probability</b></p>	
<p><b>8.D.1</b> Describe the characteristics and limitations of a data sample. Identify different ways of selecting a sample, e.g., convenience sampling, responses to a survey, random sampling.</p>	
<p><b>8.D.2</b> <b>Select</b>, create, <b>interpret</b>, and utilize various <b>tabular and graphical representations of data</b>, e.g., circle graphs, Venn diagrams, scatterplots, stem-and-leaf plots, box-and-whisker plots, histograms, <b>tables, and charts</b>. Differentiate between continuous and discrete data and ways to represent them.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Perform a single computation using information from a table or chart</p> <p>Read tables and graphs</p> <p>Perform computations on data from tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Manipulate data from tables and graphs</p>
<p><b>8.D.3</b> <b>Find</b>, describe, and interpret <b>appropriate measures of central tendency (mean, median, and mode) and spread (range) that represent a set of data</b>. Use these notions to <b>compare different sets of data</b>.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Calculate the average of a list of positive whole numbers</p> <p>Calculate the average of a list of numbers</p> <p>Calculate the average, given the number of data values and the sum of the data values</p> <p>Calculate the average, given the frequency counts of all the data values</p>
<p><b>8.D.4</b> Use tree diagrams, tables, organized lists, basic combinatorics (“fundamental counting principle”), and area models to <b>compute probabilities for simple compound events</b>, e.g., multiple coin tosses or rolls of dice.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Use the relationship between the probability of an event and the probability of its complement</p> <p>Determine the probability of a simple event</p> <p>Compute straightforward probabilities for common situations</p>



TABLE 2B

Massachusetts Grades 9-10 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<p><b>10.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; and the inverse relationship between taking the <math>n^{\text{th}}</math> root of and the <math>n^{\text{th}}</math> power of a positive real number.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>10.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Work with squares and square roots of numbers</p>
<p><b>10.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., <math>\sqrt{3^2 - 1} \approx 2.8</math>.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p>
<p><b>10.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p>



TABLE 2B

Massachusetts Grades 9-10 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
	<p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>10.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>10.P.2</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Manipulate data from tables and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>
<p><b>10.P.3</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Combine like terms (e.g., <math>2x + 5x</math>)</p> <p>Add and subtract simple algebraic expressions</p>
<p><b>10.P.4</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms; factoring (e.g., <math>a^2 - b^2 = (a + b)(a - b)</math>, <math>x^2 + 10x + 21 = (x + 3)(x + 7)</math>, <math>5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)</math>); identifying and canceling common factors in rational expressions; and applying the properties of positive integer exponents.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Combine like terms (e.g., <math>2x + 5x</math>)</p> <p>Add and subtract simple algebraic expressions</p>
<p><b>10.P.5</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Identify solutions to simple quadratic equations</p>

TABLE 2B

Massachusetts Grades 9-10 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
<p><b>10.P.6</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., <math> x - 2  &gt; 5</math>) and apply to the solution of problems.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p> <p>Solve one-step equations having integer or decimal answers</p> <p>Solve routine first-degree equations</p> <p>Solve real-world problems using first-degree equations</p>
<p><b>10.P.7</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p> <p>Solve one-step equations having integer or decimal answers</p> <p>Solve routine first-degree equations</p> <p>Solve real-world problems using first-degree equations</p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>
<p><b>10.P.8</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems.</p>	
<p>Geometry</p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>10.G.1</b> Identify figures using properties of sides, angles, and diagonals. Identify the figures' type(s) of symmetry.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>)</p>
<p><b>10.G.2</b> Draw congruent and similar figures using a compass, straightedge, protractor, and other tools such as computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments.</p>	
<p><b>10.G.3</b> Recognize and solve problems involving angles formed by transversals of coplanar lines. Identify and determine the measure of central and inscribed angles and their associated minor and major arcs. Recognize and solve problems associated with radii, chords, and arcs within or on the same circle.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit some knowledge of the angles associated with parallel lines</p> <p>Find the measure of an angle using properties of parallel lines</p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>)</p>

TABLE 2B

Massachusetts Grades 9-10 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
	Use several angle properties to find an unknown angle measure
<b>10.G.4</b> Apply congruence and similarity correspondences (e.g., $\triangle ABC \cong \triangle XYZ$ ) and properties of the figures to find missing parts of geometric figures, and provide logical justification.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use several angle properties to find an unknown angle measure
<b>10.G.5</b> Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean theorem.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use several angle properties to find an unknown angle measure
<b>10.G.6</b> Use the properties of special triangles (e.g., isosceles, equilateral, $30^\circ - 60^\circ - 90^\circ$ , $45^\circ - 45^\circ - 90^\circ$ ) to solve problems.	
<b>10.G.7</b> Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.	<b>Graphical Representations:</b> Locate points on the number line and in the first quadrant Locate points in the coordinate plane
<b>10.G.8</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation.	
<b>10.G.9</b> Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solutions of problems.	<b>Probability, Statistics, &amp; Data Analysis:</b> Manipulate data from tables and graphs <b>Graphical Representations:</b> Locate points on the number line and in the first quadrant Locate points in the coordinate plane
<b>10.G.10</b> Demonstrate the ability to visualize solid objects and recognize their projections and cross sections.	
<b>10.G.11</b> Use vertex-edge graphs to model and solve problems.	
<b>Measurement</b>  Understand measurable attributes of objects and the units, systems, and processes of measurement  Apply appropriate techniques, tools, and formulas to determine measurements	
<b>10.M.1</b> Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.	<b>Measurement:</b> Compute the perimeter of polygons when all side lengths are given  Compute the area of rectangles when whole number dimensions are given

TABLE 2B

Massachusetts Grades 9-10 Mathematics Standards	EXPLORE Mathematics College Readiness Standards
	<p>Compute the area and perimeter of triangles and rectangles in simple problems</p> <p>Use geometric formulas when all necessary information is given</p> <p>Compute the area of triangles and rectangles when one or more additional simple steps are required</p> <p>Compute the area and circumference of circles after identifying necessary information</p>
<p><b>10.M.2</b> Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area.</p>	<p><b>Measurement:</b></p> <p>Use geometric formulas when all necessary information is given</p>
<p><b>10.M.3</b> Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume.</p>	<p><b>Measurement:</b></p> <p>Use geometric formulas when all necessary information is given</p>
<p><b>10.M.4</b> Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements.</p>	
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>10.D.1</b> Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, box-and-whisker plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Calculate the average of a list of positive whole numbers</p> <p>Perform a single computation using information from a table or chart</p> <p>Calculate the average of a list of numbers</p> <p>Read tables and graphs</p> <p>Perform computations on data from tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Calculate the average, given the frequency counts of all the data values</p> <p>Manipulate data from tables and graphs</p>
<p><b>10.D.2</b> Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.</p>	
<p><b>10.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.</p>	

TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<p><b>10.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; and the inverse relationship between taking the <math>n^{\text{th}}</math> root of and the <math>n^{\text{th}}</math> power of a positive real number.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p>
<p><b>10.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems.</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Work with squares and square roots of numbers</p> <p>Work problems involving positive integer exponents</p> <p>Work with cubes and cube roots of numbers</p> <p>Apply rules of exponents</p>

TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
<p><b>10.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., <math>\sqrt{3^2-1} \approx 2.8</math>.</p>	<p><b>Numbers: Concepts &amp; Properties:</b>                      Work with squares and square roots of numbers                      Work with cubes and cube roots of numbers</p>
<p><b>10.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers.</p>	<p><b>Basic Operations &amp; Applications:</b>                      Perform one-operation computation with whole numbers and decimals                      Solve problems in one or two steps using whole numbers                      Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent                      Solve some routine two-step arithmetic problems                      Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average                      Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)                      Solve word problems containing several rates, proportions, or percentages</p>
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>10.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships.</p>	<p><b>Numbers: Concepts &amp; Properties:</b>                      Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>10.P.2</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and <math>x</math>- and <math>y</math>-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope <math>y</math>-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b>                      Read tables and graphs                      Manipulate data from tables and graphs                      Interpret and use information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>                      Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)                      Write expressions, equations, and inequalities for common algebra settings</p> <p><b>Graphical Representations:</b>                      Exhibit knowledge of slope                      Determine the slope of a line from points or equations</p>



TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
	Interpret and use information from graphs in the coordinate plane
<p><b>10.P.3</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Combine like terms (e.g., <math>2x + 5x</math>)            Add and subtract simple algebraic expressions            Multiply two binomials            Add, subtract, and multiply polynomials            Manipulate expressions and equations</p>
<p><b>10.P.4</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms; factoring (e.g., <math>a^2 - b^2 = (a + b)(a - b)</math>, <math>x^2 + 10x + 21 = (x + 3)(x + 7)</math>, <math>5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)</math>); identifying and canceling common factors in rational expressions; and applying the properties of positive integer exponents.</p>	<p><b>Numbers: Concepts &amp; Properties:</b>            Work with squares and square roots of numbers            Work problems involving positive integer exponents            Apply rules of exponents</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>            Combine like terms (e.g., <math>2x + 5x</math>)            Add and subtract simple algebraic expressions            Multiply two binomials            Add, subtract, and multiply polynomials            Manipulate expressions and equations</p>
<p><b>10.P.5</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Identify solutions to simple quadratic equations            Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)            Solve quadratic equations</p>
<p><b>10.P.6</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., <math> x - 2  &gt; 5</math>) and apply to the solution of problems.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals            Solve one-step equations having integer or decimal answers            Solve routine first-degree equations            Solve real-world problems using first-degree equations            Solve first-degree inequalities that do not require reversing the inequality sign            Solve linear inequalities that require reversing the inequality sign            Solve absolute value equations</p>
<p><b>10.P.7</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals            Solve one-step equations having integer or decimal answers            Solve routine first-degree equations            Solve real-world problems using first-degree equations</p>

TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
	<p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p>
<p><b>10.P.8</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Find solutions to systems of linear equations</p>
<p>Geometry</p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>10.G.1</b> Identify figures using properties of sides, angles, and diagonals. Identify the figures' type(s) of symmetry.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)</p> <p>Use properties of isosceles triangles</p> <p>Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles</p>
<p><b>10.G.2</b> Draw congruent and similar figures using a compass, straightedge, protractor, and other tools such as computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments.</p>	
<p><b>10.G.3</b> Recognize and solve problems involving angles formed by transversals of coplanar lines. Identify and determine the measure of central and inscribed angles and their associated minor and major arcs. Recognize and solve problems associated with radii, chords, and arcs within or on the same circle.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit some knowledge of the angles associated with parallel lines</p> <p>Find the measure of an angle using properties of parallel lines</p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)</p> <p>Use several angle properties to find an unknown angle measure</p> <p>Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles</p>
<p><b>10.G.4</b> Apply congruence and similarity correspondences (e.g., <math>\triangle ABC \cong \triangle XYZ</math>) and properties of the figures to find missing parts of geometric figures, and provide logical justification.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)</p>



TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
	Use several angle properties to find an unknown angle measure Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles
<b>10.G.5</b> Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean theorem.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use several angle properties to find an unknown angle measure Recognize Pythagorean triples Use properties of isosceles triangles Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles Use the Pythagorean theorem
<b>10.G.6</b> Use the properties of special triangles (e.g., isosceles, equilateral, $30^\circ$ – $60^\circ$ – $90^\circ$ , $45^\circ$ – $45^\circ$ – $90^\circ$ ) to solve problems.	Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles
<b>10.G.7</b> Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.	<b>Graphical Representations:</b> Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Determine the slope of a line from points or equations Match linear graphs with their equations Find the midpoint of a line segment Interpret and use information from graphs in the coordinate plane Use the distance formula
<b>10.G.8</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation.	<b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point
<b>10.G.9</b> Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solutions of problems.	<b>Probability, Statistics, &amp; Data Analysis:</b> Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs <b>Graphical Representations:</b> Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane
<b>10.G.10</b> Demonstrate the ability to visualize solid objects and recognize their projections and cross sections.	

TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
<b>10.G.11</b> Use vertex-edge graphs to model and solve problems.	
<b>Measurement</b> Understand measurable attributes of objects and the units, systems, and processes of measurement Apply appropriate techniques, tools, and formulas to determine measurements	
<b>10.M.1</b> Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.	<b>Measurement:</b> Compute the perimeter of polygons when all side lengths are given Compute the area of rectangles when whole number dimensions are given Compute the area and perimeter of triangles and rectangles in simple problems Use geometric formulas when all necessary information is given Compute the area of triangles and rectangles when one or more additional simple steps are required Compute the area and circumference of circles after identifying necessary information Compute the perimeter of simple composite geometric figures with unknown side lengths Use relationships involving area, perimeter, and volume of geometric figures to compute another measure
<b>10.M.2</b> Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area.	<b>Measurement:</b> Use geometric formulas when all necessary information is given Use relationships involving area, perimeter, and volume of geometric figures to compute another measure
<b>10.M.3</b> Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume.	<b>Measurement:</b> Use geometric formulas when all necessary information is given Use relationships involving area, perimeter, and volume of geometric figures to compute another measure
<b>10.M.4</b> Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements.	

TABLE 2C

Massachusetts Grades 9-10 Mathematics Standards	PLAN Mathematics College Readiness Standards
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, <b>organize</b>, and display <b>relevant data to answer them</b></p> <p><b>Select and use appropriate statistical methods to analyze data</b></p> <p><b>Develop and evaluate inferences and predictions that are based on data</b></p> <p><b>Understand and apply basic concepts of probability</b></p>	
<p><b>10.D.1</b> <b>Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, box-and-whisker plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.</b></p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Calculate the average of a list of positive whole numbers</p> <p>Perform a single computation using information from a table or chart</p> <p>Calculate the average of a list of numbers</p> <p>Read tables and graphs</p> <p>Perform computations on data from tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Calculate the average, given the frequency counts of all the data values</p> <p>Manipulate data from tables and graphs</p> <p>Calculate or use a weighted average</p> <p>Interpret and use information from figures, tables, and graphs</p>
<p><b>10.D.2</b> <b>Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.</b></p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Write expressions, equations, and inequalities for common algebra settings</p>
<p><b>10.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data.</p>	

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<b>12.N.1</b> Define complex numbers (e.g., $a + bi$ ) and operations on them, in particular, addition, subtraction, multiplication, and division. Relate the system of complex numbers to the systems of real and rational numbers.	<b>Numbers: Concepts &amp; Properties:</b> Exhibit some knowledge of the complex numbers Multiply two complex numbers Apply properties of complex numbers
<b>12.N.2</b> Simplify numerical expressions with powers and roots, including fractional and negative exponents.	<b>Basic Operations &amp; Applications:</b> Solve word problems containing several rates, proportions, or percentages Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings) <b>Numbers: Concepts &amp; Properties:</b> Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers
<b>Patterns, Relations, and Algebra</b>	
Understand patterns, relations, and functions	
Represent and analyze mathematical situations and structures using algebraic symbols	
Use mathematical models to represent and understand quantitative relationships	
Analyze change in various contexts	
<b>12.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle.	<b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Apply number properties involving prime factorization Apply number properties involving even/odd numbers and factors/multiples Apply number properties involving positive/negative numbers

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	<p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>12.P.2</b> Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the general term and sum recursively and explicitly.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p>Exhibit knowledge of logarithms and geometric sequences</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>12.P.3</b> Demonstrate an understanding of the binomial theorem and use it in the solution of problems.</p>	
<p><b>12.P.4</b> Demonstrate an understanding of the trigonometric, exponential, and logarithmic functions.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p>Exhibit knowledge of logarithms and geometric sequences</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Functions:</b></p> <p>Match graphs of basic trigonometric functions with their equations</p>
<p><b>12.P.5</b> Perform operations on functions, including composition. Find inverses of functions.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Functions:</b></p> <p>Evaluate composite functions at integer values</p>

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	Write an expression for the composite of two simple functions
<p><b>12.P.6</b> Given algebraic, numeric and/or graphical representations, recognize functions as polynomial, rational, logarithmic, exponential, or trigonometric.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of logarithms and geometric sequences</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math> Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>12.P.7</b> Find solutions to quadratic equations (with real coefficients and real or complex roots) and apply to the solutions of problems.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Identify solutions to simple quadratic equations Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve quadratic equations Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>12.P.8</b> Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula; use technology where appropriate. Include polynomial, exponential, logarithmic, and trigonometric functions; expressions involving absolute values; trigonometric relations; and simple rational expressions.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p>

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	<p>Solve one-step equations having integer or decimal answers</p> <p>Evaluate algebraic expressions by substituting integers for unknown quantities</p> <p>Solve routine first-degree equations</p> <p>Solve real-world problems using first-degree equations</p> <p>Identify solutions to simple quadratic equations</p> <p>Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)</p> <p>Solve first-degree inequalities that do not require reversing the inequality sign</p> <p>Solve linear inequalities that require reversing the inequality sign</p> <p>Solve absolute value equations</p> <p>Solve quadratic equations</p> <p>Find solutions to systems of linear equations</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p>Solve simple absolute value inequalities</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate quadratic functions, expressed in function notation, at integer values</p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Evaluate composite functions at integer values</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Write an expression for the composite of two simple functions</p> <p>Use trigonometric concepts and basic identities to solve problems</p> <p>Exhibit knowledge of unit circle trigonometry</p>



TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	Match graphs of basic trigonometric functions with their equations
<p><b>12.P.9</b> Use matrices to solve systems of linear equations. Apply to the solution of everyday problems.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>12.P.10</b> Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Also use technology where appropriate. Describe the relationships among the methods.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Find solutions to systems of linear equations Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math> Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>12.P.11</b> Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, trigonometric, and step functions, absolute values, and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include growth and decay; joint (e.g., <math>I = Prt</math>, <math>y = k(w_1 + w_2)</math>) and combined (<math>F = G\left(\frac{m_1 m_2}{d^2}\right)</math>) variation, and periodic processes.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving Solve simple absolute value inequalities</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane</p>



TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	<p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate quadratic functions, expressed in function notation, at integer values</p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Evaluate composite functions at integer values</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Write an expression for the composite of two simple functions</p> <p>Use trigonometric concepts and basic identities to solve problems</p> <p>Exhibit knowledge of unit circle trigonometry</p> <p>Match graphs of basic trigonometric functions with their equations</p>
<p><b>12.P.12</b> Relate the slope of a tangent line at a specific point on a curve to the instantaneous rate of change. Identify maximum and minimum values of functions in simple situations. Apply these concepts to the solution of problems.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
<p><b>12.P.13</b> Describe the translations and scale changes of a given function <math>f(x)</math> resulting from substitutions for the various parameters <math>a</math>, <math>b</math>, <math>c</math>, and <math>d</math> in <math>y = af(b(x + \frac{c}{b})) + d</math>. In particular, describe the effect of such changes on polynomial, rational, exponential, logarithmic, and trigonometric functions.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Evaluate composite functions at integer values</p> <p>Write an expression for the composite of two simple functions</p>
<p><b>Geometry</b></p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>12.G.1</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.</p>	<p><b>Functions:</b></p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Use trigonometric concepts and basic identities to solve problems</p>
<p><b>12.G.2</b> Derive and apply basic trigonometric identities (e.g., <math>\sin^2\theta + \cos^2\theta = 1</math>, <math>\tan^2\theta + 1 = \sec^2\theta</math>) and the laws of sines and cosines.</p>	<p><b>Functions:</b></p> <p>Use trigonometric concepts and basic identities to solve problems</p>

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
<p><b>12.G.3</b> Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and geometrically. Use vector methods to obtain geometric results.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Numbers: Concepts &amp; Properties:</b> Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p><b>Graphical Representations:</b> Solve problems integrating multiple algebraic and/or geometric concepts</p> <p><b>Properties of Plane Figures:</b> Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>12.G.4</b> Relate geometric and algebraic representations of lines, simple curves, and conic sections.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math> Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Properties of Plane Figures:</b> Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>12.G.5</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.</p>	<p><b>Properties of Plane Figures:</b> Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>) Use several angle properties to find an unknown angle measure</p>

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
	<p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p> <p>Use relationships among angles, arcs, and distances in a circle</p>
<p><b>Measurement</b></p> <p>Understand measurable attributes of objects and the units, systems, and processes of measurement</p> <p>Apply appropriate techniques, tools, and formulas to determine measurements</p>	
<p><b>12.M.1</b> Describe the relationship between degree and radian measures, and use radian measure in the solution of problems, in particular, problems involving angular velocity and acceleration.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Use several angle properties to find an unknown angle measure</p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p> <p>Use relationships among angles, arcs, and distances in a circle</p>
<p><b>12.M.2</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense.</p>	
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>12.D.1</b> Design surveys and apply random sampling techniques to avoid bias in the data collection.</p>	
<p><b>12.D.2</b> Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>
<p><b>12.D.3</b> Apply regression results and curve fitting to make predictions from data.</p>	

TABLE 2D

Massachusetts Grades 11-12 Mathematics Standards	ACT Mathematics College Readiness Standards
<p><b>12.D.4</b> Apply uniform, normal, and binomial distributions to the solutions of problems.</p>	
<p><b>12.D.5</b> Describe a set of frequency distribution data by spread (i.e., variance and standard deviation), skewness, symmetry, number of modes, or other characteristics. Use these concepts in everyday applications.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Perform a single computation using information from a table or chart</p> <p>Read tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>
<p><b>12.D.6</b> Use combinatorics (e.g., “fundamental counting principle,” permutations, and combinations) to solve problems, in particular, to compute probabilities of compound events. Use technology as appropriate.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Use the relationship between the probability of an event and the probability of its complement</p> <p>Exhibit knowledge of simple counting techniques</p> <p>Compute straightforward probabilities for common situations</p> <p>Apply counting techniques</p> <p>Compute a probability when the event and/or sample space are not given or obvious</p> <p>Exhibit knowledge of conditional and joint probability</p>
<p><b>12.D.7</b> Compare the results of simulations (e.g., random number tables, random functions, and area models) with predicted probabilities.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Use the relationship between the probability of an event and the probability of its complement</p> <p>Exhibit knowledge of simple counting techniques</p> <p>Compute straightforward probabilities for common situations</p> <p>Apply counting techniques</p> <p>Compute a probability when the event and/or sample space are not given or obvious</p> <p>Exhibit knowledge of conditional and joint probability</p>

TABLE 2E

Massachusetts Grades 11-12 Mathematics Standards	WorkKeys Applied Mathematics Skills
<p><b>Number Sense and Operations</b></p> <p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p> <p>Understand meanings of operations and how they relate to one another</p> <p>Compute fluently and make reasonable estimates</p>	
<p><b>12.N.1</b> Define complex numbers (e.g., <math>a + bi</math>) and operations on them, in particular, addition, subtraction, multiplication, and division. Relate the system of complex numbers to the systems of real and rational numbers.</p>	
<p><b>12.N.2</b> Simplify numerical expressions with powers and roots, including fractional and negative exponents.</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Calculate perimeters and areas of basic shapes (rectangles and circles)</p> <p>Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations</p> <p>Find the volume of rectangular solids</p> <p>Calculate multiple areas and volumes of spheres, cylinders, or cones</p>
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>12.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle.</p>	
<p><b>12.P.2</b> Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the general term and sum recursively and explicitly.</p>	
<p><b>12.P.3</b> Demonstrate an understanding of the binomial theorem and use it in the solution of problems.</p>	
<p><b>12.P.4</b> Demonstrate an understanding of the trigonometric, exponential, and logarithmic functions.</p>	

TABLE 2E

Massachusetts Grades 11-12 Mathematics Standards	WorkKeys Applied Mathematics Skills
<p><b>12.P.5</b> Perform operations on functions, including composition. Find inverses of functions.</p>	
<p><b>12.P.6</b> Given algebraic, numeric and/or graphical representations, recognize functions as polynomial, rational, logarithmic, exponential, or trigonometric.</p>	
<p><b>12.P.7</b> Find solutions to quadratic equations (with real coefficients and real or complex roots) and apply to the solutions of problems.</p>	
<p><b>12.P.8</b> Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula; use technology where appropriate. Include polynomial, exponential, logarithmic, and trigonometric functions; expressions involving absolute values; trigonometric relations; and simple rational expressions.</p>	<p>Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers</p> <p>Solve problems that require one or two operations</p> <p>Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals</p> <p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Rearrange a formula before solving a problem</p> <p>Calculate multiple rates</p> <p>Solve problems that include nonlinear functions and/or that involve more than one unknown</p> <p>Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages</p> <p>Set up and manipulate complex ratios or proportions</p>
<p><b>12.P.9</b> Use matrices to solve systems of linear equations. Apply to the solution of everyday problems.</p>	
<p><b>12.P.10</b> Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Also use technology where appropriate. Describe the relationships among the methods.</p>	
<p><b>12.P.11</b> Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, trigonometric, and step functions, absolute values, and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include growth and decay; joint (e.g., <math>I = Prt</math>, <math>y = k(w_1 + w_2)</math>) and combined (<math>F = G\left(\frac{m_1 m_2}{d^2}\right)</math>) variation, and periodic processes.</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Rearrange a formula before solving a problem</p> <p>Find mistakes in items that belong at Levels 3, 4, and 5</p> <p>Find the best deal and use the result for another calculation</p>



TABLE 2E

Massachusetts Grades 11-12 Mathematics Standards	WorkKeys Applied Mathematics Skills
	Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Find the volume of rectangular solids Calculate multiple rates Find mistakes in Level 6 items Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages Calculate multiple areas and volumes of spheres, cylinders, or cones Set up and manipulate complex ratios or proportions Find the best deal when there are several choices
<b>12.P.12</b> Relate the slope of a tangent line at a specific point on a curve to the instantaneous rate of change. Identify maximum and minimum values of functions in simple situations. Apply these concepts to the solution of problems.	
<b>12.P.13</b> Describe the translations and scale changes of a given function $f(x)$ resulting from substitutions for the various parameters $a$ , $b$ , $c$ , and $d$ in $y = af(b(x + \frac{c}{b})) + d$ . In particular, describe the effect of such changes on polynomial, rational, exponential, logarithmic, and trigonometric functions.	
<p><b>Geometry</b></p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<b>12.G.1</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.	
<b>12.G.2</b> Derive and apply basic trigonometric identities (e.g., $\sin^2\theta + \cos^2\theta = 1$ , $\tan^2\theta + 1 = \sec^2\theta$ ) and the laws of sines and cosines.	
<b>12.G.3</b> Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and geometrically. Use vector methods to obtain geometric results.	
<b>12.G.4</b> Relate geometric and algebraic representations of lines, simple curves, and conic sections.	



