STATE MATCH SUPPLEMENT

Connecticut Curriculum Framework
English Language Arts, Mathematics, and Science
Grades 8–12

and

EXPLORE®, PLAN®, the ACT®, and WorkKeys®

November 2008

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Preface

This document is a supplement to the *State Match Connecticut Curriculum Framework English Language Arts, Mathematics, and Science Grades 8–12 and EXPLORE, PLAN, the ACT, and WorkKeys* (November 2008). This supplement identifies specific ACT College Readiness Standards that correspond to each Connecticut Standard in a side-by-side format. The left side of each page presents the Connecticut 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 Connecticut Standard.

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

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SUPPLEMENT TABLES 1A–1E:

ENGLISH LANGUAGE ARTS

TABLE 1A

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.	

1.1 Students use appropriate strategies before, during and after reading in order to construct meaning.
 	
   a. activate prior knowledge, establish purposes for reading and adjust the purposes while reading.
 	
   b. monitor comprehension and apply appropriate strategies when understanding breaks down.
 	
   c. select and organize relevant information from text to summarize.
 	
   d. identify, use and analyze text structures.
 	
   e. draw conclusions and use evidence to substantiate them by using texts heard, read and viewed.
 	
   f. make and justify inferences from explicit and or implicit information.
	Reading College Readiness Standards
	
	Main Ideas and Author's Approach:
	
	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
	
	Supporting Details:
	
	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
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Locate important details in uncomplicated passages
	
	Make simple inferences about how details are used in passages
	
	Locate and interpret minor or subtly stated details in uncomplicated passages
	
	Sequential, Comparative, and Cause-Effect Relationships:
	
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	
	Recognize clear cause-effect relationships described within a single sentence in a passage
	
	Identify relationships between main characters in uncomplicated literary narratives
	
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	
	Order simple sequences of events in uncomplicated literary narratives
	
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	
	Identify clear cause-effect relationships in uncomplicated passages
	
	Order sequences of events in uncomplicated passages
	
	Understand relationships between people, ideas, and so on in uncomplicated passages

= Measured by EXPLORE English and/or Reading tests

TABLE 1A

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	

	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation. a. generate and respond to questions. b. interpret information that is implied in a text. c. distinguish between fact and opinion. d. make and support judgments about texts. e. discuss and respond to texts by making text-to-self, text-to-text and text-to-world connections. f. identify and discuss the underlying theme or main idea in texts. g. choose a variety of genres to read for personal enjoyment.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages

TABLE 1A

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	

	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	

1.3 ==Students select and apply strategies to facilitate word recognition== and develop vocabulary ==in order to comprehend text.==
 	
  a. ==use== phonetic, structural, syntactical and ==contextual clues to read and understand words.==
 	
  b. NA
 	
  c. ==analyze the meaning of words and phrases in context.==
 	
  d. develop vocabulary through listening, speaking, reading and writing.
 	
  e. ==use content vocabulary appropriately and accurately== (math, music, science, social studies, etc.).
	Reading College Readiness Standards
	
	Meanings of Words:
	
	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

1.4 Students communicate with others to create interpretations of written, oral and visual texts.
 	
  a. respond to the ideas of others and recognize the validity of differing views.
 	
  b. persuade listeners about judgments and opinions of works read, written and viewed.	

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature Students read and respond to classical and contemporary texts from many cultures and literary periods.	
2.1 Students recognize how literary devices and conventions engage the reader. a. explain how and why literary conventions and techniques contribute to their understanding of and experience with the text. b. identify and analyze the differences between the structures of fiction and nonfiction. c. discuss what makes a text engaging and appealing to a reader. d. identify and analyze literary techniques an author uses that contribute to the meaning and appeal of texts.	**Reading** College Readiness Standards **Supporting Details:** Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages
2.2 Students explore multiple responses to literature. a. develop and defend multiple responses to literature using individual connections and relevant text references. b. develop a critical stance and cite evidence to support the stance.	
2.3 Students recognize and appreciate that contemporary and classical literature has shaped human thought. a. discuss, analyze and evaluate how characters deal with the diversity of human experience and conflict. b. compare/contrast and evaluate ideas, themes and/or issues across classical and contemporary texts. c. compare, respond to and analyze texts that represent many multicultural experiences.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages

TABLE 1A

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	

2.4 Students recognize that readers and authors are influenced by individual, social, cultural and historical contexts.
 	
  a. evaluate an author's values, ethics and beliefs included in many texts.
 	
  b. discuss how the experiences of an author influence the text.
 	
  c. discuss how the experiences of a reader influence the interpretation of a text.
 	
  d. analyze and evaluate themes and connections that cross cultures.
 	
  e. interpret, analyze and evaluate the influence of culture, history and ethnicity on themes and issues in literature.
 	
  f. evaluate the effectiveness of the choices that authors, illustrators and filmmakers make to express political and social issues.	

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 3: Communicating with Others Students produce written, oral and visual texts to express, develop and substantiate ideas and experiences.	
3.1 Students use descriptive, narrative, expository, persuasive and poetic modes. a. use oral language with clarity, voice and fluency to communicate a message. b. listen to or read a variety of genres to use as models for writing in different modes. c. use the appropriate features of persuasive, narrative, expository or poetic writing. d. write to delight in the imagination.	
3.2 Students prepare, publish and/or present work appropriate to audience, purpose and task. a. determine purpose, point of view and audience, and choose an appropriate written, oral or visual format. b. apply the most effective processes to create and present a written, oral or visual piece. c. revise texts for organization, elaboration, fluency and clarity. d. research information from multiple sources for a specific purpose. e. evaluate the validity and authenticity of primary and secondary sources of information. f. publish and/or present final products in a myriad of ways, including the use of the arts and technology.	**English** College Readiness Standards **Topic Development in Terms of Purpose and Focus:** Identify the basic purpose or role of a specified phrase or sentence Delete a clause or sentence because it is obviously irrelevant to the essay Identify the central idea or main topic of a straightforward piece of writing Determine relevancy when presented with a variety of sentence-level details 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 Delete material primarily because it disturbs the flow and development of the paragraph Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement **Organization, Unity, and Coherence:** Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*) 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., *therefore*, *however*, *in addition*) 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

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 3: Communicating with Others	
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	Revise sentences to correct awkward and confusing arrangements of sentence elements
	Revise vague nouns and pronouns that create obvious logic problems
	Delete obviously synonymous and wordy material in a sentence
	Revise expressions that deviate from the style of an essay
	Delete redundant material when information is repeated in different parts of speech (e.g., "alarmingly startled")
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	Determine the clearest and most logical conjunction to link clauses
	Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence
	Identify and correct ambiguous pronoun references
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay

TABLE 1A

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions Students apply the conventions of standard English in oral, written and visual communication.	

4.1 Students use knowledge of their language and culture to improve competency in English.
 	
   a. read, listen to and tell stories from a variety of cultures, and identify the similarities and differences in the way language is used.
 	
   b. recognize and understand variations among language patterns.	

4.2 Students speak and write using standard language structures and diction appropriate to audience and task.
 	
   a. use sentence patterns