TABLE 2E

Massachusetts Grades 11-12 Mathematics Standards	WorkKeys Applied Mathematics Skills
<p><b>12.G.5</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.</p>	
<p><b>Measurement</b></p> <p>Understand measurable attributes of objects and the units, systems, and processes of measurement</p> <p>Apply appropriate techniques, tools, and formulas to determine measurements</p>	
<p><b>12.M.1</b> Describe the relationship between degree and radian measures, and use radian measure in the solution of problems, in particular, problems involving angular velocity and acceleration.</p>	
<p><b>12.M.2</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense.</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Look up a formula and perform single-step conversions within or between systems of measurement</p> <p>Rearrange a formula before solving a problem</p> <p>Use two formulas to change from one unit to another within the same system of measurement</p> <p>Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement</p> <p>Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages</p> <p>Set up and manipulate complex ratios or proportions</p>
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>12.D.1</b> Design surveys and apply random sampling techniques to avoid bias in the data collection.</p>	
<p><b>12.D.2</b> Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data.</p>	
<p><b>12.D.3</b> Apply regression results and curve fitting to make predictions from data.</p>	
<p><b>12.D.4</b> Apply uniform, normal, and binomial distributions to the solutions of problems.</p>	

TABLE 2E

Massachusetts Grades 11-12 Mathematics Standards	WorkKeys Applied Mathematics Skills
<p><b>12.D.5</b> Describe a set of frequency distribution data by spread (i.e., variance and standard deviation), skewness, symmetry, number of modes, or other characteristics. Use these concepts in everyday applications.</p>	
<p><b>12.D.6</b> Use combinatorics (e.g., “fundamental counting principle,” permutations, and combinations) to solve problems, in particular, to compute probabilities of compound events. Use technology as appropriate.</p>	
<p><b>12.D.7</b> Compare the results of simulations (e.g., random number tables, random functions, and area models) with predicted probabilities.</p>	

TABLE 2F

Massachusetts Algebra I Standards	EXPLORE Mathematics College Readiness Standards
<p><b>Number Sense and Operations</b></p>	
<p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p>	
<p>Understand meanings of operations and how they relate to one another</p>	
<p>Compute fluently and make reasonable estimates</p>	
<p><b>AI.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; the inverse relationship between taking the <math>n</math>th root of and the <math>n</math>th power of a positive real number; and the density of the set of rational numbers in the set of real numbers. (10.N.1)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>AI.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems. (10.N.2)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Work with squares and square roots of numbers</p>
<p><b>AI.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., <math>\sqrt{3^2 - 1} \approx 2.8</math>. (10.N.3)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p>
<p><b>AI.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers. (10.N.4)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p>

TABLE 2F

Massachusetts Algebra I Standards	EXPLORE Mathematics College Readiness Standards
	<p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>AI.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships. (10.P.1)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>AI.P.2</b> Use properties of the real number system to judge the validity of equations and inequalities, to prove or disprove statements, and to justify every step in a sequential argument.</p>	
<p><b>AI.P.3</b> Demonstrate an understanding of relations and functions. Identify the domain, range, dependent, and independent variables of functions.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Substitute whole numbers for unknown quantities to evaluate expressions</p> <p>Evaluate algebraic expressions by substituting integers for unknown quantities</p>
<p><b>AI.P.4</b> Translate between different representations of functions and relations: graphs, equations, point sets, and tabular.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Manipulate data from tables and graphs</p>
<p><b>AI.P.5</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Manipulate data from tables and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p>

TABLE 2F

Massachusetts Algebra I Standards	EXPLORE Mathematics College Readiness Standards
<b>AI.P.6</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation. (10.G.8)	
<b>AI.P.7</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials. (10.P.3)	<b>Expressions, Equations, &amp; Inequalities:</b> Combine like terms (e.g., $2x + 5x$ ) Add and subtract simple algebraic expressions
<b>AI.P.8</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$ , $x^2 + 10x + 21 = (x + 3)(x + 7)$ , $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$ ), identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents. (10.P.4)	<b>Numbers: Concepts &amp; Properties:</b> Work with squares and square roots of numbers <b>Expressions, Equations, &amp; Inequalities:</b> Combine like terms (e.g., $2x + 5x$ ) Add and subtract simple algebraic expressions
<b>AI.P.9</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods. (10.P.5)	<b>Expressions, Equations, &amp; Inequalities:</b> Identify solutions to simple quadratic equations
<b>AI.P.10</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., $ x - 2  > 5$ ) and apply to the solution of problems. (10.P.6)	<b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form $x + a = b$ , where $a$ and $b$ are whole numbers or decimals Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations
<b>AI.P.11</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate. (10.P.7)	<b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form $x + a = b$ , where $a$ and $b$ are whole numbers or decimals Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)
<b>AI.P.12</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems. (10.P.8)	

TABLE 2F

Massachusetts Algebra I Standards	EXPLORE Mathematics College Readiness Standards
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, <b>organize</b>, and display <b>relevant data to answer them</b></p> <p><b>Select and use appropriate statistical methods to analyze data</b></p> <p><b>Develop and evaluate inferences and predictions that are based on data</b></p> <p><b>Understand and apply basic concepts of probability</b></p>	
<p><b>AI.D.1</b> <b>Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.</b> (10.D.1)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <ul style="list-style-type: none"> <li>Calculate the average of a list of positive whole numbers</li> <li>Perform a single computation using information from a table or chart</li> <li>Calculate the average of a list of numbers</li> <li>Read tables and graphs</li> <li>Perform computations on data from tables and graphs</li> <li>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</li> <li>Calculate the average, given the frequency counts of all the data values</li> <li>Manipulate data from tables and graphs</li> </ul>
<p><b>AI.D.2</b> <b>Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate.</b> (10.D.2)</p>	
<p><b>AI.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data. (10.D.3)</p>	

TABLE 2G

Massachusetts Algebra I Standards	PLAN Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<p><b>AI.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; the inverse relationship between taking the <math>n</math>th root of and the <math>n</math>th power of a positive real number; and the density of the set of rational numbers in the set of real numbers. (10.N.1)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p>
<p><b>AI.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems. (10.N.2)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Work with squares and square roots of numbers</p> <p>Work problems involving positive integer exponents</p> <p>Work with cubes and cube roots of numbers</p> <p>Apply rules of exponents</p>

TABLE 2G

Massachusetts Algebra I Standards	PLAN Mathematics College Readiness Standards
<b>AI.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., $\sqrt{3^2 - 1} \approx 2.8$ . (10.N.3)	<b>Numbers: Concepts &amp; Properties:</b> Work with squares and square roots of numbers Work with cubes and cube roots of numbers
<b>AI.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers. (10.N.4)	<b>Basic Operations &amp; Applications:</b> Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour) Solve word problems containing several rates, proportions, or percentages
<b>Patterns, Relations, and Algebra</b> Understand patterns, relations, and functions Represent and analyze mathematical situations and structures using algebraic symbols Use mathematical models to represent and understand quantitative relationships Analyze change in various contexts	
<b>AI.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships. (10.P.1)	<b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
<b>AI.P.2</b> Use properties of the real number system to judge the validity of equations and inequalities, to prove or disprove statements, and to justify every step in a sequential argument.	
<b>AI.P.3</b> Demonstrate an understanding of relations and functions. Identify the domain, range, dependent, and independent variables of functions.	<b>Expressions, Equations, &amp; Inequalities:</b> Substitute whole numbers for unknown quantities to evaluate expressions Evaluate algebraic expressions by substituting integers for unknown quantities <b>Numbers: Concepts &amp; Properties:</b> Determine when an expression is undefined



TABLE 2G

Massachusetts Algebra I Standards	PLAN Mathematics College Readiness Standards
<p><b>AI.P.4</b> Translate between different representations of functions and relations: graphs, equations, point sets, and tabular.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b>  Read tables and graphs  Manipulate data from tables and graphs  Interpret and use information from figures, tables, and graphs</p>
<p><b>AI.P.5</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b>  Read tables and graphs  Manipulate data from tables and graphs  Interpret and use information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>  Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)  Write expressions, equations, and inequalities for common algebra settings</p> <p><b>Graphical Representations:</b>  Exhibit knowledge of slope  Determine the slope of a line from points or equations  Interpret and use information from graphs in the coordinate plane</p>
<p><b>AI.P.6</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the "point-slope" form of the equation. (10.G.8)</p>	
<p><b>AI.P.7</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials. (10.P.3)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>  Combine like terms (e.g., <math>2x + 5x</math>)  Add and subtract simple algebraic expressions  Multiply two binomials  Add, subtract, and multiply polynomials  Manipulate expressions and equations</p>
<p><b>AI.P.8</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., <math>a^2 - b^2 = (a + b)(a - b)</math>, <math>x^2 + 10x + 21 = (x + 3)(x + 7)</math>, <math>5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)</math>), identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents. (10.P.4)</p>	<p><b>Numbers: Concepts &amp; Properties:</b>  Work with squares and square roots of numbers  Work problems involving positive integer exponents  Apply rules of exponents</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>  Combine like terms (e.g., <math>2x + 5x</math>)  Add and subtract simple algebraic expressions  Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)  Solve quadratic equations</p>

TABLE 2G

Massachusetts Algebra I Standards	PLAN Mathematics College Readiness Standards
<p><b>AI.P.9</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods. (10.P.5)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Identify solutions to simple quadratic equations</p> <p>Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)</p> <p>Solve quadratic equations</p>
<p><b>AI.P.10</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., <math> x - 2  &gt; 5</math>) and apply to the solution of problems. (10.P.6)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p> <p>Solve one-step equations having integer or decimal answers</p> <p>Solve routine first-degree equations</p> <p>Solve real-world problems using first-degree equations</p> <p>Solve first-degree inequalities that do not require reversing the inequality sign</p> <p>Solve linear inequalities that require reversing the inequality sign</p> <p>Solve absolute value equations</p>
<p><b>AI.P.11</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate. (10.P.7)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p> <p>Solve one-step equations having integer or decimal answers</p> <p>Solve routine first-degree equations</p> <p>Solve real-world problems using first-degree equations</p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p>
<p><b>AI.P.12</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems. (10.P.8)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Find solutions to systems of linear equations</p>

TABLE 2G

Massachusetts Algebra I Standards	PLAN Mathematics College Readiness Standards
<b>Data Analysis, Statistics, and Probability</b>	
Formulate questions that can be addressed with data and collect, <b>organize</b> , and display <b>relevant data to answer them</b>	
<b>Select and use appropriate statistical methods to analyze data</b>	
<b>Develop and evaluate inferences and predictions that are based on data</b>	
<b>Understand and apply basic concepts of probability</b>	
<p><b>AI.D.1</b> <b>Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data. (10.D.1)</b></p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <ul style="list-style-type: none"> <li>Calculate the average of a list of positive whole numbers</li> <li>Perform a single computation using information from a table or chart</li> <li>Calculate the average of a list of numbers</li> <li>Read tables and graphs</li> <li>Perform computations on data from tables and graphs</li> <li>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</li> <li>Calculate the average, given the frequency counts of all the data values</li> <li>Manipulate data from tables and graphs</li> <li>Calculate or use a weighted average</li> <li>Interpret and use information from figures, tables, and graphs</li> </ul>
<p><b>AI.D.2</b> <b>Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate. (10.D.2)</b></p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <ul style="list-style-type: none"> <li>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</li> <li>Write expressions, equations, and inequalities for common algebra settings</li> </ul>
<p><b>AI.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data. (10.D.3)</p>	

TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<p><b>AI.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; the inverse relationship between taking the <math>n</math>th root of and the <math>n</math>th power of a positive real number; and the density of the set of rational numbers in the set of real numbers. (10.N.1)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p> <p>Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings)</p>
<p><b>AI.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems. (10.N.2)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p> <p>Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings)</p>

TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p> <p>Work with squares and square roots of numbers</p> <p>Work problems involving positive integer exponents</p> <p>Work with cubes and cube roots of numbers</p> <p>Apply rules of exponents</p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p>
<p><b>AI.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., <math>\sqrt{3^2-1} \approx 2.8</math>. (10.N.3)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p> <p>Work with cubes and cube roots of numbers</p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p>
<p><b>AI.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers. (10.N.4)</p>	<p><b>Basic Operations &amp; Applications:</b></p> <p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p> <p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p> <p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p> <p>Solve word problems containing several rates, proportions, or percentages</p> <p>Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings)</p>

TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>AI.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships. (10.P.1)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>
<p><b>AI.P.2</b> Use properties of the real number system to judge the validity of equations and inequalities, to prove or disprove statements, and to justify every step in a sequential argument.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p>
<p><b>AI.P.3</b> Demonstrate an understanding of relations and functions. Identify the domain, range, dependent, and independent variables of functions.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Substitute whole numbers for unknown quantities to evaluate expressions</p> <p>Evaluate algebraic expressions by substituting integers for unknown quantities</p> <p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Determine when an expression is undefined</p> <p><b>Functions:</b></p> <p>Evaluate quadratic functions, expressed in function notation, at integer values</p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p>
<p><b>AI.P.4</b> Translate between different representations of functions and relations: graphs, equations, point sets, and tabular.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>
<p><b>AI.P.5</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and <math>x</math>- and <math>y</math>-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope <math>y</math>-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>

TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Exhibit knowledge of slope</p> <p>Determine the slope of a line from points or equations</p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>AI.P.6</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation. (10.G.8)</p>	
<p><b>AI.P.7</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials. (10.P.3)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Combine like terms (e.g., <math>2x + 5x</math>)</p> <p>Add and subtract simple algebraic expressions</p> <p>Multiply two binomials</p> <p>Add, subtract, and multiply polynomials</p> <p>Manipulate expressions and equations</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>AI.P.8</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., <math>a^2 - b^2 = (a + b)(a - b)</math>, <math>x^2 + 10x + 21 = (x + 3)(x + 7)</math>, <math>5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)</math>), identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents. (10.P.4)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work with squares and square roots of numbers</p> <p>Work problems involving positive integer exponents</p> <p>Apply rules of exponents</p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p>



TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Combine like terms (e.g., <math>2x + 5x</math>)            Add and subtract simple algebraic expressions            Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)            Solve quadratic equations            Write expressions that require planning and/or manipulating to accurately model a situation            Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>AI.P.9</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods. (10.P.5)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Identify solutions to simple quadratic equations            Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)            Solve quadratic equations            Write expressions that require planning and/or manipulating to accurately model a situation            Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>AI.P.10</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., <math> x - 2  &gt; 5</math>) and apply to the solution of problems. (10.P.6)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals            Solve one-step equations having integer or decimal answers            Solve routine first-degree equations            Solve real-world problems using first-degree equations            Solve first-degree inequalities that do not require reversing the inequality sign            Solve linear inequalities that require reversing the inequality sign            Solve absolute value equations            Write expressions that require planning and/or manipulating to accurately model a situation            Write equations and inequalities that require planning, manipulating, and/or solving            Solve simple absolute value inequalities</p>
<p><b>AI.P.11</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate. (10.P.7)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b>            Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals            Solve one-step equations having integer or decimal answers            Solve routine first-degree equations            Solve real-world problems using first-degree equations</p>



TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
	<p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>AI.P.12</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems. (10.P.8)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Find solutions to systems of linear equations</p>
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>AI.D.1</b> Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data. (10.D.1)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Calculate the average of a list of positive whole numbers</p> <p>Perform a single computation using information from a table or chart</p> <p>Calculate the average of a list of numbers</p> <p>Read tables and graphs</p> <p>Perform computations on data from tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Calculate the average, given the frequency counts of all the data values</p> <p>Manipulate data from tables and graphs</p> <p>Calculate or use a weighted average</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Distinguish between mean, median, and mode for a list of numbers</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>

TABLE 2H

Massachusetts Algebra I Standards	ACT Mathematics College Readiness Standards
<p><b>AI.D.2</b> Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate. (10.D.2)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>AI.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data. (10.D.3)</p>	

TABLE 21

Massachusetts Algebra I Standards	WorkKeys Applied Mathematics Skills
<p><b>Number Sense and Operations</b></p> <p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p> <p>Understand meanings of operations and how they relate to one another</p> <p>Compute fluently and make reasonable estimates</p>	
<p><b>AI.N.1</b> Identify and use the properties of operations on real numbers, including the associative, commutative, and distributive properties; the existence of the identity and inverse elements for addition and multiplication; the existence of <math>n</math>th roots of positive real numbers for any positive integer <math>n</math>; the inverse relationship between taking the <math>n</math>th root of and the <math>n</math>th power of a positive real number; and the density of the set of rational numbers in the set of real numbers. (10.N.1)</p>	<p>Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers</p> <p>Solve problems that require one or two operations</p> <p>Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals</p> <p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Solve problems that include nonlinear functions and/or that involve more than one unknown</p> <p>Set up and manipulate complex ratios or proportions</p>
<p><b>AI.N.2</b> Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., <math>3(2^4 - 1) = 45</math>, <math>4 3 - 5  + 6 = 14</math>; apply such simplifications in the solution of problems. (10.N.2)</p>	
<p><b>AI.N.3</b> Find the approximate value for solutions to problems involving square roots and cube roots without the use of a calculator, e.g., <math>\sqrt{3^2 - 1} \approx 2.8</math>. (10.N.3)</p>	
<p><b>AI.N.4</b> Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers. (10.N.4)</p>	
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>AI.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative, recursive (e.g., Fibonacci Numbers), linear, quadratic, and exponential functional relationships. (10.P.1)</p>	

TABLE 21

Massachusetts Algebra I Standards	WorkKeys Applied Mathematics Skills
<b>AI.P.2</b> Use properties of the real number system to judge the validity of equations and inequalities, to prove or disprove statements, and to justify every step in a sequential argument.	
<b>AI.P.3</b> Demonstrate an understanding of relations and functions. Identify the domain, range, dependent, and independent variables of functions.	
<b>AI.P.4</b> Translate between different representations of functions and relations: graphs, equations, point sets, and tabular.	
<b>AI.P.5</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)	
<b>AI.P.6</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the "point-slope" form of the equation. (10.G.8)	
<b>AI.P.7</b> Add, subtract, and multiply polynomials. Divide polynomials by monomials. (10.P.3)	
<b>AI.P.8</b> Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$ , $x^2 + 10x + 21 = (x + 3)(x + 7)$ , $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$ ), identifying and canceling common factors in rational expressions, and applying the properties of positive integer exponents. (10.P.4)	
<b>AI.P.9</b> Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods. (10.P.5)	
<b>AI.P.10</b> Solve equations and inequalities including those involving absolute value of linear expressions (e.g., $ x - 2  > 5$ ) and apply to the solution of problems. (10.P.6)	

TABLE 21

Massachusetts Algebra I Standards	WorkKeys Applied Mathematics Skills
<p><b>AI.P.11</b> Solve everyday problems that can be modeled using linear, reciprocal, quadratic, or exponential functions. Apply appropriate tabular, graphical, or symbolic methods to the solution. Include compound interest, and direct and inverse variation problems. Use technology when appropriate. (10.P.7)</p>	<p>Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers</p> <p>Solve problems that require one or two operations</p> <p>Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals</p> <p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Calculate perimeters and areas of basic shapes (rectangles and circles)</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Rearrange a formula before solving a problem</p> <p>Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations</p> <p>Find the volume of rectangular solids</p> <p>Solve problems that include nonlinear functions and/or that involve more than one unknown</p> <p>Calculate multiple areas and volumes of spheres, cylinders, or cones</p> <p>Set up and manipulate complex ratios or proportions</p>
<p><b>AI.P.12</b> Solve everyday problems that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution. Use technology when appropriate. Include mixture, rate, and work problems. (10.P.8)</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Look up a formula and perform single-step conversions within or between systems of measurement</p> <p>Rearrange a formula before solving a problem</p> <p>Use two formulas to change from one unit to another within the same system of measurement</p> <p>Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement</p> <p>Calculate multiple rates</p> <p>Set up and manipulate complex ratios or proportions</p>

TABLE 21

Massachusetts Algebra I Standards	WorkKeys Applied Mathematics Skills
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>AI.D.1</b> Select, create, and interpret an appropriate graphical representation (e.g., scatterplot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data. (10.D.1)</p>	
<p><b>AI.D.2</b> Approximate a line of best fit (trend line) given a set of data (e.g., scatterplot). Use technology when appropriate. (10.D.2)</p>	
<p><b>AI.D.3</b> Describe and explain how the relative sizes of a sample and the population affect the validity of predictions from a set of data. (10.D.3)</p>	

TABLE 2J

Massachusetts Geometry Standards	PLAN Mathematics College Readiness Standards
<b>Geometry</b>	
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
Apply transformations and use symmetry to analyze mathematical situations	
Use visualization, spatial reasoning, and geometric modeling to solve problems	
<b>G.G.1</b> Recognize special types of polygons (e.g., isosceles triangles, parallelograms, and rhombuses). Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons. Draw and label sets of points such as line segments, rays, and circles. Detect symmetries of geometric figures.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use properties of isosceles triangles Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles
<b>G.G.2</b> Write simple proofs of theorems in geometric situations, such as theorems about congruent and similar figures, parallel or perpendicular lines. Distinguish between postulates and theorems. Use inductive and deductive reasoning, as well as proof by contradiction. Given a conditional statement, write its inverse, converse, and contrapositive.	
<b>G.G.3</b> Apply formulas for a rectangular coordinate system to prove theorems.	
<b>G.G.4</b> Draw congruent and similar figures using a compass, straightedge, protractor, or computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments. (10.G.2)	
<b>G.G.5</b> Apply congruence and similarity correspondences (e.g., $\triangle ABC \cong \triangle XYZ$ ) and properties of the figures to find missing parts of geometric figures, and provide logical justification. (10.G.4)	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use several angle properties to find an unknown angle measure Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles
<b>G.G.6</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.	<b>Properties of Plane Figures:</b> Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Use several angle properties to find an unknown angle measure

TABLE 2J

Massachusetts Geometry Standards	PLAN Mathematics College Readiness Standards
<p><b>G.G.7</b> Solve simple triangle problems using the triangle angle sum property, and/or the Pythagorean theorem. (10.G.5)</p>	<p><b>Properties of Plane Figures:</b>                      Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>)                      Use several angle properties to find an unknown angle measure                      Recognize Pythagorean triples                      Use properties of isosceles triangles                      Apply properties of <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, similar, and congruent triangles                      Use the Pythagorean theorem</p>
<p><b>G.G.8</b> Use the properties of special triangles (e.g., isosceles, equilateral, <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>) to solve problems. (10.G.6)</p>	<p><b>Properties of Plane Figures:</b>                      Apply properties of <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, similar, and congruent triangles</p>
<p><b>G.G.9</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.</p>	
<p><b>G.G.10</b> Apply the triangle inequality and other inequalities associated with triangles (e.g., the longest side is opposite the greatest angle) to prove theorems and solve problems.</p>	
<p><b>G.G.11</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and <math>x</math>- and <math>y</math>-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope <math>y</math>-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b>                      Read tables and graphs                      Manipulate data from tables and graphs                      Interpret and use information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>                      Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)                      Write expressions, equations, and inequalities for common algebra settings</p> <p><b>Graphical Representations:</b>                      Exhibit knowledge of slope                      Determine the slope of a line from points or equations                      Interpret and use information from graphs in the coordinate plane</p>
<p><b>G.G.12</b> Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems. (10.G.7)</p>	<p><b>Graphical Representations:</b>                      Locate points on the number line and in the first quadrant                      Locate points in the coordinate plane                      Exhibit knowledge of slope                      Determine the slope of a line from points or equations                      Match linear graphs with their equations                      Find the midpoint of a line segment                      Interpret and use information from graphs in the coordinate plane</p>



TABLE 2J

Massachusetts Geometry Standards	PLAN Mathematics College Readiness Standards
	Use the distance formula
<b>G.G.13</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation. (10.G.8)	<b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point
<b>G.G.14</b> Demonstrate an understanding of the relationship between geometric and algebraic representations of circles.	<b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, and inequalities for common algebra settings <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>G.G.15</b> Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems. (10.G.9)	<b>Probability, Statistics, &amp; Data Analysis:</b> Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs <b>Graphical Representations:</b> Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane
<b>G.G.16</b> Demonstrate the ability to visualize solid objects and recognize their projections and cross sections. (10.G.10)	
<b>G.G.17</b> Use vertex-edge graphs to model and solve problems. (10.G.11)	
<b>G.G.18</b> Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and pictorially. Use vector methods to obtain geometric results. (12.G.3)	
<b>Measurement</b>	
Understand measurable attributes of objects and the units, systems, and processes of measurement	
Apply appropriate techniques, tools, and formulas to determine measurements	
<b>G.M.1</b> Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles. (10.M.1)	<b>Measurement:</b> Compute the perimeter of polygons when all side lengths are given Compute the area of rectangles when whole number dimensions are given Compute the area and perimeter of triangles and rectangles in simple problems Use geometric formulas when all necessary information is given

TABLE 2J

Massachusetts Geometry Standards	PLAN Mathematics College Readiness Standards
	<p>Compute the area of triangles and rectangles when one or more additional simple steps are required</p> <p>Compute the area and circumference of circles after identifying necessary information</p> <p>Compute the perimeter of simple composite geometric figures with unknown side lengths</p> <p>Use relationships involving area, perimeter, and volume of geometric figures to compute another measure</p>
<p><b>G.M.2</b> Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area. (10.M.2)</p>	<p><b>Measurement:</b></p> <p>Use geometric formulas when all necessary information is given</p> <p>Use relationships involving area, perimeter, and volume of geometric figures to compute another measure</p>
<p><b>G.M.3</b> Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume. (10.M.3)</p>	
<p><b>G.M.4</b> Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements. (10.M.4)</p>	
<p><b>G.M.5</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense. (12.M.2)</p>	

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
<b>Geometry</b>	
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
Apply transformations and use symmetry to analyze mathematical situations	
Use visualization, spatial reasoning, and geometric modeling to solve problems	
<b>G.G.1</b> Recognize special types of polygons (e.g., isosceles triangles, parallelograms, and rhombuses). Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons. Draw and label sets of points such as line segments, rays, and circles. Detect symmetries of geometric figures.	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use properties of isosceles triangles Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
<b>G.G.2</b> Write simple proofs of theorems in geometric situations, such as theorems about congruent and similar figures, parallel or perpendicular lines. Distinguish between postulates and theorems. Use inductive and deductive reasoning, as well as proof by contradiction. Given a conditional statement, write its inverse, converse, and contrapositive.	
<b>G.G.3</b> Apply formulas for a rectangular coordinate system to prove theorems.	
<b>G.G.4</b> Draw congruent and similar figures using a compass, straightedge, protractor, or computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments. (10.G.2)	
<b>G.G.5</b> Apply congruence and similarity correspondences (e.g., $\triangle ABC \cong \triangle XYZ$ ) and properties of the figures to find missing parts of geometric figures, and provide logical justification. (10.G.4)	<b>Properties of Plane Figures:</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., $90^\circ$ , $180^\circ$ , and $360^\circ$ ) Use several angle properties to find an unknown angle measure Apply properties of $30^\circ$ - $60^\circ$ - $90^\circ$ , $45^\circ$ - $45^\circ$ - $90^\circ$ , similar, and congruent triangles Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
<b>G.G.6</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.	<b>Properties of Plane Figures:</b> Exhibit some knowledge of the angles associated with parallel lines

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
	<p>Find the measure of an angle using properties of parallel lines</p> <p>Use several angle properties to find an unknown angle measure</p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>G.G.7</b> Solve simple triangle problems using the triangle angle sum property, and/or the Pythagorean theorem. (10.G.5)</p>	<p><b>Properties of Plane Figures:</b></p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>)</p> <p>Use several angle properties to find an unknown angle measure</p> <p>Recognize Pythagorean triples</p> <p>Use properties of isosceles triangles</p> <p>Apply properties of <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, similar, and congruent triangles</p> <p>Use the Pythagorean theorem</p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>G.G.8</b> Use the properties of special triangles (e.g., isosceles, equilateral, <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>) to solve problems. (10.G.6)</p>	<p><b>Properties of Plane Figures:</b></p> <p>Apply properties of <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, similar, and congruent triangles</p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>G.G.9</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.</p>	<p><b>Functions:</b></p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Use trigonometric concepts and basic identities to solve problems</p>
<p><b>G.G.10</b> Apply the triangle inequality and other inequalities associated with triangles (e.g., the longest side is opposite the greatest angle) to prove theorems and solve problems.</p>	<p><b>Properties of Plane Figures:</b></p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
<p><b>G.G.11</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and <math>x</math>- and <math>y</math>-intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope <math>y</math>-intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b>  Read tables and graphs  Manipulate data from tables and graphs  Interpret and use information from figures, tables, and graphs  Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>  Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)  Write expressions, equations, and inequalities for common algebra settings  Write expressions that require planning and/or manipulating to accurately model a situation  Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b>  Exhibit knowledge of slope  Determine the slope of a line from points or equations  Interpret and use information from graphs in the coordinate plane  Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)  Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math>  Solve problems integrating multiple algebraic and/or geometric concepts  Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>G.G.12</b> Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems. (10.G.7)</p>	<p><b>Graphical Representations:</b>  Locate points on the number line and in the first quadrant  Locate points in the coordinate plane  Exhibit knowledge of slope  Determine the slope of a line from points or equations  Match linear graphs with their equations  Find the midpoint of a line segment  Interpret and use information from graphs in the coordinate plane  Use the distance formula  Solve problems integrating multiple algebraic and/or geometric concepts  Analyze and draw conclusions based on information from graphs in the coordinate plane</p>

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
<p><b>G.G.13</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the “point-slope” form of the equation. (10.G.8)</p>	<p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>G.G.14</b> Demonstrate an understanding of the relationship between geometric and algebraic representations of circles.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>G.G.15</b> Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems. (10.G.9)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Graphical Representations:</b></p> <p>Locate points on the number line and in the first quadrant</p> <p>Locate points in the coordinate plane</p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p>

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
	Analyze and draw conclusions based on information from graphs in the coordinate plane
<b>G.G.16</b> Demonstrate the ability to visualize solid objects and recognize their projections and cross sections. (10.G.10)	
<b>G.G.17</b> Use vertex-edge graphs to model and solve problems. (10.G.11)	
<b>G.G.18</b> Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and pictorially. Use vector methods to obtain geometric results. (12.G.3)	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Numbers: Concepts &amp; Properties:</b> Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p><b>Graphical Representations:</b> Solve problems integrating multiple algebraic and/or geometric concepts</p> <p><b>Properties of Plane Figures:</b> Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<b>Measurement</b>	
Understand measurable attributes of objects and the units, systems, and processes of measurement	
Apply appropriate techniques, tools, and formulas to determine measurements	
<b>G.M.1</b> Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles. (10.M.1)	<p><b>Measurement:</b> Compute the perimeter of polygons when all side lengths are given Compute the area of rectangles when whole number dimensions are given Compute the area and perimeter of triangles and rectangles in simple problems Use geometric formulas when all necessary information is given Compute the area of triangles and rectangles when one or more additional simple steps are required Compute the area and circumference of circles after identifying necessary information Compute the perimeter of simple composite geometric figures with unknown side lengths Use relationships involving area, perimeter, and volume of geometric figures to compute another measure Compute the area of composite geometric figures when planning or visualization is required</p>

TABLE 2K

Massachusetts Geometry Standards	ACT Mathematics College Readiness Standards
<p><b>G.M.2</b> Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area. (10.M.2)</p>	<p><b>Measurement:</b></p> <p>Use geometric formulas when all necessary information is given</p> <p>Use relationships involving area, perimeter, and volume of geometric figures to compute another measure</p> <p>Compute the area of composite geometric figures when planning or visualization is required</p>
<p><b>G.M.3</b> Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume. (10.M.3)</p>	<p><b>Measurement:</b></p> <p>Use scale factors to determine the magnitude of a size change</p>
<p><b>G.M.4</b> Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements. (10.M.4)</p>	
<p><b>G.M.5</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense. (12.M.2)</p>	



TABLE 2L

Massachusetts Geometry Standards	WorkKeys Applied Mathematics Skills
<p><b>Geometry</b></p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>G.G.1</b> Recognize special types of polygons (e.g., isosceles triangles, parallelograms, and rhombuses). Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons. Draw and label sets of points such as line segments, rays, and circles. Detect symmetries of geometric figures.</p>	
<p><b>G.G.2</b> Write simple proofs of theorems in geometric situations, such as theorems about congruent and similar figures, parallel or perpendicular lines. Distinguish between postulates and theorems. Use inductive and deductive reasoning, as well as proof by contradiction. Given a conditional statement, write its inverse, converse, and contrapositive.</p>	
<p><b>G.G.3</b> Apply formulas for a rectangular coordinate system to prove theorems.</p>	
<p><b>G.G.4</b> Draw congruent and similar figures using a compass, straightedge, protractor, or computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments. (10.G.2)</p>	
<p><b>G.G.5</b> Apply congruence and similarity correspondences (e.g., <math>\triangle ABC \cong \triangle XYZ</math>) and properties of the figures to find missing parts of geometric figures, and provide logical justification. (10.G.4)</p>	
<p><b>G.G.6</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.</p>	
<p><b>G.G.7</b> Solve simple triangle problems using the triangle angle sum property, and/or the Pythagorean theorem. (10.G.5)</p>	
<p><b>G.G.8</b> Use the properties of special triangles (e.g., isosceles, equilateral, <math>30^\circ</math>–<math>60^\circ</math>–<math>90^\circ</math>, <math>45^\circ</math>–<math>45^\circ</math>–<math>90^\circ</math>) to solve problems. (10.G.6)</p>	
<p><b>G.G.9</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.</p>	

TABLE 2L

Massachusetts Geometry Standards	WorkKeys Applied Mathematics Skills
<b>G.G.10</b> Apply the triangle inequality and other inequalities associated with triangles (e.g., the longest side is opposite the greatest angle) to prove theorems and solve problems.	
<b>G.G.11</b> Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and $x$ - and $y$ -intercepts from its graph or from a linear equation that represents the line. Find a linear equation describing a line from a graph or a geometric description of the line, e.g., by using the "point-slope" or "slope $y$ -intercept" formulas. Explain the significance of a positive, negative, zero, or undefined slope. (10.P.2)	
<b>G.G.12</b> Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems. (10.G.7)	
<b>G.G.13</b> Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the "point-slope" form of the equation. (10.G.8)	
<b>G.G.14</b> Demonstrate an understanding of the relationship between geometric and algebraic representations of circles.	
<b>G.G.15</b> Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems. (10.G.9)	
<b>G.G.16</b> Demonstrate the ability to visualize solid objects and recognize their projections and cross sections. (10.G.10)	
<b>G.G.17</b> Use vertex-edge graphs to model and solve problems. (10.G.11)	
<b>G.G.18</b> Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and pictorially. Use vector methods to obtain geometric results. (12.G.3)	

TABLE 2L

Massachusetts Geometry Standards	WorkKeys Applied Mathematics Skills
<b>Measurement</b> Understand measurable attributes of objects and the units, systems, and processes of measurement Apply appropriate techniques, tools, and formulas to determine measurements	
<b>G.M.1</b> Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles. (10.M.1)	Put the information in the right order before performing calculations Decide what information, calculations, or unit conversions to use to solve the problem Look up a formula and perform single-step conversions within or between systems of measurement Calculate perimeters and areas of basic shapes (rectangles and circles) Rearrange a formula before solving a problem Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Find the volume of rectangular solids Solve problems that include nonlinear functions and/or that involve more than one unknown Calculate multiple areas and volumes of spheres, cylinders, or cones
<b>G.M.2</b> Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area. (10.M.2)	Put the information in the right order before performing calculations Decide what information, calculations, or unit conversions to use to solve the problem Look up a formula and perform single-step conversions within or between systems of measurement Calculate perimeters and areas of basic shapes (rectangles and circles) Rearrange a formula before solving a problem Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Find the volume of rectangular solids Solve problems that include nonlinear functions and/or that involve more than one unknown Calculate multiple areas and volumes of spheres, cylinders, or cones
<b>G.M.3</b> Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume. (10.M.3)	
<b>G.M.4</b> Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements. (10.M.4)	

TABLE 2L

Massachusetts Geometry Standards	WorkKeys Applied Mathematics Skills
<p><b>G.M.5</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense. (12.M.2)</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Look up a formula and perform single-step conversions within or between systems of measurement</p> <p>Rearrange a formula before solving a problem</p> <p>Use two formulas to change from one unit to another within the same system of measurement</p> <p>Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement</p> <p>Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages</p> <p>Set up and manipulate complex ratios or proportions</p>

TABLE 2M

Massachusetts Algebra II Standards	PLAN Mathematics College Readiness Standards
<p><b>Number Sense and Operations</b></p>	
<p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p>	
<p>Understand meanings of operations and how they relate to one another</p>	
<p>Compute fluently and make reasonable estimates</p>	
<p><b>All.N.1</b> Define complex numbers (e.g., <math>a + bi</math>) and operations on them, in particular, addition, subtraction, multiplication, and division. Relate the system of complex numbers to the systems of real and rational numbers. (12.N.1)</p>	
<p><b>All.N.2</b> Simplify numerical expressions with powers and roots, including fractional and negative exponents. (12.N.2)</p>	<p><b>Basic Operations &amp; Applications:</b> Solve word problems containing several rates, proportions, or percentages</p> <p><b>Numbers: Concepts &amp; Properties:</b> Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers</p>
<p><b>Patterns, Relations, and Algebra</b></p>	
<p>Understand patterns, relations, and functions</p>	
<p>Represent and analyze mathematical situations and structures using algebraic symbols</p>	
<p>Use mathematical models to represent and understand quantitative relationships</p>	
<p>Analyze change in various contexts</p>	
<p><b>All.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle. (12.P.1)</p>	<p><b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Apply number properties involving prime factorization Apply number properties involving even/odd numbers and factors/multiples Apply number properties involving positive/negative numbers</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, and inequalities for common algebra settings</p>
<p><b>All.P.2</b> Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the formula for the general term and the sum, recursively and explicitly. (12.P.2)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, and inequalities for common algebra settings</p>

TABLE 2M

Massachusetts Algebra II Standards	PLAN Mathematics College Readiness Standards
<b>AII.P.3</b> Demonstrate an understanding of the binomial theorem and use it in the solution of problems. (12.P.3)	
<b>AII.P.4</b> Demonstrate an understanding of the exponential and logarithmic functions.	<b>Numbers: Concepts &amp; Properties:</b> Work problems involving positive integer exponents Apply rules of exponents
<b>AII.P.5</b> Perform operations on functions, including composition. Find inverses of functions. (12.P.5)	<b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, and inequalities for common algebra settings
<b>AII.P.6</b> Given algebraic, numeric and/or graphical representations, recognize functions as polynomial, rational, logarithmic, or exponential. (12.P.6)	<b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs <b>Expressions, Equations, &amp; Inequalities:</b> Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>AII.P.7</b> Find solutions to quadratic equations (with real coefficients and real or complex roots) and apply to the solutions of problems. (12.P.7)	<b>Expressions, Equations, &amp; Inequalities:</b> Identify solutions to simple quadratic equations Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve quadratic equations
<b>AII.P.8</b> Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula; use technology where appropriate. Include polynomial, exponential, and logarithmic functions; expressions involving the absolute values; and simple rational expressions. (12.P.8)	<b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs <b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form $x + a = b$ , where $a$ and $b$ are whole numbers or decimals Solve one-step equations having integer or decimal answers Evaluate algebraic expressions by substituting integers for unknown quantities Solve routine first-degree equations Solve real-world problems using first-degree equations Identify solutions to simple quadratic equations Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve first-degree inequalities that do not require reversing the inequality sign Solve linear inequalities that require reversing the inequality sign Solve absolute value equations

TABLE 2M

Massachusetts Algebra II Standards	PLAN Mathematics College Readiness Standards
	Solve quadratic equations Find solutions to systems of linear equations <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>AII.P.9</b> Use matrices to solve systems of linear equations. Apply to the solution of everyday problems. (12.P.9)	
<b>AII.P.10</b> Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Also use technology where appropriate. Describe the relationships among the methods. (12.P.10)	<b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs <b>Expressions, Equations, &amp; Inequalities:</b> Find solutions to systems of linear equations <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>AII.P.11</b> Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, and step functions, absolute values and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include growth and decay; logistic growth; joint (e.g., $I = Prt$ , $y = k(w_1 + w_2)$ ), and combined ( $F = G\left(\frac{m_1 m_2}{d^2}\right)$ ) variation. (12.P.11)	<b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>AII.P.12</b> Identify maximum and minimum values of functions in simple situations. Apply to the solution of problems. (12.P.12)	<b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs <b>Expressions, Equations, &amp; Inequalities:</b> Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>AII.P.13</b> Describe the translations and scale changes of a given function $f(x)$ resulting from substitutions for the various parameters $a$ , $b$ , $c$ , and $d$ in $y = af\left(b\left(x + \frac{c}{b}\right)\right) + d$ . In particular, describe the effect of such changes on polynomial, rational, exponential, and logarithmic functions. (12.P.13)	<b>Expressions, Equations, &amp; Inequalities:</b> Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings <b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane

TABLE 2M

Massachusetts Algebra II Standards	PLAN Mathematics College Readiness Standards
<b>Geometry</b>	
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
Apply transformations and use symmetry to analyze mathematical situations	
Use visualization, spatial reasoning, and geometric modeling to solve problems	
<b>All.G.1</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems. (12.G.1)	
<b>All.G.2</b> Derive and apply basic trigonometric identities (e.g., $\sin^2\theta + \cos^2\theta = 1$ , $\tan^2\theta + 1 = \sec^2\theta$ ) and the laws of sines and cosines. (12.G.2)	
<b>All.G.3</b> Relate geometric and algebraic representations of lines, simple curves, and conic sections. (12.G.4)	<b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane
<b>Data Analysis, Statistics, and Probability</b>	
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	
Select and use appropriate statistical methods to analyze data	
Develop and evaluate inferences and predictions that are based on data	
Understand and apply basic concepts of probability	
<b>All.D.1</b> Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data. (12.D.2)	<b>Probability, Statistics, &amp; Data Analysis:</b> Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs
<b>All.D.2</b> Use combinatorics (e.g., “fundamental counting principle,” permutations, and combinations) to solve problems, in particular, to compute probabilities of compound events. Use technology as appropriate. (12.D.6)	<b>Probability, Statistics, &amp; Data Analysis:</b> Use the relationship between the probability of an event and the probability of its complement Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations Apply counting techniques Compute a probability when the event and/or sample space are not given or obvious



TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<b>All.N.1</b> Define complex numbers (e.g., $a + bi$ ) and operations on them, in particular, addition, subtraction, multiplication, and division. Relate the system of complex numbers to the systems of real and rational numbers. (12.N.1)	<b>Numbers: Concepts &amp; Properties:</b> Exhibit some knowledge of the complex numbers Multiply two complex numbers Apply properties of complex numbers
<b>All.N.2</b> Simplify numerical expressions with powers and roots, including fractional and negative exponents. (12.N.2)	<b>Basic Operations &amp; Applications:</b> Solve word problems containing several rates, proportions, or percentages Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings) <b>Numbers: Concepts &amp; Properties:</b> Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers
<b>Patterns, Relations, and Algebra</b>	
Understand patterns, relations, and functions	
Represent and analyze mathematical situations and structures using algebraic symbols	
Use mathematical models to represent and understand quantitative relationships	
Analyze change in various contexts	
<b>All.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle. (12.P.1)	<b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Apply number properties involving prime factorization Apply number properties involving even/odd numbers and factors/multiples Apply number properties involving positive/negative numbers Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>All.P.2</b> Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the formula for the general term and the sum, recursively and explicitly. (12.P.2)</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p>Exhibit knowledge of logarithms and geometric sequences</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>All.P.3</b> Demonstrate an understanding of the binomial theorem and use it in the solution of problems. (12.P.3)</p>	
<p><b>All.P.4</b> Demonstrate an understanding of the exponential and logarithmic functions.</p>	<p><b>Numbers: Concepts &amp; Properties:</b></p> <p>Work problems involving positive integer exponents</p> <p>Apply rules of exponents</p> <p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p>Exhibit knowledge of logarithms and geometric sequences</p>
<p><b>All.P.5</b> Perform operations on functions, including composition. Find inverses of functions. (12.P.5)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Functions:</b></p> <p>Evaluate composite functions at integer values</p> <p>Write an expression for the composite of two simple functions</p>
<p><b>All.P.6</b> Given algebraic, numeric and/or graphical representations, recognize functions as polynomial, rational, logarithmic, or exponential. (12.P.6)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p><b>Numbers: Concepts &amp; Properties:</b> Exhibit knowledge of logarithms and geometric sequences</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Match number line graphs with solution sets of simple quadratic inequalities Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>All.P.7</b> Find solutions to quadratic equations (with real coefficients and real or complex roots) and apply to the solutions of problems. (12.P.7)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Identify solutions to simple quadratic equations Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve quadratic equations Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>All.P.8</b> Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula; use technology where appropriate. Include polynomial, exponential, and logarithmic functions; expressions involving the absolute values; and simple rational expressions. (12.P.8)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals Solve one-step equations having integer or decimal answers Evaluate algebraic expressions by substituting integers for unknown quantities Solve routine first-degree equations Solve real-world problems using first-degree equations Identify solutions to simple quadratic equations</p>

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p>Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)</p> <p>Solve first-degree inequalities that do not require reversing the inequality sign</p> <p>Solve linear inequalities that require reversing the inequality sign</p> <p>Solve absolute value equations</p> <p>Solve quadratic equations</p> <p>Find solutions to systems of linear equations</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p>Solve simple absolute value inequalities</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate quadratic functions, expressed in function notation, at integer values</p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Evaluate composite functions at integer values</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Write an expression for the composite of two simple functions</p> <p>Use trigonometric concepts and basic identities to solve problems</p> <p>Exhibit knowledge of unit circle trigonometry</p>
<p><b>All.P.9</b> Use matrices to solve systems of linear equations. Apply to the solution of everyday problems. (12.P.9)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
<p><b>All.P.10</b> Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Also use technology where appropriate. Describe the relationships among the methods. (12.P.10)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b> Find solutions to systems of linear equations Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math> Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>All.P.11</b> Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, and step functions, absolute values and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include growth and decay; logistic growth; joint (e.g., <math>I = Prt</math>, <math>y = k(w_1 + w_2)</math>), and combined (<math>F = G\left(\frac{m_1 m_2}{d^2}\right)</math>) variation. (12.P.11)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b> Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving Solve simple absolute value inequalities</p> <p><b>Graphical Representations:</b> Interpret and use information from graphs in the coordinate plane Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math> Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b> Evaluate quadratic functions, expressed in function notation, at integer values</p>

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Evaluate composite functions at integer values</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Write an expression for the composite of two simple functions</p> <p>Use trigonometric concepts and basic identities to solve problems</p> <p>Exhibit knowledge of unit circle trigonometry</p> <p>Match graphs of basic trigonometric functions with their equations</p>
<p><b>All.P.12</b> Identify maximum and minimum values of functions in simple situations. Apply to the solution of problems. (12.P.12)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>All.P.13</b> Describe the translations and scale changes of a given function <math>f(x)</math> resulting from substitutions for the various parameters <math>a</math>, <math>b</math>, <math>c</math>, and <math>d</math> in <math>y = af(b(x + \frac{c}{b})) + d</math>. In particular, describe the effect of such changes on polynomial, rational, exponential, and logarithmic functions. (12.P.13)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>

TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Evaluate composite functions at integer values</p> <p>Write an expression for the composite of two simple functions</p>
<p><b>Geometry</b></p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>All.G.1</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems. (12.G.1)</p>	<p><b>Functions:</b></p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Use trigonometric concepts and basic identities to solve problems</p>
<p><b>All.G.2</b> Derive and apply basic trigonometric identities (e.g., <math>\sin^2\theta + \cos^2\theta = 1</math>, <math>\tan^2\theta + 1 = \sec^2\theta</math>) and the laws of sines and cosines. (12.G.2)</p>	<p><b>Functions:</b></p> <p>Use trigonometric concepts and basic identities to solve problems</p>
<p><b>All.G.3</b> Relate geometric and algebraic representations of lines, simple curves, and conic sections. (12.G.4)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p>



TABLE 2N

Massachusetts Algebra II Standards	ACT Mathematics College Readiness Standards
	<p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Properties of Plane Figures:</b></p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, <b>organize</b>, and display <b>relevant data to answer them</b></p> <p><b>Select and use appropriate statistical methods to analyze data</b></p> <p><b>Develop and evaluate inferences and predictions that are based on data</b></p> <p><b>Understand and apply basic concepts of probability</b></p>	
<p><b>All.D.1</b> <b>Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data.</b> (12.D.2)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Read tables and graphs</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>
<p><b>All.D.2</b> <b>Use combinatorics (e.g., “fundamental counting principle,” permutations, and combinations) to solve problems, in particular, to compute probabilities of compound events.</b> Use technology as appropriate. (12.D.6)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Use the relationship between the probability of an event and the probability of its complement</p> <p>Exhibit knowledge of simple counting techniques</p> <p>Compute straightforward probabilities for common situations</p> <p>Apply counting techniques</p> <p>Compute a probability when the event and/or sample space are not given or obvious</p> <p>Exhibit knowledge of conditional and joint probability</p>



TABLE 20

Massachusetts Algebra II Standards	WorkKeys Applied Mathematics Skills
<p><b>Number Sense and Operations</b></p> <p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p> <p>Understand meanings of operations and how they relate to one another</p> <p>Compute fluently and make reasonable estimates</p>	
<p><b>All.N.1</b> Define complex numbers (e.g., <math>a + bi</math>) and operations on them, in particular, addition, subtraction, multiplication, and division. Relate the system of complex numbers to the systems of real and rational numbers. (12.N.1)</p>	
<p><b>All.N.2</b> Simplify numerical expressions with powers and roots, including fractional and negative exponents. (12.N.2)</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Calculate perimeters and areas of basic shapes (rectangles and circles)</p> <p>Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations</p> <p>Find the volume of rectangular solids</p> <p>Calculate multiple areas and volumes of spheres, cylinders, or cones</p>
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>All.P.1</b> Describe, complete, extend, analyze, generalize, and create a wide variety of patterns, including iterative and recursive patterns such as Pascal's Triangle. (12.P.1)</p>	
<p><b>All.P.2</b> Identify arithmetic and geometric sequences and finite arithmetic and geometric series. Use the properties of such sequences and series to solve problems, including finding the formula for the general term and the sum, recursively and explicitly. (12.P.2)</p>	
<p><b>All.P.3</b> Demonstrate an understanding of the binomial theorem and use it in the solution of problems. (12.P.3)</p>	
<p><b>All.P.4</b> Demonstrate an understanding of the exponential and logarithmic functions.</p>	

TABLE 20

Massachusetts Algebra II Standards	WorkKeys Applied Mathematics Skills
<b>AII.P.5</b> Perform operations on functions, including composition. Find inverses of functions. (12.P.5)	
<b>AII.P.6</b> Given algebraic, numeric and/or graphical representations, recognize functions as polynomial, rational, logarithmic, or exponential. (12.P.6)	
<b>AII.P.7</b> Find solutions to quadratic equations (with real coefficients and real or complex roots) and apply to the solutions of problems. (12.P.7)	
<b>AII.P.8</b> Solve a variety of equations and inequalities using algebraic, graphical, and numerical methods, including the quadratic formula; use technology where appropriate. Include polynomial, exponential, and logarithmic functions; expressions involving the absolute values; and simple rational expressions. (12.P.8)	<p>Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers</p> <p>Solve problems that require one or two operations</p> <p>Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals</p> <p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Rearrange a formula before solving a problem</p> <p>Calculate multiple rates</p> <p>Solve problems that include nonlinear functions and/or that involve more than one unknown</p> <p>Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages</p> <p>Set up and manipulate complex ratios or proportions</p>
<b>AII.P.9</b> Use matrices to solve systems of linear equations. Apply to the solution of everyday problems. (12.P.9)	
<b>AII.P.10</b> Use symbolic, numeric, and graphical methods to solve systems of equations and/or inequalities involving algebraic, exponential, and logarithmic expressions. Also use technology where appropriate. Describe the relationships among the methods. (12.P.10)	
<b>AII.P.11</b> Solve everyday problems that can be modeled using polynomial, rational, exponential, logarithmic, and step functions, absolute values and square roots. Apply appropriate graphical, tabular, or symbolic methods to the solution. Include growth and decay; logistic growth; joint (e.g., $I = Prt$ , $y = k(w_1 + w_2)$ ), and combined ( $F = G\left(\frac{m_1 m_2}{d^2}\right)$ ) variation. (12.P.11)	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Use fractions, negative numbers, ratios, percentages, or mixed numbers</p> <p>Rearrange a formula before solving a problem</p> <p>Find mistakes in items that belong at Levels 3, 4, and 5</p> <p>Find the best deal and use the result for another calculation</p>

TABLE 20

Massachusetts Algebra II Standards	WorkKeys Applied Mathematics Skills
	Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Find the volume of rectangular solids Calculate multiple rates Find mistakes in Level 6 items Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages Calculate multiple areas and volumes of spheres, cylinders, or cones Set up and manipulate complex ratios or proportions Find the best deal when there are several choices
<b>AII.P.12</b> Identify maximum and minimum values of functions in simple situations. Apply to the solution of problems. (12.P.12)	
<b>AII.P.13</b> Describe the translations and scale changes of a given function $f(x)$ resulting from substitutions for the various parameters $a$ , $b$ , $c$ , and $d$ in $y = af(b(x + \frac{c}{b})) + d$ . In particular, describe the effect of such changes on polynomial, rational, exponential, and logarithmic functions. (12.P.13)	
<b>Geometry</b> Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships Specify locations and describe spatial relationships using coordinate geometry and other representational systems Apply transformations and use symmetry to analyze mathematical situations Use visualization, spatial reasoning, and geometric modeling to solve problems	
<b>AII.G.1</b> Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems. (12.G.1)	
<b>AII.G.2</b> Derive and apply basic trigonometric identities (e.g., $\sin^2\theta + \cos^2\theta = 1$ , $\tan^2\theta + 1 = \sec^2\theta$ ) and the laws of sines and cosines. (12.G.2)	
<b>AII.G.3</b> Relate geometric and algebraic representations of lines, simple curves, and conic sections. (12.G.4)	

TABLE 20

Massachusetts Algebra II Standards	WorkKeys Applied Mathematics Skills
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>AII.D.1</b> Select an appropriate graphical representation for a set of data and use appropriate statistics (e.g., quartile or percentile distribution) to communicate information about the data. (12.D.2)</p>	
<p><b>AII.D.2</b> Use combinatorics (e.g., “fundamental counting principle,” permutations, and combinations) to solve problems, in particular, to compute probabilities of compound events. Use technology as appropriate. (12.D.6)</p>	

TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
<b>Number Sense and Operations</b>	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	
Understand meanings of operations and how they relate to one another	
Compute fluently and make reasonable estimates	
<p><b>PC.N.1</b> Plot complex numbers using both rectangular and polar coordinates systems. Represent complex numbers using polar coordinates, i.e., <math>a + bi = r(\cos\theta + i\sin\theta)</math>. Apply DeMoivre's theorem to multiply, take roots, and raise complex numbers to a power.</p>	<p><b>Numbers: Concepts &amp; Properties:</b>  Exhibit some knowledge of the complex numbers  Multiply two complex numbers  Apply properties of complex numbers</p> <p><b>Functions:</b>  Apply basic trigonometric ratios to solve right-triangle problems  Use trigonometric concepts and basic identities to solve problems  Exhibit knowledge of unit circle trigonometry</p>
<b>Patterns, Relations, and Algebra</b>	
Understand patterns, relations, and functions	
Represent and analyze mathematical situations and structures using algebraic symbols	
Use mathematical models to represent and understand quantitative relationships	
Analyze change in various contexts	
<p><b>PC.P.1</b> Use mathematical induction to prove theorems and verify summation formulas, e.g., verify <math display="block">\sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}</math></p>	
<p><b>PC.P.2</b> Relate the number of roots of a polynomial to its degree. Solve quadratic equations with complex coefficients.</p>	<p><b>Numbers: Concepts &amp; Properties:</b>  Exhibit some knowledge of the complex numbers  Multiply two complex numbers  Apply properties of complex numbers</p> <p><b>Expressions, Equations, &amp; Inequalities:</b>  Solve quadratic equations  Write expressions that require planning and/or manipulating to accurately model a situation  Write equations and inequalities that require planning, manipulating, and/or solving</p>
<p><b>PC.P.3</b> Demonstrate an understanding of the trigonometric functions (sine, cosine, tangent, cosecant, secant, and cotangent). Relate the functions to their geometric definitions.</p>	<p><b>Functions:</b>  Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths  Apply basic trigonometric ratios to solve right-triangle problems  Use trigonometric concepts and basic identities to solve problems</p>

TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
<p><b>PC.P.4</b> Explain the identity <math>\sin^2\theta + \cos^2\theta = 1</math>. Relate the identity to the Pythagorean theorem.</p>	
<p><b>PC.P.5</b> Demonstrate an understanding of the formulas for the sine and cosine of the sum or the difference of two angles. Relate the formulas to DeMoivre's theorem and use them to prove other trigonometric identities. Apply to the solution of problems.</p>	<p><b>Functions:</b></p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p> <p>Use trigonometric concepts and basic identities to solve problems</p>
<p><b>PC.P.6</b> Understand, predict, and interpret the effects of the parameters <math>a</math>, <math>\omega</math>, <math>b</math>, and <math>c</math> on the graph of <math>y = a\sin(\omega(x - b)) + c</math>; similarly for the cosine and tangent. Use to model periodic processes. (12.P.13)</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>Functions:</b></p> <p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Evaluate composite functions at integer values</p> <p>Write an expression for the composite of two simple functions</p>
<p><b>PC.P.7</b> Translate between geometric, algebraic, and parametric representations of curves. Apply to the solution of problems.</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p>

TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
	<p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>PC.P.8</b> Identify and discuss features of conic sections: axes, foci, asymptotes, and tangents. Convert between different algebraic representations of conic sections.</p>	<p><b>Expressions, Equations, &amp; Inequalities:</b></p> <p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p><b>Graphical Representations:</b></p> <p>Interpret and use information from graphs in the coordinate plane</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>
<p><b>PC.P.9</b> Relate the slope of a tangent line at a specific point on a curve to the instantaneous rate of change. Explain the significance of a horizontal tangent line. Apply these concepts to the solution of problems.</p>	

TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
<b>Geometry</b>	
Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	
Specify locations and describe spatial relationships using coordinate geometry and other representational systems	
Apply transformations and use symmetry to analyze mathematical situations	
Use visualization, spatial reasoning, and geometric modeling to solve problems	
<p><b>PC.G.1</b> Demonstrate an understanding of the laws of sines and cosines. Use the laws to solve for the unknown sides or angles in triangles. Determine the area of a triangle given the length of two adjacent sides and the measure of the included angle. (12.G.2)</p>	<p><b>Functions:</b> Use trigonometric concepts and basic identities to solve problems</p>
<p><b>PC.G.2</b> Use the notion of vectors to solve problems. Describe addition of vectors, multiplication of a vector by a scalar, and the dot product of two vectors, both symbolically and geometrically. Use vector methods to obtain geometric results. (12.G.3)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b> Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p><b>Numbers: Concepts &amp; Properties:</b> Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p><b>Graphical Representations:</b> Solve problems integrating multiple algebraic and/or geometric concepts</p> <p><b>Properties of Plane Figures:</b> Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p>
<p><b>PC.G.3</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems. (12.G.5)</p>	<p><b>Properties of Plane Figures:</b> Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., <math>90^\circ</math>, <math>180^\circ</math>, and <math>360^\circ</math>) Use several angle properties to find an unknown angle measure Draw conclusions based on a set of conditions Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas Use relationships among angles, arcs, and distances in a circle</p>



TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
<b>Measurement</b>	
Understand measurable attributes of objects and the units, systems, and processes of measurement	
Apply appropriate techniques, tools, and formulas to determine measurements	
<p><b>PC.M.1</b> Describe the relationship between degree and radian measures, and use radian measure in the solution of problems, in particular problems involving angular velocity and acceleration. (12.M.1)</p>	<p><b>Properties of Plane Figures:</b></p> <p>Use several angle properties to find an unknown angle measure</p> <p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p> <p>Use relationships among angles, arcs, and distances in a circle</p>
<p><b>PC.M.2</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense. (12.M.2)</p>	
<b>Data Analysis, Statistics, and Probability</b>	
Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	
Select and use appropriate statistical methods to analyze data	
Develop and evaluate inferences and predictions that are based on data	
Understand and apply basic concepts of probability	
<p><b>PC.D.1</b> Design surveys and apply random sampling techniques to avoid bias in the data collection. (12.D.1)</p>	
<p><b>PC.D.2</b> Apply regression results and curve fitting to make predictions from data. (12.D.3)</p>	
<p><b>PC.D.3</b> Apply uniform, normal, and binomial distributions to the solutions of problems. (12.D.4)</p>	
<p><b>PC.D.4</b> Describe a set of frequency distribution data by spread (variance and standard deviation), skewness, symmetry, number of modes, or other characteristics. Use these concepts in everyday applications. (12.D.5)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Perform a single computation using information from a table or chart</p> <p>Calculate the average, given the number of data values and the sum of the data values</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Manipulate data from tables and graphs</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p>

TABLE 2P

Massachusetts Precalculus Standards	ACT Mathematics College Readiness Standards
<p><b>PC.D.5</b> Compare the results of simulations (e.g., random number tables, random functions, and area models) with predicted probabilities. (12.D.7)</p>	<p><b>Probability, Statistics, &amp; Data Analysis:</b></p> <p>Use the relationship between the probability of an event and the probability of its complement</p> <p>Exhibit knowledge of simple counting techniques</p> <p>Compute straightforward probabilities for common situations</p> <p>Apply counting techniques</p> <p>Compute a probability when the event and/or sample space are not given or obvious</p> <p>Exhibit knowledge of conditional and joint probability</p>

TABLE 2Q

Massachusetts Precalculus Standards	WorkKeys Applied Mathematics Skills
<p><b>Number Sense and Operations</b></p> <p>Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p> <p>Understand meanings of operations and how they relate to one another</p> <p>Compute fluently and make reasonable estimates</p>	
<p><b>PC.N.1</b> Plot complex numbers using both rectangular and polar coordinates systems. Represent complex numbers using polar coordinates, i.e., <math>a + bi = r(\cos\theta + i\sin\theta)</math>. Apply DeMoivre's theorem to multiply, take roots, and raise complex numbers to a power.</p>	
<p><b>Patterns, Relations, and Algebra</b></p> <p>Understand patterns, relations, and functions</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>Use mathematical models to represent and understand quantitative relationships</p> <p>Analyze change in various contexts</p>	
<p><b>PC.P.1</b> Use mathematical induction to prove theorems and verify summation formulas, e.g., verify</p> $\sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}$	
<p><b>PC.P.2</b> Relate the number of roots of a polynomial to its degree. Solve quadratic equations with complex coefficients.</p>	
<p><b>PC.P.3</b> Demonstrate an understanding of the trigonometric functions (sine, cosine, tangent, cosecant, secant, and cotangent). Relate the functions to their geometric definitions.</p>	
<p><b>PC.P.4</b> Explain the identity <math>\sin^2\theta + \cos^2\theta = 1</math>. Relate the identity to the Pythagorean theorem.</p>	
<p><b>PC.P.5</b> Demonstrate an understanding of the formulas for the sine and cosine of the sum or the difference of two angles. Relate the formulas to DeMoivre's theorem and use them to prove other trigonometric identities. Apply to the solution of problems.</p>	
<p><b>PC.P.6</b> Understand, predict, and interpret the effects of the parameters <math>a</math>, <math>\omega</math>, <math>b</math>, and <math>c</math> on the graph of <math>y = a\sin(\omega(x - b)) + c</math>; similarly for the cosine and tangent. Use to model periodic processes. (12.P.13)</p>	

TABLE 2Q

Massachusetts Precalculus Standards	WorkKeys Applied Mathematics Skills
<p><b>PC.P.7</b> Translate between geometric, algebraic, and parametric representations of curves. Apply to the solution of problems.</p>	
<p><b>PC.P.8</b> Identify and discuss features of conic sections: axes, foci, asymptotes, and tangents. Convert between different algebraic representations of conic sections.</p>	
<p><b>PC.P.9</b> Relate the slope of a tangent line at a specific point on a curve to the instantaneous rate of change. Explain the significance of a horizontal tangent line. Apply these concepts to the solution of problems.</p>	
<p><b>Geometry</b></p> <p>Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships</p> <p>Specify locations and describe spatial relationships using coordinate geometry and other representational systems</p> <p>Apply transformations and use symmetry to analyze mathematical situations</p> <p>Use visualization, spatial reasoning, and geometric modeling to solve problems</p>	
<p><b>PC.G.1</b> Demonstrate an understanding of the laws of sines and cosines. Use the laws to solve for the unknown sides or angles in triangles. Determine the area of a triangle given the length of two adjacent sides and the measure of the included angle. (12.G.2)</p>	
<p><b>PC.G.2</b> Use the notion of vectors to solve problems. Describe addition of vectors, multiplication of a vector by a scalar, and the dot product of two vectors, both symbolically and geometrically. Use vector methods to obtain geometric results. (12.G.3)</p>	
<p><b>PC.G.3</b> Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems. (12.G.5)</p>	
<p><b>Measurement</b></p> <p>Understand measurable attributes of objects and the units, systems, and processes of measurement</p> <p>Apply appropriate techniques, tools, and formulas to determine measurements</p>	
<p><b>PC.M.1</b> Describe the relationship between degree and radian measures, and use radian measure in the solution of problems, in particular problems involving angular velocity and acceleration. (12.M.1)</p>	

TABLE 2Q

Massachusetts Precalculus Standards	WorkKeys Applied Mathematics Skills
<p><b>PC.M.2</b> Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense. (12.M.2)</p>	<p>Put the information in the right order before performing calculations</p> <p>Decide what information, calculations, or unit conversions to use to solve the problem</p> <p>Look up a formula and perform single-step conversions within or between systems of measurement</p> <p>Rearrange a formula before solving a problem</p> <p>Use two formulas to change from one unit to another within the same system of measurement</p> <p>Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement</p> <p>Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages</p> <p>Set up and manipulate complex ratios or proportions</p>
<p><b>Data Analysis, Statistics, and Probability</b></p> <p>Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them</p> <p>Select and use appropriate statistical methods to analyze data</p> <p>Develop and evaluate inferences and predictions that are based on data</p> <p>Understand and apply basic concepts of probability</p>	
<p><b>PC.D.1</b> Design surveys and apply random sampling techniques to avoid bias in the data collection. (12.D.1)</p>	
<p><b>PC.D.2</b> Apply regression results and curve fitting to make predictions from data. (12.D.3)</p>	
<p><b>PC.D.3</b> Apply uniform, normal, and binomial distributions to the solutions of problems. (12.D.4)</p>	
<p><b>PC.D.4</b> Describe a set of frequency distribution data by spread (variance and standard deviation), skewness, symmetry, number of modes, or other characteristics. Use these concepts in everyday applications. (12.D.5)</p>	
<p><b>PC.D.5</b> Compare the results of simulations (e.g., random number tables, random functions, and area models) with predicted probabilities. (12.D.7)</p>	

**SUPPLEMENT  
TABLES 3A–3X  
SCIENCE**

TABLE 3A

MASSACHUSETTS Earth and Space Science Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>Mapping the Earth</b>	
1. <u>Recognize, interpret, and be able to create models of the earth’s common physical features in various mapping representations, including contour maps.</u>	
<b>Earth’s Structure</b>	
2. <u>Describe the layers of the earth, including the lithosphere, the hot convecting mantle, and the dense metallic core.</u>	
<b>Heat Transfer in the Earth System</b>	
3. <u>Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth’s system.</u>	
4. <u>Explain the relationship among the energy provided by the sun, the global patterns of atmospheric movement, and the temperature differences among water, land, and atmosphere.</u>	
<b>Earth’s History</b>	
5. <u>Describe how the movement of the earth’s crustal plates causes both slow changes in the earth’s surface (e.g., formation of mountains and ocean basins) and rapid ones (e.g., volcanic eruptions and earthquakes).</u>	
6. <u>Describe and give examples of ways in which the earth’s surface is built up and torn down by natural processes, including deposition of sediments, rock formation, erosion, and weathering.</u>	
7. <u>Explain and give examples of how physical evidence, such as fossils and surface features of glaciation, supports theories that the earth has evolved over geologic time.</u>	
<b>The Earth in the Solar System</b>	
8. <u>Recognize that gravity is a force that pulls all things on and near the earth toward the center of the earth. Gravity plays a major role in the formation of the planets, stars, and solar system and in determining their motions.</u>	
9. <u>Describe lunar and solar eclipses, the observed moon phases, and tides. Relate them to the relative positions of the earth, moon, and sun.</u>	
10. <u>Compare and contrast properties and conditions of objects in the solar system (i.e., sun, planets, and moons) to those on Earth (i.e., gravitational force, distance from the sun, speed, movement, temperature, and atmospheric conditions).</u>	

**TABLE 3A**

MASSACHUSETTS Earth and Space Science Standards for Grade 8	EXPLORE Science College Readiness Standards
11. <u>Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons.</u>	
12. <u>Recognize that the universe contains many billions of galaxies, and that each galaxy contains many billions of stars.</u>	



TABLE 3B

MASSACHUSETTS Life Science Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>Classification of Organisms</b>	
1. <u>Classify organisms into the currently recognized kingdoms according to characteristics that they share. Be familiar with organisms from each kingdom.</u>	
<b>Structure and Function of Cells</b>	
2. <u>Recognize that all organisms are composed of cells, and that many organisms are single-celled (unicellular), e.g., bacteria, yeast. In these single-celled organisms, one cell must carry out all of the basic functions of life.</u>	
3. <u>Compare and contrast plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles).</u>	
4. <u>Recognize that within cells, many of the basic functions of organisms (e.g., extracting energy from food and getting rid of waste) are carried out. The way in which cells function is similar in all living organisms.</u>	
<b>Systems in Living Things</b>	
5. <u>Describe the hierarchical organization of multicellular organisms from cells to tissues to organs to systems to organisms.</u>	
6. <u>Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.</u>	
<b>Reproduction and Heredity</b>	
7. <u>Recognize that every organism requires a set of instructions that specifies its traits. These instructions are stored in the organism's chromosomes. Heredity is the passage of these instructions from one generation to another.</u>	
8. <u>Recognize that hereditary information is contained in genes located in the chromosomes of each cell. A human cell contains about 30,000 different genes on 23 different chromosomes.</u>	
9. <u>Compare sexual reproduction (offspring inherit half of their genes from each parent) with asexual reproduction (offspring is an identical copy of the parent's cell).</u>	

**TABLE 3B**

MASSACHUSETTS Life Science Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>Evolution and Biodiversity</b>	
10. Give examples of ways in which <u>genetic variation and environmental factors are causes of evolution and the diversity of organisms.</u>	
11. <u>Recognize that evidence drawn from geology, fossils, and comparative anatomy provides the basis of the theory of evolution.</u>	
12. <u>Relate the extinction of species to a mismatch of adaptation and the environment.</u>	
13. <u>Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.</u>	
<b>Energy and Living Things</b>	
14. <u>Explain the roles and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.</u>	
15. <u>Explain how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole.</u>	
16. <u>Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.</u>	
<b>Changes in Ecosystems Over Time</b>	
17. <u>Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.</u>	
18. <u>Recognize that biological evolution accounts for the diversity of species developed through gradual processes over many generations.</u>	

TABLE 3C

MASSACHUSETTS Physical Sciences Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>Properties of Matter</b>	
1. <u>Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object.</u>	
2. <u>Differentiate between volume and mass. Define density.</u>	
3. <u>Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (e.g., rulers, graduated cylinders, balances) and knowledge and appropriate use of significant digits.</u>	
4. <u>Explain and give examples of how mass is conserved in a closed system.</u>	
<b>Elements, Compounds, and Mixtures</b>	
5. <u>Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.</u>	
6. <u>Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound).</u>	
7. <u>Give basic examples of elements and compounds.</u>	
8. <u>Differentiate between mixtures and pure substances.</u>	
9. <u>Recognize that a substance (element or compound) has a melting point and a boiling point, both of which are independent of the amount of the sample.</u>	
10. <u>Differentiate between physical changes and chemical changes.</u>	
<b>Motion of Objects</b>	
11. <u>Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.</u>	
12. <u>Graph and interpret distance vs. time graphs for constant speed.</u>	
<b>Forms of Energy</b>	
13. <u>Differentiate between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.</u>	

TABLE 3C

MASSACHUSETTS Physical Sciences Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>Heat Energy</b>	
14. <u>Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.</u>	
15. <u>Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.</u>	
16. <u>Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.</u>	

**TABLE 3D**

MASSACHUSETTS Technology/Engineering Standards for Grade 8	EXPLORE Science College Readiness Standards
<b>1. Materials, Tools, and Machines</b>	
<p><b>1.1.</b> Given a design task, identify appropriate materials (e.g., wood, paper, plastic, aggregates, ceramics, metals, solvents, adhesives) based on specific properties and characteristics (e.g., strength, hardness, and flexibility).</p>	
<p><b>1.2.</b> Identify and explain appropriate measuring tools, hand tools, and power tools used to hold, lift, carry, fasten, and separate, and explain their safe and proper use.</p>	
<p><b>1.3.</b> Identify and explain the safe and proper use of measuring tools, hand tools, and machines (e.g., band saw, drill press, sander, hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) needed to construct a prototype of an engineering design.</p>	
<b>2. Engineering Design</b>	
<p><b>2.1.</b> Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate the solution(s), and redesign.</p>	
<p><b>2.2.</b> Demonstrate methods of representing solutions to a design problem, e.g., sketches, orthographic projections, multiview drawings.</p>	
<p><b>2.3.</b> Describe and explain the purpose of a given prototype.</p>	
<p><b>2.4.</b> Identify appropriate materials, tools, and machines needed to construct a prototype of a given engineering design.</p>	
<p><b>2.5.</b> Explain how such design features as size, shape, weight, function, and cost limitations would affect the construction of a given prototype.</p>	
<p><b>2.6.</b> Identify the five elements of a universal systems model: goal, inputs, processes, outputs, and feedback.</p>	
<b>3. Communication Technologies</b>	
<p><b>3.1.</b> Identify and explain the components of a communication system, i.e., source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination.</p>	

**TABLE 3D**

MASSACHUSETTS Technology/Engineering Standards for Grade 8	EXPLORE Science College Readiness Standards
<p><b>3.2.</b> Identify and explain the appropriate tools, machines, and electronic devices (e.g., drawing tools, computer-aided design, and cameras) used to produce and/or reproduce design solutions (e.g., engineering drawings, prototypes, and reports).</p>	
<p><b>3.3.</b> Identify and compare communication technologies and systems, i.e., audio, visual, printed, and mass communication.</p>	
<p><b>3.4.</b> Identify and explain how symbols and icons (e.g., international symbols and graphics) are used to communicate a message.</p>	
<p><b>4. Manufacturing Technologies</b></p>	
<p><b>4.1.</b> Describe and explain the manufacturing systems of custom and mass production.</p>	
<p><b>4.2.</b> Explain and give examples of the impacts of interchangeable parts, components of mass-produced products, and the use of automation, e.g., robotics.</p>	
<p><b>4.3.</b> Describe a manufacturing organization, e.g., corporate structure, research and development, production, marketing, quality control, distribution.</p>	
<p><b>4.4</b> Explain basic processes in manufacturing systems, e.g., cutting, shaping, assembling, joining, finishing, quality control, and safety.</p>	
<p><b>5. Construction Technologies</b></p>	
<p><b>5.1.</b> Describe and explain parts of a structure, e.g., foundation, flooring, decking, wall, roofing systems.</p>	
<p><b>5.2.</b> Identify and describe three major types of bridges (e.g., arch, beam, and suspension) and their appropriate uses (e.g., site, span, resources, and load).</p>	
<p><b>5.3.</b> <u>Explain how the forces of tension, compression, torsion, bending, and shear affect the performance of bridges.</u></p>	
<p><b>5.4.</b> <u>Describe and explain the effects of loads and structural shapes on bridges.</u></p>	
<p><b>6. Transportation Technologies</b></p>	
<p><b>6.1.</b> Identify and compare examples of transportation systems and devices that operate on or in each of the following: land, air, water, and space.</p>	

**TABLE 3D**

MASSACHUSETTS Technology/Engineering Standards for Grade 8	EXPLORE Science College Readiness Standards
<p><b>6.2.</b> Given a transportation problem, explain a possible solution using the universal systems model.</p>	
<p><b>6.3.</b> Identify and describe three subsystems of a transportation vehicle or device, i.e., structural, propulsion, guidance, suspension, control, and support.</p>	
<p><b>6.4.</b> Identify and explain lift, drag, friction, thrust, and gravity in a vehicle or device, e.g., cars, boats, airplanes, rockets.</p>	
<p><b>7. Bioengineering Technologies</b></p>	
<p><b>7.1.</b> Explain examples of adaptive or assistive devices, e.g., prosthetic devices, wheelchairs, eyeglasses, grab bars, hearing aids, lifts, braces.</p>	
<p><b>7.2.</b> <u>Describe and explain adaptive and assistive bioengineered products, e.g., food, bio-fuels, irradiation, integrated pest management.</u></p>	

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Matter and Energy in the Earth System</b>	
1.1. <u>Identify Earth's principal sources of internal and external energy, such as radioactive decay, gravity, and solar energy.</u>	
1.2. <u>Describe the characteristics of electromagnetic radiation and give examples of its impact on life and Earth's systems.</u>	
1.3. <u>Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.</u>	
1.4. <u>Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).</u>	
1.5. <u>Explain how the revolution of Earth around the Sun and the inclination of Earth on its axis cause Earth's seasonal variations (equinoxes and solstices).</u>	
1.6. <u>Describe the various conditions associated with frontal boundaries and cyclonic storms (e.g., thunderstorms, winter storms [nor'easters], hurricanes, tornadoes) and their impact on human affairs, including storm preparations.</u>	
1.7. <u>Explain the dynamics of oceanic currents, including upwelling, deep-water currents, the Labrador Current and the Gulf Stream, and their relationship to global circulation within the marine environment and climate.</u>	
1.8. <u>Read, interpret, and analyze a combination of ground-based observations, satellite data, and computer models to demonstrate Earth systems and their interconnections.</u>	
<b>2. Energy Resources in the Earth System</b>	
2.1. <u>Recognize, describe, and compare renewable energy resources (e.g., solar, wind, water, biomass) and nonrenewable energy resources (e.g., fossil fuels, nuclear energy).</u>	
2.2. <u>Describe the effects on the environment and on the carbon cycle of using both renewable and nonrenewable sources of energy.</u>	



**TABLE 3E**

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
<b>3. Earth Processes and Cycles</b>	
<p><b>3.1.</b> <u>Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments, and creates various types of landscapes. Give examples that show the effects of physical and chemical weathering on the environment.</u></p>	
<p><b>3.2.</b> <u>Describe the carbon cycle.</u></p>	
<p><b>3.3.</b> <u>Describe the nitrogen cycle.</u></p>	
<p><b>3.4.</b> <u>Explain how water flows into and through a watershed. Explain the roles of aquifers, wells, porosity, permeability, water table, and runoff.</u></p>	
<p><b>3.5.</b> <u>Describe the processes of the hydrologic cycle, including evaporation, condensation, precipitation, surface runoff and groundwater percolation, infiltration, and transpiration.</u></p>	
<p><b>3.6.</b> <u>Describe the rock cycle, and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks. Compare the physical properties of these rock types and the physical properties of common rock-forming minerals.</u></p>	
<p><b>3.7.</b> <u>Describe the absolute and relative dating methods used to measure geologic time, such as index fossils, radioactive dating, law of superposition, and crosscutting relationships.</u></p>	
<p><b>3.8.</b> <u>Trace the development of a lithospheric plate from its growth at a divergent boundary (mid-ocean ridge) to its destruction at a convergent boundary (subduction zone). Recognize that alternating magnetic polarity is recorded in rock at mid-ocean ridges.</u></p>	
<p><b>3.9.</b> <u>Explain the relationship between convection currents in Earth's mantle and the motion of the lithospheric plates.</u></p>	
<p><b>3.10.</b> <u>Relate earthquakes, volcanic activity, tsunamis, mountain building, and tectonic uplift to plate movements.</u></p>	
<p><b>3.11.</b> <u>Explain how seismic data are used to reveal Earth's interior structure and to locate earthquake epicenters.</u></p>	
<p><b>3.12.</b> <u>Describe the Richter scale of earthquake magnitude and the relative damage that is incurred by earthquakes of a given magnitude.</u></p>	

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
<b>4. The Origin and Evolution of the Universe</b>	
<p>4.1. Explain the Big Bang Theory and discuss the evidence that supports it, such as <u>background radiation and relativistic Doppler effect (i.e., “red shift”).</u></p>	
<p>4.2. Describe the influence of gravity and inertia on the <u>rotation and revolution of orbiting bodies. Explain the Sun-Earth-moon relationships (e.g., day, year, solar/lunar eclipses, tides).</u></p>	
<p>4.3. Explain how the Sun, Earth, and solar system <u>formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 billion years ago.</u></p>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about geologic, meteorological, oceanographic, and astronomical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in Earth and Space Science, including reading and interpreting maps, keys, and satellite, radar, and telescope imageries; using satellite and radar images and weather maps to illustrate weather forecasts; using seismic data to identify regions of seismic activity; and using data from various instruments that are used to study deep space and the solar system, as well as the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
	Understand a simple experimental design Identify a control in an experiment <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the experimental conditions that would produce specified results
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<b>Scientific Investigation:</b> Understand a simple experimental design
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently                             <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

= Measured by EXPLORE Science Test

\_\_\_\_\_ = Content sampled by EXPLORE Science Test

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>

TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

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MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>



TABLE 3E

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>● Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>● Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course</p>	
<ul style="list-style-type: none"> <li>● Determine percent error from experimental and accepted values.</li> </ul>	



**TABLE 3E**

MASSACHUSETTS Earth and Space Science Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>• Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); and frequency (Hz).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>• Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Matter and Energy in the Earth System</b>	
1.1. <u>Identify Earth's principal sources of internal and external energy, such as radioactive decay, gravity, and solar energy.</u>	
1.2. <u>Describe the characteristics of electromagnetic radiation and give examples of its impact on life and Earth's systems.</u>	
1.3. <u>Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.</u>	
1.4. <u>Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).</u>	
1.5. <u>Explain how the revolution of Earth around the Sun and the inclination of Earth on its axis cause Earth's seasonal variations (equinoxes and solstices).</u>	
1.6. <u>Describe the various conditions associated with frontal boundaries and cyclonic storms (e.g., thunderstorms, winter storms [nor'easters], hurricanes, tornadoes) and their impact on human affairs, including storm preparations.</u>	
1.7. <u>Explain the dynamics of oceanic currents, including upwelling, deep-water currents, the Labrador Current and the Gulf Stream, and their relationship to global circulation within the marine environment and climate.</u>	
1.8. <u>Read, interpret, and analyze a combination of ground-based observations, satellite data, and computer models to demonstrate Earth systems and their interconnections.</u>	
<b>2. Energy Resources in the Earth System</b>	
2.1. <u>Recognize, describe, and compare renewable energy resources (e.g., solar, wind, water, biomass) and nonrenewable energy resources (e.g., fossil fuels, nuclear energy).</u>	
2.2. <u>Describe the effects on the environment and on the carbon cycle of using both renewable and nonrenewable sources of energy.</u>	

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
<b>3. Earth Processes and Cycles</b>	
3.1. <u>Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments, and creates various types of landscapes. Give examples that show the effects of physical and chemical weathering on the environment.</u>	
3.2. <u>Describe the carbon cycle.</u>	
3.3. <u>Describe the nitrogen cycle.</u>	
3.4. <u>Explain how water flows into and through a watershed. Explain the roles of aquifers, wells, porosity, permeability, water table, and runoff.</u>	
3.5. <u>Describe the processes of the hydrologic cycle, including evaporation, condensation, precipitation, surface runoff and groundwater percolation, infiltration, and transpiration.</u>	
3.6. <u>Describe the rock cycle, and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks. Compare the physical properties of these rock types and the physical properties of common rock-forming minerals.</u>	
3.7. <u>Describe the absolute and relative dating methods used to measure geologic time, such as index fossils, radioactive dating, law of superposition, and crosscutting relationships.</u>	
3.8. <u>Trace the development of a lithospheric plate from its growth at a divergent boundary (mid-ocean ridge) to its destruction at a convergent boundary (subduction zone). Recognize that alternating magnetic polarity is recorded in rock at mid-ocean ridges.</u>	
3.9. <u>Explain the relationship between convection currents in Earth's mantle and the motion of the lithospheric plates.</u>	
3.10. <u>Relate earthquakes, volcanic activity, tsunamis, mountain building, and tectonic uplift to plate movements.</u>	
3.11. <u>Explain how seismic data are used to reveal Earth's interior structure and to locate earthquake epicenters.</u>	
3.12. <u>Describe the Richter scale of earthquake magnitude and the relative damage that is incurred by earthquakes of a given magnitude.</u>	

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
<b>4. The Origin and Evolution of the Universe</b>	
<p>4.1. Explain the Big Bang Theory and discuss the evidence that supports it, such as <u>background radiation and relativistic Doppler effect (i.e., “red shift”).</u></p>	
<p>4.2. Describe the influence of <u>gravity and inertia on the rotation and revolution of orbiting bodies. Explain the Sun-Earth-moon relationships (e.g., day, year, solar/lunar eclipses, tides).</u></p>	
<p>4.3. Explain how the Sun, Earth, and solar system <u>formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 billion years ago.</u></p>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about geologic, meteorological, oceanographic, and astronomical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in Earth and Space Science, including reading and interpreting maps, keys, and satellite, radar, and telescope imageries; using satellite and radar images and weather maps to illustrate weather forecasts; using seismic data to identify regions of seismic activity; and using data from various instruments that are used to study deep space and the solar system, as well as the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	

TABLE 3F

<p>MASSACHUSETTS Earth and Space Science Standards for High School</p>	<p>PLAN Science College Readiness Standards</p>
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
	<p>Understand basic scientific terminology            Find basic information in a brief body of text            Determine how the value of one variable changes as the value of another variable changes in a simple data presentation            Compare or combine data from a simple data presentation (e.g., order or sum data from a table)            Translate information into a table, graph, or diagram  <b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b>            Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)            Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)            Select two or more pieces of data from a simple data presentation            Understand basic scientific terminology            Find basic information in a brief body of text            Determine how the value of one variable changes as the value of another variable changes in a simple data presentation            Compare or combine data from a simple data presentation (e.g., order or sum data from a table)            Translate information into a table, graph, or diagram  <b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment  <b>Evaluation of Models, Inferences, and Experimental Results:</b>            Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment  <b>Evaluation of Models, Inferences, and Experimental Results:</b>            Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
	Identify key issues or assumptions in a model
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p>



TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
	<p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p>

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
	Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<ul style="list-style-type: none"> <li>● Solve simple algebraic expressions.</li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
<ul style="list-style-type: none"> <li>● Convert within a unit (e.g., centimeters to meters).</li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	<b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course	
<ul style="list-style-type: none"> <li>● Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); and frequency (Hz).</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology

TABLE 3F

MASSACHUSETTS Earth and Space Science Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"><li>• Use the Celsius and Kelvin scales.</li></ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Matter and Energy in the Earth System</b>	
1.1. <u>Identify Earth's principal sources of internal and external energy, such as radioactive decay, gravity, and solar energy.</u>	
1.2. <u>Describe the characteristics of electromagnetic radiation and give examples of its impact on life and Earth's systems.</u>	
1.3. <u>Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.</u>	
1.4. <u>Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).</u>	
1.5. <u>Explain how the revolution of Earth around the Sun and the inclination of Earth on its axis cause Earth's seasonal variations (equinoxes and solstices).</u>	
1.6. <u>Describe the various conditions associated with frontal boundaries and cyclonic storms (e.g., thunderstorms, winter storms [nor'easters], hurricanes, tornadoes) and their impact on human affairs, including storm preparations.</u>	
1.7. <u>Explain the dynamics of oceanic currents, including upwelling, deep-water currents, the Labrador Current and the Gulf Stream, and their relationship to global circulation within the marine environment and climate.</u>	
1.8. <u>Read, interpret, and analyze a combination of ground-based observations, satellite data, and computer models to demonstrate Earth systems and their interconnections.</u>	
<b>2. Energy Resources in the Earth System</b>	
2.1. <u>Recognize, describe, and compare renewable energy resources (e.g., solar, wind, water, biomass) and nonrenewable energy resources (e.g., fossil fuels, nuclear energy).</u>	
2.2. <u>Describe the effects on the environment and on the carbon cycle of using both renewable and nonrenewable sources of energy.</u>	

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
<b>3. Earth Processes and Cycles</b>	
3.1. <u>Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments, and creates various types of landscapes. Give examples that show the effects of physical and chemical weathering on the environment.</u>	
3.2. <u>Describe the carbon cycle.</u>	
3.3. <u>Describe the nitrogen cycle.</u>	
3.4. <u>Explain how water flows into and through a watershed. Explain the roles of aquifers, wells, porosity, permeability, water table, and runoff.</u>	
3.5. <u>Describe the processes of the hydrologic cycle, including evaporation, condensation, precipitation, surface runoff and groundwater percolation, infiltration, and transpiration.</u>	
3.6. <u>Describe the rock cycle, and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks. Compare the physical properties of these rock types and the physical properties of common rock-forming minerals.</u>	
3.7. <u>Describe the absolute and relative dating methods used to measure geologic time, such as index fossils, radioactive dating, law of superposition, and crosscutting relationships.</u>	
3.8. <u>Trace the development of a lithospheric plate from its growth at a divergent boundary (mid-ocean ridge) to its destruction at a convergent boundary (subduction zone). Recognize that alternating magnetic polarity is recorded in rock at mid-ocean ridges.</u>	
3.9. <u>Explain the relationship between convection currents in Earth's mantle and the motion of the lithospheric plates.</u>	
3.10. <u>Relate earthquakes, volcanic activity, tsunamis, mountain building, and tectonic uplift to plate movements.</u>	
3.11. <u>Explain how seismic data are used to reveal Earth's interior structure and to locate earthquake epicenters.</u>	
3.12. <u>Describe the Richter scale of earthquake magnitude and the relative damage that is incurred by earthquakes of a given magnitude.</u>	

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
<b>4. The Origin and Evolution of the Universe</b>	
4.1. Explain the Big Bang Theory and discuss the evidence that supports it, such as <u>background radiation and relativistic Doppler effect (i.e., “red shift”).</u>	
4.2. Describe the influence of gravity and inertia on the <u>rotation and revolution of orbiting bodies. Explain the Sun-Earth-moon relationships (e.g., day, year, solar/lunar eclipses, tides).</u>	
4.3. Explain how the Sun, Earth, and solar system <u>formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 billion years ago.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about geologic, meteorological, oceanographic, and astronomical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in Earth and Space Science, including reading and interpreting maps, keys, and satellite, radar, and telescope imageries; using satellite and radar images and weather maps to illustrate weather forecasts; using seismic data to identify regions of seismic activity; and using data from various instruments that are used to study deep space and the solar system, as well as the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>



TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>• Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results</p>

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

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MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>● Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>● Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>

TABLE 3G

MASSACHUSETTS Earth and Space Science Standards for High School	ACT Science College Readiness Standards
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); and frequency (Hz).</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology

TABLE 3H

MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<b>I. CONTENT STANDARDS</b>	
<b>1. Matter and Energy in the Earth System</b>	
1.1. Identify Earth's principal sources of internal and external energy, such as radioactive decay, gravity, and solar energy.	
1.2. Describe the characteristics of electromagnetic radiation and give examples of its impact on life and Earth's systems.	
1.3. Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.	
1.4. Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).	
1.5. Explain how the revolution of Earth around the Sun and the inclination of Earth on its axis cause Earth's seasonal variations (equinoxes and solstices).	
1.6. Describe the various conditions associated with frontal boundaries and cyclonic storms (e.g., thunderstorms, winter storms [nor'easters], hurricanes, tornadoes) and their impact on human affairs, including storm preparations.	
1.7. Explain the dynamics of oceanic currents, including upwelling, deep-water currents, the Labrador Current and the Gulf Stream, and their relationship to global circulation within the marine environment and climate.	
1.8. Read, interpret, and analyze a combination of ground-based observations, satellite data, and computer models to demonstrate Earth systems and their interconnections.	
<b>2. Energy Resources in the Earth System</b>	
2.1. Recognize, describe, and compare renewable energy resources (e.g., solar, wind, water, biomass) and nonrenewable energy resources (e.g., fossil fuels, nuclear energy).	
2.2. Describe the effects on the environment and on the carbon cycle of using both renewable and nonrenewable sources of energy.	

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MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<b>3. Earth Processes and Cycles</b>	
<p><b>3.1.</b> Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments, and creates various types of landscapes. Give examples that show the effects of physical and chemical weathering on the environment.</p>	
<p><b>3.2.</b> Describe the carbon cycle.</p>	
<p><b>3.3.</b> Describe the nitrogen cycle.</p>	
<p><b>3.4.</b> Explain how water flows into and through a watershed. Explain the roles of aquifers, wells, porosity, permeability, water table, and runoff.</p>	
<p><b>3.5.</b> Describe the processes of the hydrologic cycle, including evaporation, condensation, precipitation, surface runoff and groundwater percolation, infiltration, and transpiration.</p>	
<p><b>3.6.</b> Describe the rock cycle, and the processes that are responsible for the formation of igneous, sedimentary, and metamorphic rocks. Compare the physical properties of these rock types and the physical properties of common rock-forming minerals.</p>	
<p><b>3.7.</b> Describe the absolute and relative dating methods used to measure geologic time, such as index fossils, radioactive dating, law of superposition, and crosscutting relationships.</p>	
<p><b>3.8.</b> Trace the development of a lithospheric plate from its growth at a divergent boundary (mid-ocean ridge) to its destruction at a convergent boundary (subduction zone). Recognize that alternating magnetic polarity is recorded in rock at mid-ocean ridges.</p>	
<p><b>3.9.</b> Explain the relationship between convection currents in Earth's mantle and the motion of the lithospheric plates.</p>	
<p><b>3.10.</b> Relate earthquakes, volcanic activity, tsunamis, mountain building, and tectonic uplift to plate movements.</p>	
<p><b>3.11.</b> Explain how seismic data are used to reveal Earth's interior structure and to locate earthquake epicenters.</p>	
<p><b>3.12.</b> Describe the Richter scale of earthquake magnitude and the relative damage that is incurred by earthquakes of a given magnitude.</p>	

TABLE 3H

MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<b>4. The Origin and Evolution of the Universe</b>	
<b>4.1.</b> Explain the Big Bang Theory and discuss the evidence that supports it, such as background radiation and relativistic Doppler effect (i.e., “red shift”).	
<b>4.2.</b> Describe the influence of gravity and inertia on the rotation and revolution of orbiting bodies. Explain the Sun-Earth-moon relationships (e.g., day, year, solar/lunar eclipses, tides).	
<b>4.3.</b> Explain how the Sun, Earth, and solar system formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 billion years ago.	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about geologic, meteorological, oceanographic, and astronomical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in Earth and Space Science, including reading and interpreting maps, keys, and satellite, radar, and telescope imageries; using satellite and radar images and weather maps to illustrate weather forecasts; using seismic data to identify regions of seismic activity; and using data from various instruments that are used to study deep space and the solar system, as well as the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>● Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>● Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	
<ul style="list-style-type: none"> <li>● Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>● Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>● Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	
<ul style="list-style-type: none"> <li>● Identify independent and dependent variables.</li> </ul>	
<ul style="list-style-type: none"> <li>● Write procedures that are clear and replicable.</li> </ul>	



TABLE 3H

MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>● Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>● making observations</li> <li>● making and recording measurements at appropriate levels of precision</li> <li>● collecting data or evidence in an organized way</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>● Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	
<ul style="list-style-type: none"> <li>● Follow safety guidelines.</li> </ul>	
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>● Present relationships between and among variables in appropriate forms.</li> </ul>	
<ul style="list-style-type: none"> <li>● Represent data and relationships between and among variables in charts and graphs.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use mathematical operations to analyze and interpret data results.</li> </ul>	
<ul style="list-style-type: none"> <li>● Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	
<ul style="list-style-type: none"> <li>● State questions raised by an experiment that may require further investigation.</li> </ul>	
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>● Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	
<ul style="list-style-type: none"> <li>● Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>● Explain diagrams and charts that represent relationships of variables.</li> </ul>	

TABLE 3H

MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	
<b>III. MATHEMATICAL SKILLS</b>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and <b>use tables and graphs to interpret data sets.</b></li> </ul>	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p> <p>Apply information from one or more complicated graphics to specific situations</p> <p>Use the information to make decisions</p>
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	

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MASSACHUSETTS Earth and Space Science Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (<math>m/s^2</math>); and frequency (Hz).</li> </ul>	
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. The Chemistry of Life</b>	
1.1. <u>Recognize that biological organisms are composed primarily of very few elements. The six most common are C, H, N, O, P, and S.</u>	
1.2. <u>Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, nucleic acids).</u>	
1.3. <u>Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.</u>	
<b>2. Cell Biology</b>	
2.1. <u>Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, active transport).</u>	
2.2. <u>Compare and contrast, at the cellular level, the general structures and degrees of complexity of prokaryotes and eukaryotes.</u>	
2.3. <u>Use cellular evidence (e.g., cell structure, cell number, cell reproduction) and modes of nutrition to describe the six kingdoms (Archaeobacteria, Eubacteria, Protista, Fungi, Plantae, Animalia).</u>	
2.4. <u>Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration. Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.</u>	
2.5. <u>Explain the important role that ATP serves in metabolism.</u>	
2.6. <u>Describe the cell cycle and the process of mitosis. Explain the role of mitosis in the formation of new cells, and its importance in maintaining chromosome number during asexual reproduction.</u>	
2.7. <u>Describe how the process of meiosis results in the formation of haploid cells. Explain the importance of this process in sexual reproduction, and how gametes form diploid zygotes in the process of fertilization.</u>	

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
2.8. <u>Compare and contrast a virus and a cell in terms of genetic material and reproduction.</u>	
<b>3. Genetics</b>	
3.1. <u>Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance.</u>	
3.2. <u>Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code. Explain the basic processes of transcription and translation, and how they result in the expression of genes. Distinguish among the end products of replication, transcription, and translation.</u>	
3.3. <u>Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism. Explain how mutations in gametes may result in phenotypic changes in offspring.</u>	
3.4. <u>Distinguish among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, codominant, sex-linked, polygenic, incomplete dominance, multiple alleles).</u>	
3.5. <u>Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance (e.g., dihybrid crosses).</u>	
3.6. <u>Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.</u>	
<b>4. Anatomy and Physiology</b>	
4.1. <u>Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth.</u>	
4.2. <u>Explain how the circulatory system (heart, arteries, veins, capillaries, red blood cells) transports nutrients and oxygen to cells and removes cell wastes. Describe how the kidneys and the liver are closely associated with the circulatory system as they perform the excretory function of removing waste from the blood. Recognize that kidneys remove nitrogenous wastes, and the liver removes many toxic compounds from blood.</u>	
4.3. <u>Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide.</u>	

**TABLE 31**

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
<p><b>4.4.</b> <u>Explain how the nervous system (brain, spinal cord, sensory neurons, motor neurons) mediates communication among different parts of the body and mediates the body's interactions with the environment. Identify the basic unit of the nervous system, the neuron, and explain generally how it works.</u></p>	
<p><b>4.5.</b> <u>Explain how the muscular/skeletal system (skeletal, smooth and cardiac muscles, bones, cartilage, ligaments, tendons) works with other systems to support the body and allow for movement. Recognize that bones produce blood cells.</u></p>	
<p><b>4.6.</b> <u>Recognize that the sexual reproductive system allows organisms to produce offspring that receive half of their genetic information from their mother and half from their father, and that sexually produced offspring resemble, but are not identical to, either of their parents.</u></p>	
<p><b>4.7.</b> Recognize that communication among cells is required for coordination of body functions. The nerves communicate with electrochemical signals, hormones circulate through the blood, and some cells produce signals to communicate only with nearby cells.</p>	
<p><b>4.8.</b> <u>Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.</u></p>	
<p><b>5. Evolution and Biodiversity</b></p>	
<p><b>5.1.</b> <u>Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection.</u></p>	
<p><b>5.2.</b> <u>Describe species as reproductively distinct groups of organisms. Recognize that species are further classified into a hierarchical taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and molecular similarities. Describe the role that geographic isolation can play in speciation.</u></p>	
<p><b>5.3.</b> <u>Explain how evolution through natural selection can result in changes in biodiversity through the increase or decrease of genetic diversity within a population.</u></p>	
<p><b>6. Ecology</b></p>	
<p><b>6.1.</b> <u>Explain how birth, death, immigration, and emigration influence population size.</u></p>	

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
<p><b>6.2.</b> <u>Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.</u></p>	
<p><b>6.3.</b> <u>Use a food web to identify and distinguish producers, consumers, and decomposers, and explain the transfer of energy through trophic levels. Describe how relationships among organisms (predation, parasitism, competition, commensalism, mutualism) add to the complexity of biological communities.</u></p>	
<p><b>6.4.</b> <u>Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.</u></p>	
<p><b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b></p>	
<p>Scientific literacy can be achieved as students inquire about the biological world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in biology, along with the inquiry skills listed below.</p>	
<p><b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.</p>	
<ul style="list-style-type: none"> <li>Observe the world from a Scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
	Understand a simple experimental design Identify a control in an experiment <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the experimental conditions that would produce specified results
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<b>Scientific Investigation:</b> Understand a simple experimental design
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	



**TABLE 31**

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

**TABLE 31**

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>● Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>● State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

TABLE 31

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
	Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<ul style="list-style-type: none"> <li>● <b>Solve simple algebraic expressions.</b></li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● <b>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</b></li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
<ul style="list-style-type: none"> <li>● <b>Convert within a unit (e.g., centimeters to meters).</b></li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● <b>Use common prefixes such as milli-, centi-, and kilo-.</b></li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology
<ul style="list-style-type: none"> <li>● <b>Use scientific notation, where appropriate.</b></li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● <b>Use ratio and proportion to solve problems.</b></li> </ul>	<b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>● Determine the correct number of significant figures.</li> </ul>	

**TABLE 3I**

MASSACHUSETTS Biology Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); and time (s).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius scale.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. The Chemistry of Life</b>	
1.1. <u>Recognize that biological organisms are composed primarily of very few elements. The six most common are C, H, N, O, P, and S.</u>	
1.2. <u>Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, nucleic acids).</u>	
1.3. <u>Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.</u>	
<b>2. Cell Biology</b>	
2.1. <u>Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, active transport).</u>	
2.2. <u>Compare and contrast, at the cellular level, the general structures and degrees of complexity of prokaryotes and eukaryotes.</u>	
2.3. <u>Use cellular evidence (e.g., cell structure, cell number, cell reproduction) and modes of nutrition to describe the six kingdoms (Archaeobacteria, Eubacteria, Protista, Fungi, Plantae, Animalia).</u>	
2.4. <u>Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration. Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.</u>	
2.5. <u>Explain the important role that ATP serves in metabolism.</u>	
2.6. <u>Describe the cell cycle and the process of mitosis. Explain the role of mitosis in the formation of new cells, and its importance in maintaining chromosome number during asexual reproduction.</u>	
2.7. <u>Describe how the process of meiosis results in the formation of haploid cells. Explain the importance of this process in sexual reproduction, and how gametes form diploid zygotes in the process of fertilization.</u>	

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
2.8. <u>Compare and contrast a virus and a cell in terms of genetic material and reproduction.</u>	
<b>3. Genetics</b>	
3.1. <u>Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance.</u>	
3.2. <u>Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code. Explain the basic processes of transcription and translation, and how they result in the expression of genes. Distinguish among the end products of replication, transcription, and translation.</u>	
3.3. <u>Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism. Explain how mutations in gametes may result in phenotypic changes in offspring.</u>	
3.4. <u>Distinguish among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, codominant, sex-linked, polygenic, incomplete dominance, multiple alleles).</u>	
3.5. <u>Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance (e.g., dihybrid crosses).</u>	
3.6. <u>Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.</u>	
<b>4. Anatomy and Physiology</b>	
4.1. <u>Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth.</u>	
4.2. <u>Explain how the circulatory system (heart, arteries, veins, capillaries, red blood cells) transports nutrients and oxygen to cells and removes cell wastes. Describe how the kidneys and the liver are closely associated with the circulatory system as they perform the excretory function of removing waste from the blood. Recognize that kidneys remove nitrogenous wastes, and the liver removes many toxic compounds from blood.</u>	
4.3. <u>Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide.</u>	



TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
4.4. <u>Explain how the nervous system (brain, spinal cord, sensory neurons, motor neurons) mediates communication among different parts of the body and mediates the body's interactions with the environment. Identify the basic unit of the nervous system, the neuron, and explain generally how it works.</u>	
4.5. <u>Explain how the muscular/skeletal system (skeletal, smooth and cardiac muscles, bones, cartilage, ligaments, tendons) works with other systems to support the body and allow for movement. Recognize that bones produce blood cells.</u>	
4.6. <u>Recognize that the sexual reproductive system allows organisms to produce offspring that receive half of their genetic information from their mother and half from their father, and that sexually produced offspring resemble, but are not identical to, either of their parents.</u>	
4.7. <u>Recognize that communication among cells is required for coordination of body functions. The nerves communicate with electrochemical signals, hormones circulate through the blood, and some cells produce signals to communicate only with nearby cells.</u>	
4.8. <u>Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.</u>	
<b>5. Evolution and Biodiversity</b>	
5.1. <u>Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection.</u>	
5.2. <u>Describe species as reproductively distinct groups of organisms. Recognize that species are further classified into a hierarchical taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and molecular similarities. Describe the role that geographic isolation can play in speciation.</u>	
5.3. <u>Explain how evolution through natural selection can result in changes in biodiversity through the increase or decrease of genetic diversity within a population.</u>	
<b>6. Ecology</b>	
6.1. <u>Explain how birth, death, immigration, and emigration influence population size.</u>	

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
<p><b>6.2.</b> <u>Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.</u></p>	
<p><b>6.3.</b> <u>Use a food web to identify and distinguish producers, consumers, and decomposers, and explain the transfer of energy through trophic levels. Describe how relationships among organisms (predation, parasitism, competition, commensalism, mutualism) add to the complexity of biological communities.</u></p>	
<p><b>6.4.</b> <u>Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.</u></p>	
<p><b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b></p>	
<p>Scientific literacy can be achieved as students inquire about the biological world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in biology, along with the inquiry skills listed below.</p>	
<p><b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.</p>	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b> Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

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MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>● Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>● State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>

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MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>• Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>• Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
	<p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p>III. MATHEMATICAL SKILLS</p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>



TABLE 3J

MASSACHUSETTS Biology Standards for High School	PLAN Science College Readiness Standards
	Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<ul style="list-style-type: none"> <li>● <b>Solve simple algebraic expressions.</b></li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● <b>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</b></li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
<ul style="list-style-type: none"> <li>● <b>Convert within a unit (e.g., centimeters to meters).</b></li> </ul>	<b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● <b>Use common prefixes such as milli-, centi-, and kilo-.</b></li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology
<ul style="list-style-type: none"> <li>● <b>Use scientific notation, where appropriate.</b></li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>● <b>Use ratio and proportion to solve problems.</b></li> </ul>	<b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>● Determine the correct number of significant figures.</li> </ul>	



TABLE 3J

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<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); and time (s).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius scale.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. The Chemistry of Life</b>	
1.1. <u>Recognize that biological organisms are composed primarily of very few elements. The six most common are C, H, N, O, P, and S.</u>	
1.2. <u>Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, nucleic acids).</u>	
1.3. <u>Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.</u>	
<b>2. Cell Biology</b>	
2.1. <u>Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, active transport).</u>	
2.2. <u>Compare and contrast, at the cellular level, the general structures and degrees of complexity of prokaryotes and eukaryotes.</u>	
2.3. <u>Use cellular evidence (e.g., cell structure, cell number, cell reproduction) and modes of nutrition to describe the six kingdoms (Archaeobacteria, Eubacteria, Protista, Fungi, Plantae, Animalia).</u>	
2.4. <u>Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration. Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.</u>	
2.5. <u>Explain the important role that ATP serves in metabolism.</u>	
2.6. <u>Describe the cell cycle and the process of mitosis. Explain the role of mitosis in the formation of new cells, and its importance in maintaining chromosome number during asexual reproduction.</u>	
2.7. <u>Describe how the process of meiosis results in the formation of haploid cells. Explain the importance of this process in sexual reproduction, and how gametes form diploid zygotes in the process of fertilization.</u>	

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
2.8. <u>Compare and contrast a virus and a cell in terms of genetic material and reproduction.</u>	
<b>3. Genetics</b>	
3.1. <u>Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance.</u>	
3.2. <u>Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code. Explain the basic processes of transcription and translation, and how they result in the expression of genes. Distinguish among the end products of replication, transcription, and translation.</u>	
3.3. <u>Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism. Explain how mutations in gametes may result in phenotypic changes in offspring.</u>	
3.4. <u>Distinguish among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, codominant, sex-linked, polygenic, incomplete dominance, multiple alleles).</u>	
3.5. <u>Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance (e.g., dihybrid crosses).</u>	
3.6. <u>Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.</u>	
<b>4. Anatomy and Physiology</b>	
4.1. <u>Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth.</u>	
4.2. <u>Explain how the circulatory system (heart, arteries, veins, capillaries, red blood cells) transports nutrients and oxygen to cells and removes cell wastes. Describe how the kidneys and the liver are closely associated with the circulatory system as they perform the excretory function of removing waste from the blood. Recognize that kidneys remove nitrogenous wastes, and the liver removes many toxic compounds from blood.</u>	
4.3. <u>Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide.</u>	

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
<p>4.4. <u>Explain how the nervous system (brain, spinal cord, sensory neurons, motor neurons) mediates communication among different parts of the body and mediates the body's interactions with the environment. Identify the basic unit of the nervous system, the neuron, and explain generally how it works.</u></p>	
<p>4.5. <u>Explain how the muscular/skeletal system (skeletal, smooth and cardiac muscles, bones, cartilage, ligaments, tendons) works with other systems to support the body and allow for movement. Recognize that bones produce blood cells.</u></p>	
<p>4.6. <u>Recognize that the sexual reproductive system allows organisms to produce offspring that receive half of their genetic information from their mother and half from their father, and that sexually produced offspring resemble, but are not identical to, either of their parents.</u></p>	
<p>4.7. <u>Recognize that communication among cells is required for coordination of body functions. The nerves communicate with electrochemical signals, hormones circulate through the blood, and some cells produce signals to communicate only with nearby cells.</u></p>	
<p>4.8. <u>Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.</u></p>	
<p><b>5. Evolution and Biodiversity</b></p>	
<p>5.1. <u>Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection.</u></p>	
<p>5.2. <u>Describe species as reproductively distinct groups of organisms. Recognize that species are further classified into a hierarchical taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and molecular similarities. Describe the role that geographic isolation can play in speciation.</u></p>	
<p>5.3. <u>Explain how evolution through natural selection can result in changes in biodiversity through the increase or decrease of genetic diversity within a population.</u></p>	
<p><b>6. Ecology</b></p>	
<p>6.1. <u>Explain how birth, death, immigration, and emigration influence population size.</u></p>	

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
<p><b>6.2.</b> <u>Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.</u></p>	
<p><b>6.3.</b> <u>Use a food web to identify and distinguish producers, consumers, and decomposers, and explain the transfer of energy through trophic levels. Describe how relationships among organisms (predation, parasitism, competition, commensalism, mutualism) add to the complexity of biological communities.</u></p>	
<p><b>6.4.</b> <u>Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.</u></p>	
<p><b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b></p>	
<p>Scientific literacy can be achieved as students inquire about the biological world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in biology, along with the inquiry skills listed below.</p>	
<p><b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.</p>	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b> Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>



TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
	<p>Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>• <b>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</b></li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>• <b>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• <b>Explain diagrams and charts that represent relationships of variables.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
	<p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<h3>III. MATHEMATICAL SKILLS</h3>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
	<p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>● Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>● Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>

TABLE 3K

MASSACHUSETTS Biology Standards for High School	ACT Science College Readiness Standards
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); and time (s).</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology
<ul style="list-style-type: none"> <li>Use the Celsius scale.</li> </ul>	<b>Interpretation of Data:</b> Understand basic scientific terminology

TABLE 3L

MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
<b>I. CONTENT STANDARDS</b>	
<b>1. The Chemistry of Life</b>	
1.1. Recognize that biological organisms are composed primarily of very few elements. The six most common are C, H, N, O, P, and S.	
1.2. Describe the basic molecular structures and primary functions of the four major categories of organic molecules (carbohydrates, lipids, proteins, nucleic acids).	
1.3. Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, that have an effect on enzymes.	
<b>2. Cell Biology</b>	
2.1. Relate cell parts/organelles (plasma membrane, nuclear envelope, nucleus, nucleolus, cytoplasm, mitochondrion, endoplasmic reticulum, Golgi apparatus, lysosome, ribosome, vacuole, cell wall, chloroplast, cytoskeleton, centriole, cilium, flagellum, pseudopod) to their functions. Explain the role of cell membranes as a highly selective barrier (diffusion, osmosis, facilitated diffusion, active transport).	
2.2. Compare and contrast, at the cellular level, the general structures and degrees of complexity of prokaryotes and eukaryotes.	
2.3. Use cellular evidence (e.g., cell structure, cell number, cell reproduction) and modes of nutrition to describe the six kingdoms (Archaeobacteria, Eubacteria, Protista, Fungi, Plantae, Animalia).	
2.4. Identify the reactants, products, and basic purposes of photosynthesis and cellular respiration. Explain the interrelated nature of photosynthesis and cellular respiration in the cells of photosynthetic organisms.	
2.5. Explain the important role that ATP serves in metabolism.	
2.6. Describe the cell cycle and the process of mitosis. Explain the role of mitosis in the formation of new cells, and its importance in maintaining chromosome number during asexual reproduction.	
2.7. Describe how the process of meiosis results in the formation of haploid cells. Explain the importance of this process in sexual reproduction, and how gametes form diploid zygotes in the process of fertilization.	

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MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
2.8. Compare and contrast a virus and a cell in terms of genetic material and reproduction.	
<b>3. Genetics</b>	
3.1. Describe the basic structure (double helix, sugar/phosphate backbone, linked by complementary nucleotide pairs) of DNA, and describe its function in genetic inheritance.	
3.2. Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic code. Explain the basic processes of transcription and translation, and how they result in the expression of genes. Distinguish among the end products of replication, transcription, and translation.	
3.3. Explain how mutations in the DNA sequence of a gene may or may not result in phenotypic change in an organism. Explain how mutations in gametes may result in phenotypic changes in offspring.	
3.4. Distinguish among observed inheritance patterns caused by several types of genetic traits (dominant, recessive, codominant, sex-linked, polygenic, incomplete dominance, multiple alleles).	
3.5. Describe how Mendel's laws of segregation and independent assortment can be observed through patterns of inheritance (e.g., dihybrid crosses).	
3.6. Use a Punnett Square to determine the probabilities for genotype and phenotype combinations in monohybrid crosses.	
<b>4. Anatomy and Physiology</b>	
4.1. Explain generally how the digestive system (mouth, pharynx, esophagus, stomach, small and large intestines, rectum) converts macromolecules from food into smaller molecules that can be used by cells for energy and for repair and growth.	
4.2. Explain how the circulatory system (heart, arteries, veins, capillaries, red blood cells) transports nutrients and oxygen to cells and removes cell wastes. Describe how the kidneys and the liver are closely associated with the circulatory system as they perform the excretory function of removing waste from the blood. Recognize that kidneys remove nitrogenous wastes, and the liver removes many toxic compounds from blood.	
4.3. Explain how the respiratory system (nose, pharynx, larynx, trachea, lungs, alveoli) provides exchange of oxygen and carbon dioxide.	

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MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
<p><b>4.4.</b> Explain how the nervous system (brain, spinal cord, sensory neurons, motor neurons) mediates communication among different parts of the body and mediates the body's interactions with the environment. Identify the basic unit of the nervous system, the neuron, and explain generally how it works.</p>	
<p><b>4.5.</b> Explain how the muscular/skeletal system (skeletal, smooth and cardiac muscles, bones, cartilage, ligaments, tendons) works with other systems to support the body and allow for movement. Recognize that bones produce blood cells.</p>	
<p><b>4.6.</b> Recognize that the sexual reproductive system allows organisms to produce offspring that receive half of their genetic information from their mother and half from their father, and that sexually produced offspring resemble, but are not identical to, either of their parents.</p>	
<p><b>4.7.</b> Recognize that communication among cells is required for coordination of body functions. The nerves communicate with electrochemical signals, hormones circulate through the blood, and some cells produce signals to communicate only with nearby cells.</p>	
<p><b>4.8.</b> Recognize that the body's systems interact to maintain homeostasis. Describe the basic function of a physiological feedback loop.</p>	
<b>5. Evolution and Biodiversity</b>	
<p><b>5.1.</b> Explain how evolution is demonstrated by evidence from the fossil record, comparative anatomy, genetics, molecular biology, and examples of natural selection.</p>	
<p><b>5.2.</b> Describe species as reproductively distinct groups of organisms. Recognize that species are further classified into a hierarchical taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and molecular similarities. Describe the role that geographic isolation can play in speciation.</p>	
<p><b>5.3.</b> Explain how evolution through natural selection can result in changes in biodiversity through the increase or decrease of genetic diversity within a population.</p>	
<b>6. Ecology</b>	
<p><b>6.1.</b> Explain how birth, death, immigration, and emigration influence population size.</p>	

TABLE 3L

MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
<p><b>6.2.</b> Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.</p>	
<p><b>6.3.</b> Use a food web to identify and distinguish producers, consumers, and decomposers, and explain the transfer of energy through trophic levels. Describe how relationships among organisms (predation, parasitism, competition, commensalism, mutualism) add to the complexity of biological communities.</p>	
<p><b>6.4.</b> Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.</p>	
<p><b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b></p>	
<p>Scientific literacy can be achieved as students inquire about the biological world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in biology, along with the inquiry skills listed below.</p>	
<p><b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.</p>	
<ul style="list-style-type: none"> <li>● Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>● Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	
<ul style="list-style-type: none"> <li>● Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	
<p><b>SIS2.</b> Design and conduct scientific investigations.</p>	
<ul style="list-style-type: none"> <li>● Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>● Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	
<ul style="list-style-type: none"> <li>● Identify independent and dependent variables.</li> </ul>	
<ul style="list-style-type: none"> <li>● Write procedures that are clear and replicable.</li> </ul>	
<ul style="list-style-type: none"> <li>● Employ appropriate methods for accurately and consistently                             <ul style="list-style-type: none"> <li>● making observations</li> <li>● making and recording measurements at appropriate levels of precision</li> </ul> </li> </ul>	



TABLE 3L

MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>collecting data or evidence in an organized way</li> </ul>	
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	
<ul style="list-style-type: none"> <li><b>Represent data and relationships between and among variables in charts and graphs.</b></li> </ul>	<p>Find one or two pieces of information in a graphic</p> <p>Fill in one or two pieces of information that are missing from a graphic</p> <p>Find several pieces of information in one or two graphics</p> <p>Understand how graphics are related to each other</p> <p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Sort through distracting information</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p> <p>Apply information from one or more complicated graphics to specific situations</p> <p>Use the information to make decisions</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	

TABLE 3L

MASSACHUSETTS Biology Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p>
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p>

**TABLE 3L**

<b>MASSACHUSETTS Biology Standards for High School</b>	<b>WorkKeys Locating Information Skills</b>
	Apply information from one or more complicated graphics to specific situations Use the information to make decisions
<ul style="list-style-type: none"> <li>● Solve simple algebraic expressions.</li> </ul>	
<ul style="list-style-type: none"> <li>● Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>● Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	
<ul style="list-style-type: none"> <li>● Convert within a unit (e.g., centimeters to meters).</li> </ul>	
<ul style="list-style-type: none"> <li>● Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>● Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>● Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); and time (s).</li> </ul>	
<ul style="list-style-type: none"> <li>● Use the Celsius scale.</li> </ul>	

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Properties of Matter</b>	
1.1. <u>Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.</u>	
1.2. <u>Explain the difference between pure substances (elements and compounds) and mixtures. Differentiate between heterogeneous and homogeneous mixtures.</u>	
1.3. <u>Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle motion, and phase transitions.</u>	
<b>2. Atomic Structure and Nuclear Chemistry</b>	
2.1. <u>Recognize discoveries from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus), and Bohr (planetary model of atom), and understand how each discovery leads to modern theory.</u>	
2.2. <u>Describe Rutherford's "gold foil" experiment that led to the discovery of the nuclear atom. Identify the major components (protons, neutrons, and electrons) of the nuclear atom and explain how they interact.</u>	
2.3. <u>Interpret and apply the laws of conservation of mass, constant composition (definite proportions), and multiple proportions.</u>	
2.4. <u>Write the electron configurations for the first twenty elements of the periodic table.</u>	
2.5. <u>Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power).</u>	
2.6. <u>Describe the process of radioactive decay by using nuclear equations, and explain the concept of half-life for an isotope (for example, C-14 is a powerful tool in determining the age of objects).</u>	
2.7. <u>Compare and contrast nuclear fission and nuclear fusion.</u>	

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<b>3. Periodicity</b>	
3.1. <u>Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table.</u>	
3.2. <u>Use the periodic table to identify the three classes of elements: metals, nonmetals, and metalloids.</u>	
3.3. <u>Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table.</u>	
3.4. <u>Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).</u>	
<b>4. Chemical Bonding</b>	
4.1. <u>Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.</u>	
4.2. <u>Draw Lewis dot structures for simple molecules and ionic compounds.</u>	
4.3. <u>Use electronegativity to explain the difference between polar and nonpolar covalent bonds.</u>	
4.4. <u>Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.</u>	
4.5. <u>Identify how hydrogen bonding in water affects a variety of physical, chemical, and biological phenomena (e.g., surface tension, capillary action, density, boiling point).</u>	
4.6. <u>Name and write the chemical formulas for simple ionic and molecular compounds, including those that contain the polyatomic ions: ammonium, carbonate, hydroxide, nitrate, phosphate, and sulfate.</u>	
<b>5. Chemical Reactions and Stoichiometry</b>	
5.1. <u>Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions).</u>	
5.2. <u>Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.</u>	

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
5.3. <u>Use the mole concept to determine number of particles and molar mass for elements and compounds.</u>	
5.4. <u>Determine percent compositions, empirical formulas, and molecular formulas.</u>	
5.5. <u>Calculate the mass-to-mass stoichiometry for a chemical reaction.</u>	
5.6. <u>Calculate percent yield in a chemical reaction.</u>	
<b>6. States of Matter, Kinetic Molecular Theory, and Thermochemistry</b>	
6.1. <u>Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and the number of particles in a gas sample (Avogadro's hypothesis). Use the combined gas law to determine changes in pressure, volume, and temperature.</u>	
6.2. <u>Perform calculations using the ideal gas law. Understand the molar volume at 273 K and 1 atmosphere (STP).</u>	
6.3. <u>Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.</u>	
6.4. <u>Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.</u>	
6.5. <u>Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy).</u>	
<b>7. Solutions, Rates of Reaction, and Equilibrium</b>	
7.1. <u>Describe the process by which solutes dissolve in solvents.</u>	
7.2. <u>Calculate concentration in terms of molarity. Use molarity to perform solution dilution and solution stoichiometry.</u>	
7.3. <u>Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).</u>	
7.4. <u>Compare and contrast qualitatively the properties of solutions and pure solvents (colligative properties such as boiling point and freezing point).</u>	

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
7.5. <u>Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).</u>	
7.6. <u>Predict the shift in equilibrium when a system is subjected to a stress (LeChatelier's principle) and identify the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).</u>	
<b>8. Acids and Bases and Oxidation-Reduction Reactions</b>	
8.1. <u>Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Bronsted-Lowry theory of acids and bases in terms of proton donors and acceptors.</u>	
8.2. <u>Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).</u>	
8.3. <u>Explain how a buffer works.</u>	
8.4. <u>Describe oxidation and reduction reactions and give some everyday examples, such as fuel burning and corrosion. Assign oxidation numbers in a reaction.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about chemical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in chemistry, along with the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
	<p>Understand basic scientific terminology            Find basic information in a brief body of text            Determine how the value of one variable changes as the value of another variable changes in a simple data presentation            Compare or combine data from a simple data presentation (e.g., order or sum data from a table)            Translate information into a table, graph, or diagram  <b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment  <b>Evaluation of Models, Inferences, and Experimental Results:</b>            Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment            Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b>            Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment            Understand a simple experimental design            Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b>            Understand the methods and tools used in a simple experiment</p>



**TABLE 3M**

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>● Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>● Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>● Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>• <b>Construct and use tables and graphs to interpret data sets.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• <b>Solve simple algebraic expressions.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>• <b>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</b></li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• <b>Convert within a unit (e.g., centimeters to meters).</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• <b>Use common prefixes such as milli-, centi-, and kilo-.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>• <b>Use scientific notation, where appropriate.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>

TABLE 3M

MASSACHUSETTS Chemistry Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (g); length (cm); and time (s).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Properties of Matter</b>	
1.1. <u>Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.</u>	
1.2. <u>Explain the difference between pure substances (elements and compounds) and mixtures. Differentiate between heterogeneous and homogeneous mixtures.</u>	
1.3. <u>Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle motion, and phase transitions.</u>	
<b>2. Atomic Structure and Nuclear Chemistry</b>	
2.1. <u>Recognize discoveries from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus), and Bohr (planetary model of atom), and understand how each discovery leads to modern theory.</u>	
2.2. <u>Describe Rutherford's "gold foil" experiment that led to the discovery of the nuclear atom. Identify the major components (protons, neutrons, and electrons) of the nuclear atom and explain how they interact.</u>	
2.3. <u>Interpret and apply the laws of conservation of mass, constant composition (definite proportions), and multiple proportions.</u>	
2.4. <u>Write the electron configurations for the first twenty elements of the periodic table.</u>	
2.5. <u>Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power).</u>	
2.6. <u>Describe the process of radioactive decay by using nuclear equations, and explain the concept of half-life for an isotope (for example, C-14 is a powerful tool in determining the age of objects).</u>	
2.7. <u>Compare and contrast nuclear fission and nuclear fusion.</u>	

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<b>3. Periodicity</b>	
3.1. <u>Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table.</u>	
3.2. <u>Use the periodic table to identify the three classes of elements: metals, nonmetals, and metalloids.</u>	
3.3. <u>Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table.</u>	
3.4. <u>Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).</u>	
<b>4. Chemical Bonding</b>	
4.1. <u>Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.</u>	
4.2. <u>Draw Lewis dot structures for simple molecules and ionic compounds.</u>	
4.3. <u>Use electronegativity to explain the difference between polar and nonpolar covalent bonds.</u>	
4.4. <u>Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.</u>	
4.5. <u>Identify how hydrogen bonding in water affects a variety of physical, chemical, and biological phenomena (e.g., surface tension, capillary action, density, boiling point).</u>	
4.6. <u>Name and write the chemical formulas for simple ionic and molecular compounds, including those that contain the polyatomic ions: ammonium, carbonate, hydroxide, nitrate, phosphate, and sulfate.</u>	
<b>5. Chemical Reactions and Stoichiometry</b>	
5.1. <u>Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions).</u>	
5.2. <u>Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.</u>	



TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
5.3. <u>Use the mole concept to determine number of particles and molar mass for elements and compounds.</u>	
5.4. <u>Determine percent compositions, empirical formulas, and molecular formulas.</u>	
5.5. <u>Calculate the mass-to-mass stoichiometry for a chemical reaction.</u>	
5.6. <u>Calculate percent yield in a chemical reaction.</u>	
<b>6. States of Matter, Kinetic Molecular Theory, and Thermochemistry</b>	
6.1. <u>Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and the number of particles in a gas sample (Avogadro's hypothesis). Use the combined gas law to determine changes in pressure, volume, and temperature.</u>	
6.2. <u>Perform calculations using the ideal gas law. Understand the molar volume at 273 K and 1 atmosphere (STP).</u>	
6.3. <u>Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.</u>	
6.4. <u>Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.</u>	
6.5. <u>Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy).</u>	
<b>7. Solutions, Rates of Reaction, and Equilibrium</b>	
7.1. <u>Describe the process by which solutes dissolve in solvents.</u>	
7.2. <u>Calculate concentration in terms of molarity. Use molarity to perform solution dilution and solution stoichiometry.</u>	
7.3. <u>Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).</u>	
7.4. <u>Compare and contrast qualitatively the properties of solutions and pure solvents (colligative properties such as boiling point and freezing point).</u>	

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
7.5. <u>Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).</u>	
7.6. <u>Predict the shift in equilibrium when a system is subjected to a stress (LeChatelier's principle) and identify the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).</u>	
<b>8. Acids and Bases and Oxidation-Reduction Reactions</b>	
8.1. <u>Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Bronsted-Lowry theory of acids and bases in terms of proton donors and acceptors.</u>	
8.2. <u>Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).</u>	
8.3. <u>Explain how a buffer works.</u>	
8.4. <u>Describe oxidation and reduction reactions and give some everyday examples, such as fuel burning and corrosion. Assign oxidation numbers in a reaction.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about chemical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in chemistry, along with the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"> <li>collecting data or evidence in an organized way</li> </ul>	
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>

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MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>• Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>• Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>• Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>

TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>• Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>• Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>• Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>



TABLE 3N

MASSACHUSETTS Chemistry Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (g); length (cm); and time (s).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Properties of Matter</b>	
1.1. <u>Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.</u>	
1.2. <u>Explain the difference between pure substances (elements and compounds) and mixtures. Differentiate between heterogeneous and homogeneous mixtures.</u>	
1.3. <u>Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle motion, and phase transitions.</u>	
<b>2. Atomic Structure and Nuclear Chemistry</b>	
2.1. <u>Recognize discoveries from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus), and Bohr (planetary model of atom), and understand how each discovery leads to modern theory.</u>	
2.2. <u>Describe Rutherford's "gold foil" experiment that led to the discovery of the nuclear atom. Identify the major components (protons, neutrons, and electrons) of the nuclear atom and explain how they interact.</u>	
2.3. <u>Interpret and apply the laws of conservation of mass, constant composition (definite proportions), and multiple proportions.</u>	
2.4. <u>Write the electron configurations for the first twenty elements of the periodic table.</u>	
2.5. <u>Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power).</u>	
2.6. <u>Describe the process of radioactive decay by using nuclear equations, and explain the concept of half-life for an isotope (for example, C-14 is a powerful tool in determining the age of objects).</u>	
2.7. <u>Compare and contrast nuclear fission and nuclear fusion.</u>	

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
<b>3. Periodicity</b>	
3.1. <u>Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table.</u>	
3.2. <u>Use the periodic table to identify the three classes of elements: metals, nonmetals, and metalloids.</u>	
3.3. <u>Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table.</u>	
3.4. <u>Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).</u>	
<b>4. Chemical Bonding</b>	
4.1. <u>Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.</u>	
4.2. <u>Draw Lewis dot structures for simple molecules and ionic compounds.</u>	
4.3. <u>Use electronegativity to explain the difference between polar and nonpolar covalent bonds.</u>	
4.4. <u>Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.</u>	
4.5. <u>Identify how hydrogen bonding in water affects a variety of physical, chemical, and biological phenomena (e.g., surface tension, capillary action, density, boiling point).</u>	
4.6. <u>Name and write the chemical formulas for simple ionic and molecular compounds, including those that contain the polyatomic ions: ammonium, carbonate, hydroxide, nitrate, phosphate, and sulfate.</u>	
<b>5. Chemical Reactions and Stoichiometry</b>	
5.1. <u>Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions).</u>	
5.2. <u>Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.</u>	

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
5.3. <u>Use the mole concept to determine number of particles and molar mass for elements and compounds.</u>	
5.4. <u>Determine percent compositions, empirical formulas, and molecular formulas.</u>	
5.5. <u>Calculate the mass-to-mass stoichiometry for a chemical reaction.</u>	
5.6. <u>Calculate percent yield in a chemical reaction.</u>	
<b>6. States of Matter, Kinetic Molecular Theory, and Thermochemistry</b>	
6.1. <u>Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and the number of particles in a gas sample (Avogadro's hypothesis). Use the combined gas law to determine changes in pressure, volume, and temperature.</u>	
6.2. <u>Perform calculations using the ideal gas law. Understand the molar volume at 273 K and 1 atmosphere (STP).</u>	
6.3. <u>Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.</u>	
6.4. <u>Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.</u>	
6.5. <u>Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy).</u>	
<b>7. Solutions, Rates of Reaction, and Equilibrium</b>	
7.1. <u>Describe the process by which solutes dissolve in solvents.</u>	
7.2. <u>Calculate concentration in terms of molarity. Use molarity to perform solution dilution and solution stoichiometry.</u>	
7.3. <u>Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).</u>	
7.4. <u>Compare and contrast qualitatively the properties of solutions and pure solvents (colligative properties such as boiling point and freezing point).</u>	

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MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
7.5. <u>Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).</u>	
7.6. <u>Predict the shift in equilibrium when a system is subjected to a stress (LeChatelier's principle) and identify the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).</u>	
<b>8. Acids and Bases and Oxidation-Reduction Reactions</b>	
8.1. <u>Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Bronsted-Lowry theory of acids and bases in terms of proton donors and acceptors.</u>	
8.2. <u>Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).</u>	
8.3. <u>Explain how a buffer works.</u>	
8.4. <u>Describe oxidation and reduction reactions and give some everyday examples, such as fuel burning and corrosion. Assign oxidation numbers in a reaction.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
Scientific literacy can be achieved as students inquire about chemical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in chemistry, along with the inquiry skills listed below.	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Determine the hypothesis for an experiment</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand precision and accuracy issues</p>

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
<ul style="list-style-type: none"> <li>collecting data or evidence in an organized way</li> </ul>	
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>



TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p>

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
	Identify a control in an experiment <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram
<ul style="list-style-type: none"> <li>• Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Identify similarities and differences between models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
<ul style="list-style-type: none"> <li>• Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>• Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design <b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>• Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>• Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>• Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>• Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p>

TABLE 30

MASSACHUSETTS Chemistry Standards for High School	ACT Science College Readiness Standards
	Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (g); length (cm); and time (s).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
<b>I. CONTENT STANDARDS</b>	
<b>1. Properties of Matter</b>	
1.1. Identify and explain physical properties (e.g., density, melting point, boiling point, conductivity, malleability) and chemical properties (e.g., the ability to form new substances). Distinguish between chemical and physical changes.	
1.2. Explain the difference between pure substances (elements and compounds) and mixtures. Differentiate between heterogeneous and homogeneous mixtures.	
1.3. Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle motion, and phase transitions.	
<b>2. Atomic Structure and Nuclear Chemistry</b>	
2.1. Recognize discoveries from Dalton (atomic theory), Thomson (the electron), Rutherford (the nucleus), and Bohr (planetary model of atom), and understand how each discovery leads to modern theory.	
2.2. Describe Rutherford's "gold foil" experiment that led to the discovery of the nuclear atom. Identify the major components (protons, neutrons, and electrons) of the nuclear atom and explain how they interact.	
2.3. Interpret and apply the laws of conservation of mass, constant composition (definite proportions), and multiple proportions.	
2.4. Write the electron configurations for the first twenty elements of the periodic table.	
2.5. Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power).	
2.6. Describe the process of radioactive decay by using nuclear equations, and explain the concept of half-life for an isotope (for example, C-14 is a powerful tool in determining the age of objects).	
2.7. Compare and contrast nuclear fission and nuclear fusion.	

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
<b>3. Periodicity</b>	
3.1. Explain the relationship of an element's position on the periodic table to its atomic number. Identify families (groups) and periods on the periodic table.	
3.2. Use the periodic table to identify the three classes of elements: metals, nonmetals, and metalloids.	
3.3. Relate the position of an element on the periodic table to its electron configuration and compare its reactivity to the reactivity of other elements in the table.	
3.4. Identify trends on the periodic table (ionization energy, electronegativity, and relative sizes of atoms and ions).	
<b>4. Chemical Bonding</b>	
4.1. Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.	
4.2. Draw Lewis dot structures for simple molecules and ionic compounds.	
4.3. Use electronegativity to explain the difference between polar and nonpolar covalent bonds.	
4.4. Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.	
4.5. Identify how hydrogen bonding in water affects a variety of physical, chemical, and biological phenomena (e.g., surface tension, capillary action, density, boiling point).	
4.6. Name and write the chemical formulas for simple ionic and molecular compounds, including those that contain the polyatomic ions: ammonium, carbonate, hydroxide, nitrate, phosphate, and sulfate.	
<b>5. Chemical Reactions and Stoichiometry</b>	
5.1. Balance chemical equations by applying the laws of conservation of mass and constant composition (definite proportions).	
5.2. Classify chemical reactions as synthesis (combination), decomposition, single displacement (replacement), double displacement, and combustion.	

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
5.3. Use the mole concept to determine number of particles and molar mass for elements and compounds.	
5.4. Determine percent compositions, empirical formulas, and molecular formulas.	
5.5. Calculate the mass-to-mass stoichiometry for a chemical reaction.	
5.6. Calculate percent yield in a chemical reaction.	
<b>6. States of Matter, Kinetic Molecular Theory, and Thermochemistry</b>	
6.1. Using the kinetic molecular theory, explain the behavior of gases and the relationship between pressure and volume (Boyle's law), volume and temperature (Charles's law), pressure and temperature (Gay-Lussac's law), and the number of particles in a gas sample (Avogadro's hypothesis). Use the combined gas law to determine changes in pressure, volume, and temperature.	
6.2. Perform calculations using the ideal gas law. Understand the molar volume at 273 K and 1 atmosphere (STP).	
6.3. Using the kinetic molecular theory, describe and contrast the properties of gases, liquids, and solids. Explain, at the molecular level, the behavior of matter as it undergoes phase transitions.	
6.4. Describe the law of conservation of energy. Explain the difference between an endothermic process and an exothermic process.	
6.5. Recognize that there is a natural tendency for systems to move in a direction of disorder or randomness (entropy).	
<b>7. Solutions, Rates of Reaction, and Equilibrium</b>	
7.1. Describe the process by which solutes dissolve in solvents.	
7.2. Calculate concentration in terms of molarity. Use molarity to perform solution dilution and solution stoichiometry.	
7.3. Identify and explain the factors that affect the rate of dissolving (e.g., temperature, concentration, surface area, pressure, mixing).	
7.4. Compare and contrast qualitatively the properties of solutions and pure solvents (colligative properties such as boiling point and freezing point).	

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
7.5. Identify the factors that affect the rate of a chemical reaction (temperature, mixing, concentration, particle size, surface area, catalyst).	
7.6. Predict the shift in equilibrium when a system is subjected to a stress (LeChatelier's principle) and identify the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).	
<b>8. Acids and Bases and Oxidation-Reduction Reactions</b>	
8.1. Define the Arrhenius theory of acids and bases in terms of the presence of hydronium and hydroxide ions in water and the Bronsted-Lowry theory of acids and bases in terms of proton donors and acceptors.	
8.2. Relate hydrogen ion concentrations to the pH scale and to acidic, basic, and neutral solutions. Compare and contrast the strengths of various common acids and bases (e.g., vinegar, baking soda, soap, citrus juice).	
8.3. Explain how a buffer works.	
8.4. Describe oxidation and reduction reactions and give some everyday examples, such as fuel burning and corrosion. Assign oxidation numbers in a reaction.	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
Scientific literacy can be achieved as students inquire about chemical phenomena. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in chemistry, along with the inquiry skills listed below.	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	



TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	
<ul style="list-style-type: none"> <li><b>Represent data and relationships between and among variables in charts and graphs.</b></li> </ul>	Find one or two pieces of information in a graphic Fill in one or two pieces of information that are missing from a graphic Find several pieces of information in one or two graphics Understand how graphics are related to each other Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics Compare information and trends shown in one or two straightforward graphics Sort through distracting information Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Compare information and trends from one or more complicated graphics Draw conclusions based on one complicated graphic or several related graphics Apply information from one or more complicated graphics to specific situations Use the information to make decisions
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Draw conclusions based on one complicated graphic or several related graphics
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics

TABLE 3P

MASSACHUSETTS Chemistry Standards for High School	WorkKeys Locating Information Skills
	Compare information and trends shown in one or two straightforward graphics Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Compare information and trends from one or more complicated graphics Draw conclusions based on one complicated graphic or several related graphics Apply information from one or more complicated graphics to specific situations Use the information to make decisions
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (g); length (cm); and time (s).</li> </ul>	
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Motion and Forces</b>	
1.1. <u>Compare and contrast vector quantities (e.g., displacement, velocity, acceleration force, linear momentum) and scalar quantities (e.g., distance, speed, energy, mass, work).</u>	
1.2. <u>Distinguish between displacement, distance, velocity, speed, and acceleration. Solve problems involving displacement, distance, velocity, speed, and constant acceleration.</u>	
1.3. <u>Create and interpret graphs of 1-dimensional motion, such as position vs. time, distance vs. time, speed vs. time, velocity vs. time, and acceleration vs. time where acceleration is constant.</u>	
1.4. <u>Interpret and apply Newton's three laws of motion.</u>	
1.5. <u>Use a free-body force diagram to show forces acting on a system consisting of a pair of interacting objects. For a diagram with only co-linear forces, determine the net force acting on a system and between the objects.</u>	
1.6. <u>Distinguish qualitatively between static and kinetic friction, and describe their effects on the motion of objects.</u>	
1.7. <u>Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the distance between them.</u>	
1.8. <u>Describe conceptually the forces involved in circular motion.</u>	
<b>2. Conservation of Energy and Momentum</b>	
2.1. <u>Interpret and provide examples that illustrate the law of conservation of energy.</u>	
2.2. <u>Interpret and provide examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa.</u>	
2.3. <u>Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy.</u>	
2.4. <u>Describe both qualitatively and quantitatively the concept of power as work done per unit time.</u>	

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
2.5. <u>Provide and interpret examples showing that linear momentum is the product of mass and velocity, and is always conserved (law of conservation of momentum). Calculate the momentum of an object.</u>	
<b>3. Heat and Heat Transfer</b>	
3.1. <u>Explain how heat energy is transferred by convection, conduction, and radiation.</u>	
3.2. <u>Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.</u>	
3.3. <u>Describe the relationship between average molecular kinetic energy and temperature. Recognize that energy is absorbed when a substance changes from a solid to a liquid to a gas, and that energy is released when a substance changes from a gas to a liquid to a solid. Explain the relationships among evaporation, condensation, cooling, and warming.</u>	
3.4. <u>Explain the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance.</u>	
<b>4. Waves</b>	
4.1. <u>Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.</u>	
4.2. <u>Distinguish between mechanical and electromagnetic waves.</u>	
4.3. <u>Distinguish between the two types of mechanical waves, transverse and longitudinal.</u>	
4.4. <u>Describe qualitatively the basic principles of reflection and refraction of waves.</u>	
4.5. <u>Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.</u>	
4.6. <u>Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect).</u>	

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<b>5. Electromagnetism</b>	
5.1. <u>Recognize that an electric charge tends to be static on insulators and can move on and in conductors. Explain that energy can produce a separation of charges.</u>	
5.2. <u>Develop qualitative and quantitative understandings of current, voltage, resistance, and the connections among them (Ohm’s law).</u>	
5.3. <u>Analyze simple arrangements of electrical components in both series and parallel circuits. Recognize symbols and understand the functions of common circuit elements (battery, connecting wire, switch, fuse, resistance) in a schematic diagram.</u>	
5.4. <u>Describe conceptually the attractive or repulsive forces between objects relative to their charges and the distance between them (Coulomb’s law).</u>	
5.5. <u>Explain how electric current is a flow of charge caused by a potential difference (voltage), and how power is equal to current multiplied by voltage.</u>	
5.6. <u>Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize that the interplay of electric and magnetic forces is the basis for electric motors, generators, and other technologies.</u>	
<b>6. Electromagnetic Radiation</b>	
6.1. <u>Recognize that electromagnetic waves are transverse waves and travel at the speed of light through a vacuum.</u>	
6.2. <u>Describe the electromagnetic spectrum in terms of frequency and wavelength, and identify the locations of radio waves, microwaves, infrared radiation, visible light (red, orange, yellow, green, blue, indigo, and violet), ultraviolet rays, x-rays, and gamma rays on the spectrum.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
<p>Scientific literacy can be achieved as students inquire about the physical world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in introductory physics, along with the inquiry skills listed below.</p>	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>SIS2.</b> Design and conduct scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Determine the experimental conditions that would produce specified results</p>
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand a simple experimental design</p>

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>• Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• Employ appropriate methods for accurately and consistently               <ul style="list-style-type: none"> <li>• making observations</li> <li>• making and recording measurements at appropriate levels of precision</li> <li>• collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>• Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>• Follow safety guidelines.</li> </ul>	
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>• Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>• Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p>



TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
	<p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p>

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	<p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p>

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
	<p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>• Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>
<ul style="list-style-type: none"> <li>• Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3Q

MASSACHUSETTS Physics Standards for High School	EXPLORE Science College Readiness Standards
<ul style="list-style-type: none"> <li>● Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>● Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>● Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>● Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>● Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); frequency (Hz); work and energy (J); power (W); momentum (kg·m/s); electric current (A); electric potential difference/voltage (V); and electric resistance (Ω).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>● Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3R

MASSACHUSETTS Physics Standards for High School	PLAN Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Motion and Forces</b>	
1.1. <u>Compare and contrast vector quantities (e.g., displacement, velocity, acceleration force, linear momentum) and scalar quantities (e.g., distance, speed, energy, mass, work).</u>	
1.2. <u>Distinguish between displacement, distance, velocity, speed, and acceleration. Solve problems involving displacement, distance, velocity, speed, and constant acceleration.</u>	
1.3. <u>Create and interpret graphs of 1-dimensional motion, such as position vs. time, distance vs. time, speed vs. time, velocity vs. time, and acceleration vs. time where acceleration is constant.</u>	
1.4. <u>Interpret and apply Newton's three laws of motion.</u>	
1.5. <u>Use a free-body force diagram to show forces acting on a system consisting of a pair of interacting objects. For a diagram with only co-linear forces, determine the net force acting on a system and between the objects.</u>	
1.6. <u>Distinguish qualitatively between static and kinetic friction, and describe their effects on the motion of objects.</u>	
1.7. <u>Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the distance between them.</u>	
1.8. <u>Describe conceptually the forces involved in circular motion.</u>	
<b>2. Conservation of Energy and Momentum</b>	
2.1. <u>Interpret and provide examples that illustrate the law of conservation of energy.</u>	
2.2. <u>Interpret and provide examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa.</u>	
2.3. <u>Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy.</u>	
2.4. <u>Describe both qualitatively and quantitatively the concept of power as work done per unit time.</u>	

TABLE 3R

MASSACHUSETTS Physics Standards for High School	PLAN Science College Readiness Standards
<p><b>2.5.</b> <u>Provide and interpret examples showing that linear momentum is the product of mass and velocity, and is always conserved (law of conservation of momentum). Calculate the momentum of an object.</u></p>	
<p><b>3. Heat and Heat Transfer</b></p>	
<p><b>3.1.</b> <u>Explain how heat energy is transferred by convection, conduction, and radiation.</u></p>	
<p><b>3.2.</b> <u>Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.</u></p>	
<p><b>3.3.</b> <u>Describe the relationship between average molecular kinetic energy and temperature. Recognize that energy is absorbed when a substance changes from a solid to a liquid to a gas, and that energy is released when a substance changes from a gas to a liquid to a solid. Explain the relationships among evaporation, condensation, cooling, and warming.</u></p>	
<p><b>3.4.</b> <u>Explain the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance.</u></p>	
<p><b>4. Waves</b></p>	
<p><b>4.1.</b> <u>Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.</u></p>	
<p><b>4.2.</b> <u>Distinguish between mechanical and electromagnetic waves.</u></p>	
<p><b>4.3.</b> <u>Distinguish between the two types of mechanical waves, transverse and longitudinal.</u></p>	
<p><b>4.4.</b> <u>Describe qualitatively the basic principles of reflection and refraction of waves.</u></p>	
<p><b>4.5.</b> <u>Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.</u></p>	
<p><b>4.6.</b> <u>Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect).</u></p>	

TABLE 3R

MASSACHUSETTS Physics Standards for High School	PLAN Science College Readiness Standards
<b>5. Electromagnetism</b>	
5.1. <u>Recognize that an electric charge tends to be static on insulators and can move on and in conductors. Explain that energy can produce a separation of charges.</u>	
5.2. <u>Develop qualitative and quantitative understandings of current, voltage, resistance, and the connections among them (Ohm's law).</u>	
5.3. <u>Analyze simple arrangements of electrical components in both series and parallel circuits. Recognize symbols and understand the functions of common circuit elements (battery, connecting wire, switch, fuse, resistance) in a schematic diagram.</u>	
5.4. <u>Describe conceptually the attractive or repulsive forces between objects relative to their charges and the distance between them (Coulomb's law).</u>	
5.5. <u>Explain how electric current is a flow of charge caused by a potential difference (voltage), and how power is equal to current multiplied by voltage.</u>	
5.6. <u>Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize that the interplay of electric and magnetic forces is the basis for electric motors, generators, and other technologies.</u>	
<b>6. Electromagnetic Radiation</b>	
6.1. <u>Recognize that electromagnetic waves are transverse waves and travel at the speed of light through a vacuum.</u>	
6.2. <u>Describe the electromagnetic spectrum in terms of frequency and wavelength, and identify the locations of radio waves, microwaves, infrared radiation, visible light (red, orange, yellow, green, blue, indigo, and violet), ultraviolet rays, x-rays, and gamma rays on the spectrum.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
Scientific literacy can be achieved as students inquire about the physical world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in introductory physics, along with the inquiry skills listed below.	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>● Observe the world from a scientific perspective.</li> </ul>	



TABLE 3R

MASSACHUSETTS Physics Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Determine the hypothesis for an experiment</p>
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<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b> Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p>

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<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
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<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p>

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<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<p><b>SIS4.</b> Communicate and apply the results of scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p>

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<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>• Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>

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MASSACHUSETTS Physics Standards for High School	PLAN Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<h3>III. MATHEMATICAL SKILLS</h3>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>

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<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); frequency (Hz); work and energy (J); power (W); momentum (kg•m/s); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

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MASSACHUSETTS Physics Standards for High School	ACT Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Motion and Forces</b>	
1.1. <u>Compare and contrast vector quantities (e.g., displacement, velocity, acceleration force, linear momentum) and scalar quantities (e.g., distance, speed, energy, mass, work).</u>	
1.2. <u>Distinguish between displacement, distance, velocity, speed, and acceleration. Solve problems involving displacement, distance, velocity, speed, and constant acceleration.</u>	
1.3. <u>Create and interpret graphs of 1-dimensional motion, such as position vs. time, distance vs. time, speed vs. time, velocity vs. time, and acceleration vs. time where acceleration is constant.</u>	
1.4. <u>Interpret and apply Newton's three laws of motion.</u>	
1.5. <u>Use a free-body force diagram to show forces acting on a system consisting of a pair of interacting objects. For a diagram with only co-linear forces, determine the net force acting on a system and between the objects.</u>	
1.6. <u>Distinguish qualitatively between static and kinetic friction, and describe their effects on the motion of objects.</u>	
1.7. <u>Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the distance between them.</u>	
1.8. <u>Describe conceptually the forces involved in circular motion.</u>	
<b>2. Conservation of Energy and Momentum</b>	
2.1. <u>Interpret and provide examples that illustrate the law of conservation of energy.</u>	
2.2. <u>Interpret and provide examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa.</u>	
2.3. <u>Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy.</u>	
2.4. <u>Describe both qualitatively and quantitatively the concept of power as work done per unit time.</u>	



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2.5. <u>Provide and interpret examples showing that linear momentum is the product of mass and velocity, and is always conserved (law of conservation of momentum). Calculate the momentum of an object.</u>	
<b>3. Heat and Heat Transfer</b>	
3.1. <u>Explain how heat energy is transferred by convection, conduction, and radiation.</u>	
3.2. <u>Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.</u>	
3.3. <u>Describe the relationship between average molecular kinetic energy and temperature. Recognize that energy is absorbed when a substance changes from a solid to a liquid to a gas, and that energy is released when a substance changes from a gas to a liquid to a solid. Explain the relationships among evaporation, condensation, cooling, and warming.</u>	
3.4. <u>Explain the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance.</u>	
<b>4. Waves</b>	
4.1. <u>Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.</u>	
4.2. <u>Distinguish between mechanical and electromagnetic waves.</u>	
4.3. <u>Distinguish between the two types of mechanical waves, transverse and longitudinal.</u>	
4.4. <u>Describe qualitatively the basic principles of reflection and refraction of waves.</u>	
4.5. <u>Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.</u>	
4.6. <u>Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect).</u>	

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<b>5. Electromagnetism</b>	
5.1. <u>Recognize that an electric charge tends to be static on insulators and can move on and in conductors. Explain that energy can produce a separation of charges.</u>	
5.2. <u>Develop qualitative and quantitative understandings of current, voltage, resistance, and the connections among them (Ohm's law).</u>	
5.3. <u>Analyze simple arrangements of electrical components in both series and parallel circuits. Recognize symbols and understand the functions of common circuit elements (battery, connecting wire, switch, fuse, resistance) in a schematic diagram.</u>	
5.4. <u>Describe conceptually the attractive or repulsive forces between objects relative to their charges and the distance between them (Coulomb's law).</u>	
5.5. <u>Explain how electric current is a flow of charge caused by a potential difference (voltage), and how power is equal to current multiplied by voltage.</u>	
5.6. <u>Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize that the interplay of electric and magnetic forces is the basis for electric motors, generators, and other technologies.</u>	
<b>6. Electromagnetic Radiation</b>	
6.1. <u>Recognize that electromagnetic waves are transverse waves and travel at the speed of light through a vacuum.</u>	
6.2. <u>Describe the electromagnetic spectrum in terms of frequency and wavelength, and identify the locations of radio waves, microwaves, infrared radiation, visible light (red, orange, yellow, green, blue, indigo, and violet), ultraviolet rays, x-rays, and gamma rays on the spectrum.</u>	
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
Scientific literacy can be achieved as students inquire about the physical world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in introductory physics, along with the inquiry skills listed below.	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	

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<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	<p><b>Scientific Investigation:</b> Determine the hypothesis for an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<p><b>SIS2.</b> Design and conduct scientific investigations.</p>	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Determine the hypothesis for an experiment</p>
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<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	<p><b>Scientific Investigation:</b> Understand a simple experimental design</p>
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment</p>
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<p><b>SIS3.</b> Analyze and interpret results of scientific investigations.</p>	
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<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Understand precision and accuracy issues</p>
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p>

TABLE 3S

MASSACHUSETTS Physics Standards for High School	ACT Science College Readiness Standards
	<p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p>Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p>
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p>
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p>

TABLE 3S

MASSACHUSETTS Physics Standards for High School	ACT Science College Readiness Standards
	<p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Explain diagrams and charts that represent relationships of variables.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>• Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	<p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p> <p>Identify key issues or assumptions in a model</p> <p>Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why</p> <p>Identify strengths and weaknesses in one or more models</p> <p>Identify similarities and differences between models</p> <p>Determine which model(s) is(are) supported or weakened by new information</p> <p>Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion</p>

TABLE 3S

MASSACHUSETTS Physics Standards for High School	ACT Science College Readiness Standards
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b> Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<h3>III. MATHEMATICAL SKILLS</h3>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b> Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram) Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels) Select two or more pieces of data from a simple data presentation Understand basic scientific terminology Find basic information in a brief body of text Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Compare or combine data from a simple data presentation (e.g., order or sum data from a table) Translate information into a table, graph, or diagram</p>
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b> Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Understand precision and accuracy issues</p>



TABLE 3S

MASSACHUSETTS Physics Standards for High School	ACT Science College Readiness Standards
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	<p><b>Interpretation of Data:</b> Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); frequency (Hz); work and energy (J); power (W); momentum (kg·m/s); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Kelvin scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
<b>I. CONTENT STANDARDS</b>	
<b>1. Motion and Forces</b>	
1.1. Compare and contrast vector quantities (e.g., displacement, velocity, acceleration force, linear momentum) and scalar quantities (e.g., distance, speed, energy, mass, work).	
1.2. Distinguish between displacement, distance, velocity, speed, and acceleration. Solve problems involving displacement, distance, velocity, speed, and constant acceleration.	
1.3. Create and interpret graphs of 1-dimensional motion, such as position vs. time, distance vs. time, speed vs. time, velocity vs. time, and acceleration vs. time where acceleration is constant.	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p> <p>Apply information from one or more complicated graphics to specific situations</p> <p>Use the information to make decisions</p>
1.4. Interpret and apply Newton's three laws of motion.	
1.5. Use a free-body force diagram to show forces acting on a system consisting of a pair of interacting objects. For a diagram with only co-linear forces, determine the net force acting on a system and between the objects.	
1.6. Distinguish qualitatively between static and kinetic friction, and describe their effects on the motion of objects.	
1.7. Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the distance between them.	
1.8. Describe conceptually the forces involved in circular motion.	
<b>2. Conservation of Energy and Momentum</b>	
2.1. Interpret and provide examples that illustrate the law of conservation of energy.	

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
2.2. Interpret and provide examples of how energy can be converted from gravitational potential energy to kinetic energy and vice versa.	
2.3. Describe both qualitatively and quantitatively how work can be expressed as a change in mechanical energy.	
2.4. Describe both qualitatively and quantitatively the concept of power as work done per unit time.	
2.5. Provide and interpret examples showing that linear momentum is the product of mass and velocity, and is always conserved (law of conservation of momentum). Calculate the momentum of an object.	
<b>3. Heat and Heat Transfer</b>	
3.1. Explain how heat energy is transferred by convection, conduction, and radiation.	
3.2. Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.	
3.3. Describe the relationship between average molecular kinetic energy and temperature. Recognize that energy is absorbed when a substance changes from a solid to a liquid to a gas, and that energy is released when a substance changes from a gas to a liquid to a solid. Explain the relationships among evaporation, condensation, cooling, and warming.	
3.4. Explain the relationships among temperature changes in a substance, the amount of heat transferred, the amount (mass) of the substance, and the specific heat of the substance.	
<b>4. Waves</b>	
4.1. Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period) and explain the relationships among them. Recognize examples of simple harmonic motion.	
4.2. Distinguish between mechanical and electromagnetic waves.	
4.3. Distinguish between the two types of mechanical waves, transverse and longitudinal.	
4.4. Describe qualitatively the basic principles of reflection and refraction of waves.	

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
4.5. Recognize that mechanical waves generally move faster through a solid than through a liquid and faster through a liquid than through a gas.	
4.6. Describe the apparent change in frequency of waves due to the motion of a source or a receiver (the Doppler effect).	
<b>5. Electromagnetism</b>	
5.1. Recognize that an electric charge tends to be static on insulators and can move on and in conductors. Explain that energy can produce a separation of charges.	
5.2. Develop qualitative and quantitative understandings of current, voltage, resistance, and the connections among them (Ohm's law).	
5.3. Analyze simple arrangements of electrical components in both series and parallel circuits. Recognize symbols and understand the functions of common circuit elements (battery, connecting wire, switch, fuse, resistance) in a schematic diagram.	
5.4. Describe conceptually the attractive or repulsive forces between objects relative to their charges and the distance between them (Coulomb's law).	
5.5. Explain how electric current is a flow of charge caused by a potential difference (voltage), and how power is equal to current multiplied by voltage.	
5.6. Recognize that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize that the interplay of electric and magnetic forces is the basis for electric motors, generators, and other technologies.	
<b>6. Electromagnetic Radiation</b>	
6.1. Recognize that electromagnetic waves are transverse waves and travel at the speed of light through a vacuum.	
6.2. Describe the electromagnetic spectrum in terms of frequency and wavelength, and identify the locations of radio waves, microwaves, infrared radiation, visible light (red, orange, yellow, green, blue, indigo, and violet), ultraviolet rays, x-rays, and gamma rays on the spectrum.	

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
<b>II. SCIENTIFIC INQUIRY SKILLS STANDARDS</b>	
Scientific literacy can be achieved as students inquire about the physical world. The curriculum should include substantial hands-on laboratory and field experiences, as appropriate, for students to develop and use scientific skills in introductory physics, along with the inquiry skills listed below.	
<b>SIS1.</b> Make observations, raise questions, and formulate hypotheses.	
<ul style="list-style-type: none"> <li>Observe the world from a scientific perspective.</li> </ul>	
<ul style="list-style-type: none"> <li>Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.</li> </ul>	
<ul style="list-style-type: none"> <li>Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.</li> </ul>	
<b>SIS2.</b> Design and conduct scientific investigations.	
<ul style="list-style-type: none"> <li>Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>Select required materials, equipment, and conditions for conducting an experiment.</li> </ul>	
<ul style="list-style-type: none"> <li>Identify independent and dependent variables.</li> </ul>	
<ul style="list-style-type: none"> <li>Write procedures that are clear and replicable.</li> </ul>	
<ul style="list-style-type: none"> <li>Employ appropriate methods for accurately and consistently           <ul style="list-style-type: none"> <li>making observations</li> <li>making and recording measurements at appropriate levels of precision</li> <li>collecting data or evidence in an organized way</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration (if required), technique, maintenance, and storage.</li> </ul>	
<ul style="list-style-type: none"> <li>Follow safety guidelines.</li> </ul>	
<b>SIS3.</b> Analyze and interpret results of scientific investigations.	
<ul style="list-style-type: none"> <li>Present relationships between and among variables in appropriate forms.</li> </ul>	
<ul style="list-style-type: none"> <li>Represent data and relationships between and among variables in charts and graphs.</li> </ul>	Find one or two pieces of information in a graphic

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
	Fill in one or two pieces of information that are missing from a graphic Find several pieces of information in one or two graphics Understand how graphics are related to each other Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics Compare information and trends shown in one or two straightforward graphics Sort through distracting information Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Compare information and trends from one or more complicated graphics Draw conclusions based on one complicated graphic or several related graphics Apply information from one or more complicated graphics to specific situations Use the information to make decisions
<ul style="list-style-type: none"> <li>Use appropriate technology (e.g., graphing software) and other tools.</li> </ul>	
<ul style="list-style-type: none"> <li>Use mathematical operations to analyze and interpret data results.</li> </ul>	
<ul style="list-style-type: none"> <li>Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use results of an experiment to develop a conclusion to an investigation that addresses the initial questions and supports or refutes the stated hypothesis.</li> </ul>	
<ul style="list-style-type: none"> <li>State questions raised by an experiment that may require further investigation.</li> </ul>	
<b>SIS4.</b> Communicate and apply the results of scientific investigations.	
<ul style="list-style-type: none"> <li>Develop descriptions of and explanations for scientific concepts that were a focus of one or more investigations.</li> </ul>	
<ul style="list-style-type: none"> <li>Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul>	
<ul style="list-style-type: none"> <li>Explain diagrams and charts that represent relationships of variables.</li> </ul>	Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics Summarize information from one or more detailed graphics

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
	Identify trends shown in one or more detailed or complicated graphics Draw conclusions based on one complicated graphic or several related graphics
<ul style="list-style-type: none"> <li>Construct a reasoned argument and respond appropriately to critical comments and questions.</li> </ul>	
<ul style="list-style-type: none"> <li>Use language and vocabulary appropriately, speak clearly and logically, and use appropriate technology (e.g., presentation software) and other tools to present findings.</li> </ul>	
<ul style="list-style-type: none"> <li>Use and refine scientific models that simulate physical processes or phenomena.</li> </ul>	
<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>Construct and <b>use tables and graphs to interpret data sets.</b></li> </ul>	Summarize information from one or two straightforward graphics Identify trends shown in one or two straightforward graphics Compare information and trends shown in one or two straightforward graphics Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Compare information and trends from one or more complicated graphics Draw conclusions based on one complicated graphic or several related graphics Apply information from one or more complicated graphics to specific situations Use the information to make decisions
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters).</li> </ul>	
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	

TABLE 3T

MASSACHUSETTS Physics Standards for High School	WorkKeys Locating Information Skills
<ul style="list-style-type: none"> <li>• Use ratio and proportion to solve problems.</li> </ul>	
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>• Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>• Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>• Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); force (N); speed (m/s); acceleration (m/s<sup>2</sup>); frequency (Hz); work and energy (J); power (W); momentum (kg•m/s); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	
<ul style="list-style-type: none"> <li>• Use the Celsius and Kelvin scales.</li> </ul>	



TABLE 3U

MASSACHUSETTS Technology/Engineering Standards for High School	EXPLORE Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Engineering Design</b>	
1.1. Identify and explain the steps of the engineering design process: identify the problem, research the problem, develop possible solutions, select the best possible solution(s), construct prototypes and/or models, test and evaluate, communicate the solutions, and redesign.	
1.2. Understand that the engineering design process is used in the solution of problems and the advancement of society. Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified.	
1.3. Produce and analyze multi-view drawings (orthographic projections) and pictorial drawings (isometric, oblique, perspective), using various techniques.	
1.4. Interpret and apply scale and proportion to orthographic projections and pictorial drawings (e.g., $\frac{1}{4}'' = 1'0''$ , 1 cm = 1 m).	
1.5. Interpret plans, diagrams, and working drawings in the construction of prototypes or models.	
<b>2. Construction Technologies</b>	
2.1. <u>Identify and explain the engineering properties of materials used in structures (e.g., elasticity, plasticity, R value, density, strength).</u>	
2.2. <u>Distinguish among tension, compression, shear, and torsion, and explain how they relate to the selection of materials in structures.</u>	
2.3. <u>Explain Bernoulli's principle and its effect on structures such as buildings and bridges.</u>	
2.4. <u>Calculate the resultant force(s) for a combination of live loads and dead loads.</u>	
2.5. Identify and demonstrate the safe and proper use of common hand tools, power tools, and measurement devices used in construction.	
2.6. Recognize the purposes of zoning laws and building codes in the design and use of structures.	

TABLE 3U

MASSACHUSETTS Technology/Engineering Standards for High School	EXPLORE Science College Readiness Standards
<b>3. Energy and Power Technologies—Fluid Systems</b>	
3.1. <u>Explain the basic differences between open fluid systems (e.g., irrigation, forced hot air system, air compressors) and closed fluid systems (e.g., forced hot water system, hydraulic brakes).</u>	
3.2. <u>Explain the differences and similarities between hydraulic and pneumatic systems, and explain how each relates to manufacturing and transportation systems.</u>	
3.3. <u>Calculate and describe the ability of a hydraulic system to multiply distance, multiply force, and effect directional change.</u>	
3.4. <u>Recognize that the velocity of a liquid moving in a pipe varies inversely with changes in the cross-sectional area of the pipe.</u>	
3.5. <u>Identify and explain sources of resistance (e.g., 45° elbow, 90° elbow, changes in diameter) for water moving through a pipe.</u>	
<b>4. Energy and Power Technologies—Thermal Systems</b>	
4.1. <u>Differentiate among conduction, convection, and radiation in a thermal system (e.g., heating and cooling a house, cooking).</u>	
4.2. <u>Give examples of how conduction, convection, and radiation are considered in the selection of materials for buildings and in the design of a heating system.</u>	
4.3. <u>Explain how environmental conditions such as wind, solar angle, and temperature influence the design of buildings.</u>	
4.4. <u>Identify and explain alternatives to nonrenewable energies (e.g., wind and solar energy conversion systems).</u>	
<b>5. Energy and Power Technologies—Electrical Systems</b>	
5.1. <u>Explain how to measure and calculate voltage, current, resistance, and power consumption in a series circuit and in a parallel circuit. Identify the instruments used to measure voltage, current, power consumption, and resistance.</u>	
5.2. <u>Identify and explain the components of a circuit, including sources, conductors, circuit breakers, fuses, controllers, and loads. Examples of some controllers are switches, relays, diodes, and variable resistors.</u>	

**TABLE 3U**

MASSACHUSETTS Technology/Engineering Standards for High School	EXPLORE Science College Readiness Standards
5.3. <u>Explain the relationships among voltage, current, and resistance in a simple circuit, using Ohm’s law.</u>	
5.4. <u>Recognize that resistance is affected by external factors (e.g., temperature).</u>	
5.5. <u>Compare and contrast alternating current (AC) and direct current (DC), and give examples of each.</u>	
<b>6. Communication Technologies</b>	
6.1. <u>Explain how information travels through the following media: electrical wire, optical fiber, air, and space.</u>	
6.2. <u>Differentiate between digital and analog signals. Describe how communication devices employ digital and analog technologies (e.g., computers, cell phones).</u>	
6.3. <u>Explain how the various components (source, encoder, transmitter, receiver, decoder, destination, storage, and retrieval) and processes of a communication system function.</u>	
6.4. <u>Identify and explain the applications of laser and fiber optic technologies (e.g., telephone systems, cable television, photography).</u>	
6.5. <u>Explain the application of electromagnetic signals in fiber optic technologies, including critical angle and total internal reflection.</u>	
<b>7. Manufacturing Technologies</b>	
7.1. Describe the manufacturing processes of casting and molding, forming, separating, conditioning, assembling, and finishing.	
7.2. Identify the criteria necessary to select safe tools and procedures for a manufacturing process (e.g., properties of materials, required tolerances, end-uses).	
7.3. Describe the advantages of using robotics in the automation of manufacturing processes (e.g., increased production, improved quality, safety).	

**TABLE 3U**

MASSACHUSETTS Technology/Engineering Standards for High School	EXPLORE Science College Readiness Standards
<b>II. STEPS OF THE ENGINEERING DESIGN PROCESS</b>	
Students should be provided opportunities for hands-on experiences to design, build, test, and evaluate (and redesign, if necessary) a prototype or model of their solution to a problem. Students should have access to materials, hand and/or power tools, and other resources necessary to engage in these tasks. Students may also engage in design challenges that provide constraints and specifications to consider as they develop a solution to a problem.	
Steps of the Engineering Design Process*	
1. Identify the need or problem	
2. Research the need or problem <ul style="list-style-type: none"> <li>● Examine current state of the issue and current solution(s)</li> <li>● Explore other options via the Internet, library, interviews, etc.</li> </ul>	
3. Develop possible solution(s) <ul style="list-style-type: none"> <li>● Brainstorm possible solution(s)</li> <li>● Draw on mathematics and science</li> <li>● Articulate the possible solution(s) in two and three dimensions</li> <li>● Refine the possible solution(s)</li> </ul>	
4. Select the best possible solution(s) <ul style="list-style-type: none"> <li>● Determine which solution(s) best meet(s) the original requirements</li> </ul>	
5. Construct one or more prototypes and/or models <ul style="list-style-type: none"> <li>● Model the selected solution(s) in two and three dimensions</li> </ul>	
6. Test and evaluate the solution(s) <ul style="list-style-type: none"> <li>● Does it work?</li> <li>● Does it meet the original design constraints?</li> </ul>	
7. Communicate the solution(s) <ul style="list-style-type: none"> <li>● Make an engineering presentation that includes a discussion of how the solution(s) best meet(s) the needs of the initial problem or need</li> <li>● Discuss societal impact and tradeoffs of the solution(s)</li> </ul>	
8. Redesign <ul style="list-style-type: none"> <li>● Modify the solution(s) based on information gathered during the tests and presentation</li> </ul>	

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<b>III. MATHEMATICAL SKILLS</b>	
Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:	
<ul style="list-style-type: none"> <li>• Construct and use tables and graphs to interpret data sets.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Select a single piece of data (numerical or nonnumerical) from a simple data presentation (e.g., a table or graph with two or three variables; a food web diagram)</p> <p>Identify basic features of a table, graph, or diagram (e.g., headings, units of measurement, axis labels)</p> <p>Select two or more pieces of data from a simple data presentation</p> <p>Understand basic scientific terminology</p> <p>Find basic information in a brief body of text</p> <p>Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Compare or combine data from a simple data presentation (e.g., order or sum data from a table)</p> <p>Translate information into a table, graph, or diagram</p> <p><b>Evaluation of Models, Inferences, and Experimental Results:</b></p> <p>Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model</p>
<ul style="list-style-type: none"> <li>• Solve simple algebraic expressions.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>• Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	<p><b>Scientific Investigation:</b></p> <p>Understand the methods and tools used in a simple experiment</p> <p>Understand a simple experimental design</p> <p>Identify a control in an experiment</p>
<ul style="list-style-type: none"> <li>• Use both metric/standard international (SI) and U.S. Customary (English) systems of measurement.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
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<ul style="list-style-type: none"> <li>• Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Understand basic scientific terminology</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>

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<ul style="list-style-type: none"> <li>• Use scientific notation, where appropriate.</li> </ul>	<p><b>Interpretation of Data:</b>            Determine how the value of one variable changes as the value of another variable changes in a simple data presentation            Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
<ul style="list-style-type: none"> <li>• Use ratio and proportion to solve problems.</li> </ul>	
<p>The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:</p>	
<ul style="list-style-type: none"> <li>• Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>• Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>• Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); power (W); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	<p><b>Interpretation of Data:</b>            Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>• Use the Celsius and Fahrenheit scales.</li> </ul>	<p><b>Interpretation of Data:</b>            Understand basic scientific terminology</p>

TABLE 3V

MASSACHUSETTS Technology/Engineering Standards for High School	PLAN Science College Readiness Standards
<b>I. CONTENT STANDARDS</b>	
<b>1. Engineering Design</b>	
1.1. Identify and explain the steps of the engineering design process: identify the problem, research the problem, develop possible solutions, select the best possible solution(s), construct prototypes and/or models, test and evaluate, communicate the solutions, and redesign.	
1.2. Understand that the engineering design process is used in the solution of problems and the advancement of society. Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified.	
1.3. Produce and analyze multi-view drawings (orthographic projections) and pictorial drawings (isometric, oblique, perspective), using various techniques.	
1.4. Interpret and apply scale and proportion to orthographic projections and pictorial drawings (e.g., $\frac{1}{4}'' = 1'0''$ , $1 \text{ cm} = 1 \text{ m}$ ).	
1.5. Interpret plans, diagrams, and working drawings in the construction of prototypes or models.	
<b>2. Construction Technologies</b>	
2.1. <u>Identify and explain the engineering properties of materials used in structures (e.g., elasticity, plasticity, R value, density, strength).</u>	
2.2. <u>Distinguish among tension, compression, shear, and torsion, and explain how they relate to the selection of materials in structures.</u>	
2.3. <u>Explain Bernoulli's principle and its effect on structures such as buildings and bridges.</u>	
2.4. <u>Calculate the resultant force(s) for a combination of live loads and dead loads.</u>	
2.5. Identify and demonstrate the safe and proper use of common hand tools, power tools, and measurement devices used in construction.	
2.6. Recognize the purposes of zoning laws and building codes in the design and use of structures.	

TABLE 3V

MASSACHUSETTS Technology/Engineering Standards for High School	PLAN Science College Readiness Standards
<b>3. Energy and Power Technologies—Fluid Systems</b>	
3.1. <u>Explain the basic differences between open fluid systems (e.g., irrigation, forced hot air system, air compressors) and closed fluid systems (e.g., forced hot water system, hydraulic brakes).</u>	
3.2. <u>Explain the differences and similarities between hydraulic and pneumatic systems, and explain how each relates to manufacturing and transportation systems.</u>	
3.3. <u>Calculate and describe the ability of a hydraulic system to multiply distance, multiply force, and effect directional change.</u>	
3.4. <u>Recognize that the velocity of a liquid moving in a pipe varies inversely with changes in the cross-sectional area of the pipe.</u>	
3.5. <u>Identify and explain sources of resistance (e.g., 45° elbow, 90° elbow, changes in diameter) for water moving through a pipe.</u>	
<b>4. Energy and Power Technologies—Thermal Systems</b>	
4.1. <u>Differentiate among conduction, convection, and radiation in a thermal system (e.g., heating and cooling a house, cooking).</u>	
4.2. <u>Give examples of how conduction, convection, and radiation are considered in the selection of materials for buildings and in the design of a heating system.</u>	
4.3. <u>Explain how environmental conditions such as wind, solar angle, and temperature influence the design of buildings.</u>	
4.4. <u>Identify and explain alternatives to nonrenewable energies (e.g., wind and solar energy conversion systems).</u>	
<b>5. Energy and Power Technologies—Electrical Systems</b>	
5.1. <u>Explain how to measure and calculate voltage, current, resistance, and power consumption in a series circuit and in a parallel circuit. Identify the instruments used to measure voltage, current, power consumption, and resistance.</u>	
5.2. <u>Identify and explain the components of a circuit, including sources, conductors, circuit breakers, fuses, controllers, and loads. Examples of some controllers are switches, relays, diodes, and variable resistors.</u>	



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5.3. <u>Explain the relationships among voltage, current, and resistance in a simple circuit, using Ohm's law.</u>	
5.4. <u>Recognize that resistance is affected by external factors (e.g., temperature).</u>	
5.5. <u>Compare and contrast alternating current (AC) and direct current (DC), and give examples of each.</u>	
<b>6. Communication Technologies</b>	
6.1. <u>Explain how information travels through the following media: electrical wire, optical fiber, air, and space.</u>	
6.2. <u>Differentiate between digital and analog signals. Describe how communication devices employ digital and analog technologies (e.g., computers, cell phones).</u>	
6.3. <u>Explain how the various components (source, encoder, transmitter, receiver, decoder, destination, storage, and retrieval) and processes of a communication system function.</u>	
6.4. <u>Identify and explain the applications of laser and fiber optic technologies (e.g., telephone systems, cable television, photography).</u>	
6.5. <u>Explain the application of electromagnetic signals in fiber optic technologies, including critical angle and total internal reflection.</u>	
<b>7. Manufacturing Technologies</b>	
7.1. Describe the manufacturing processes of casting and molding, forming, separating, conditioning, assembling, and finishing.	
7.2. Identify the criteria necessary to select safe tools and procedures for a manufacturing process (e.g., properties of materials, required tolerances, end-uses).	
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<ul style="list-style-type: none"> <li>• <b>Solve simple algebraic expressions.</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
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<ul style="list-style-type: none"> <li>• <b>Convert within a unit (e.g., centimeters to meters, inches to feet).</b></li> </ul>	<p><b>Interpretation of Data:</b></p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
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	Identify and/or use a simple (e.g., linear) mathematical relationship between data
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	<p><b>Interpretation of Data:</b> Determine how the value of one variable changes as the value of another variable changes in a simple data presentation</p> <p>Identify and/or use a simple (e.g., linear) mathematical relationship between data</p>
The following skills are not detailed in the Mathematics Framework, but are necessary for a solid understanding in this course:	
<ul style="list-style-type: none"> <li>Determine the correct number of significant figures.</li> </ul>	
<ul style="list-style-type: none"> <li>Determine percent error from experimental and accepted values.</li> </ul>	
<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); power (W); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>
<ul style="list-style-type: none"> <li>Use the Celsius and Fahrenheit scales.</li> </ul>	<p><b>Interpretation of Data:</b> Understand basic scientific terminology</p>

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MASSACHUSETTS Technology/Engineering Standards for High School	WorkKeys Locating Information Skills
<b>I. CONTENT STANDARDS</b>	
<b>1. Engineering Design</b>	
<p><b>1.1.</b> Identify and explain the steps of the engineering design process: identify the problem, research the problem, develop possible solutions, select the best possible solution(s), construct prototypes and/or models, test and evaluate, communicate the solutions, and redesign.</p>	
<p><b>1.2.</b> Understand that the engineering design process is used in the solution of problems and the advancement of society. Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified.</p>	
<p><b>1.3.</b> Produce and analyze multi-view drawings (orthographic projections) and pictorial drawings (isometric, oblique, perspective), using various techniques.</p>	
<p><b>1.4.</b> Interpret and apply scale and proportion to orthographic projections and pictorial drawings (e.g., <math>\frac{1}{4}'' = 1'0''</math>, <math>1\text{ cm} = 1\text{ m}</math>).</p>	
<p><b>1.5.</b> Interpret plans, diagrams, and working drawings in the construction of prototypes or models.</p>	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p> <p>Apply information from one or more complicated graphics to specific situations</p> <p>Use the information to make decisions</p>
<b>2. Construction Technologies</b>	
<p><b>2.1.</b> Identify and explain the engineering properties of materials used in structures (e.g., elasticity, plasticity, R value, density, strength).</p>	
<p><b>2.2.</b> Distinguish among tension, compression, shear, and torsion, and explain how they relate to the selection of materials in structures.</p>	

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2.3. Explain Bernoulli's principle and its effect on structures such as buildings and bridges.	
2.4. Calculate the resultant force(s) for a combination of live loads and dead loads.	
2.5. Identify and demonstrate the safe and proper use of common hand tools, power tools, and measurement devices used in construction.	
2.6. Recognize the purposes of zoning laws and building codes in the design and use of structures.	
<b>3. Energy and Power Technologies—Fluid Systems</b>	
3.1. Explain the basic differences between open fluid systems (e.g., irrigation, forced hot air system, air compressors) and closed fluid systems (e.g., forced hot water system, hydraulic brakes).	
3.2. Explain the differences and similarities between hydraulic and pneumatic systems, and explain how each relates to manufacturing and transportation systems.	
3.3. Calculate and describe the ability of a hydraulic system to multiply distance, multiply force, and effect directional change.	
3.4. Recognize that the velocity of a liquid moving in a pipe varies inversely with changes in the cross-sectional area of the pipe.	
3.5. Identify and explain sources of resistance (e.g., 45° elbow, 90° elbow, changes in diameter) for water moving through a pipe.	
<b>4. Energy and Power Technologies—Thermal Systems</b>	
4.1. Differentiate among conduction, convection, and radiation in a thermal system (e.g., heating and cooling a house, cooking).	
4.2. Give examples of how conduction, convection, and radiation are considered in the selection of materials for buildings and in the design of a heating system.	
4.3. Explain how environmental conditions such as wind, solar angle, and temperature influence the design of buildings.	
4.4. Identify and explain alternatives to nonrenewable energies (e.g., wind and solar energy conversion systems).	

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MASSACHUSETTS Technology/Engineering Standards for High School	WorkKeys Locating Information Skills
<b>5. Energy and Power Technologies—Electrical Systems</b>	
5.1. Explain how to measure and calculate voltage, current, resistance, and power consumption in a series circuit and in a parallel circuit. Identify the instruments used to measure voltage, current, power consumption, and resistance.	
5.2. Identify and explain the components of a circuit, including sources, conductors, circuit breakers, fuses, controllers, and loads. Examples of some controllers are switches, relays, diodes, and variable resistors.	
5.3. Explain the relationships among voltage, current, and resistance in a simple circuit, using Ohm's law.	
5.4. Recognize that resistance is affected by external factors (e.g., temperature).	
5.5. Compare and contrast alternating current (AC) and direct current (DC), and give examples of each.	
<b>6. Communication Technologies</b>	
6.1. Explain how information travels through the following media: electrical wire, optical fiber, air, and space.	
6.2. Differentiate between digital and analog signals. Describe how communication devices employ digital and analog technologies (e.g., computers, cell phones).	
6.3. Explain how the various components (source, encoder, transmitter, receiver, decoder, destination, storage, and retrieval) and processes of a communication system function.	
6.4. Identify and explain the applications of laser and fiber optic technologies (e.g., telephone systems, cable television, photography).	
6.5. Explain the application of electromagnetic signals in fiber optic technologies, including critical angle and total internal reflection.	
<b>7. Manufacturing Technologies</b>	
7.1. Describe the manufacturing processes of casting and molding, forming, separating, conditioning, assembling, and finishing.	

TABLE 3X

<b>MASSACHUSETTS Technology/Engineering Standards for High School</b>	<b>WorkKeys Locating Information Skills</b>
<b>7.2.</b> Identify the criteria necessary to select safe tools and procedures for a manufacturing process (e.g., properties of materials, required tolerances, end-uses).	
<b>7.3.</b> Describe the advantages of using robotics in the automation of manufacturing processes (e.g., increased production, improved quality, safety).	
<b>II. STEPS OF THE ENGINEERING DESIGN PROCESS</b>	
<p>Students should be provided opportunities for hands-on experiences to design, build, test, and evaluate (and redesign, if necessary) a prototype or model of their solution to a problem. Students should have access to materials, hand and/or power tools, and other resources necessary to engage in these tasks. Students may also engage in design challenges that provide constraints and specifications to consider as they develop a solution to a problem.</p>	
Steps of the Engineering Design Process*	
<b>1.</b> Identify the need or problem	
<b>2.</b> Research the need or problem <ul style="list-style-type: none"> <li>● Examine current state of the issue and current solution(s)</li> <li>● Explore other options via the Internet, library, interviews, etc.</li> </ul>	
<b>3.</b> Develop possible solution(s) <ul style="list-style-type: none"> <li>● Brainstorm possible solution(s)</li> <li>● Draw on mathematics and science</li> <li>● Articulate the possible solution(s) in two and three dimensions</li> <li>● Refine the possible solution(s)</li> </ul>	
<b>4.</b> Select the best possible solution(s) <ul style="list-style-type: none"> <li>● Determine which solution(s) best meet(s) the original requirements</li> </ul>	
<b>5.</b> Construct one or more prototypes and/or models <ul style="list-style-type: none"> <li>● Model the selected solution(s) in two and three dimensions</li> </ul>	
<b>6.</b> Test and evaluate the solution(s) <ul style="list-style-type: none"> <li>● Does it work?</li> <li>● Does it meet the original design constraints?</li> </ul>	
<b>7.</b> Communicate the solution(s) <ul style="list-style-type: none"> <li>● Make an engineering presentation that includes a discussion of how the solution(s) best meet(s) the needs of the initial problem or need</li> <li>● Discuss societal impact and tradeoffs of the solution(s)</li> </ul>	

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<b>MASSACHUSETTS Technology/Engineering Standards for High School</b>	<b>WorkKeys Locating Information Skills</b>
<p>8. Redesign</p> <ul style="list-style-type: none"> <li>Modify the solution(s) based on information gathered during the tests and presentation</li> </ul>	
<p><b>III. MATHEMATICAL SKILLS</b></p>	
<p>Students are expected to know the content of the Massachusetts Mathematics Curriculum Framework, through grade 8. Below are some specific skills from the Mathematics Framework that students in this course should have the opportunity to apply:</p>	
<ul style="list-style-type: none"> <li>Construct and use tables and graphs to interpret data sets.</li> </ul>	<p>Summarize information from one or two straightforward graphics</p> <p>Identify trends shown in one or two straightforward graphics</p> <p>Compare information and trends shown in one or two straightforward graphics</p> <p>Summarize information from one or more detailed graphics</p> <p>Identify trends shown in one or more detailed or complicated graphics</p> <p>Compare information and trends from one or more complicated graphics</p> <p>Draw conclusions based on one complicated graphic or several related graphics</p> <p>Apply information from one or more complicated graphics to specific situations</p> <p>Use the information to make decisions</p>
<ul style="list-style-type: none"> <li>Solve simple algebraic expressions.</li> </ul>	
<ul style="list-style-type: none"> <li>Perform basic statistical procedures to analyze the center and spread of data.</li> </ul>	
<ul style="list-style-type: none"> <li>Measure with accuracy and precision (e.g., length, volume, mass, temperature, time)</li> </ul>	
<ul style="list-style-type: none"> <li>Use both metric/standard international (SI) and U.S. Customary (English) systems of measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>Convert within a unit (e.g., centimeters to meters, inches to feet).</li> </ul>	
<ul style="list-style-type: none"> <li>Use common prefixes such as milli-, centi-, and kilo-.</li> </ul>	
<ul style="list-style-type: none"> <li>Use scientific notation, where appropriate.</li> </ul>	
<ul style="list-style-type: none"> <li>Use ratio and proportion to solve problems.</li> </ul>	

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<b>MASSACHUSETTS Technology/Engineering Standards for High School</b>	<b>WorkKeys Locating Information Skills</b>
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<ul style="list-style-type: none"> <li>Use appropriate metric/standard international (SI) units of measurement for mass (kg); length (m); time (s); power (W); electric current (A); electric potential difference/voltage (V); and electric resistance (<math>\Omega</math>).</li> </ul>	
<ul style="list-style-type: none"> <li>Use the Celsius and Fahrenheit scales.</li> </ul>	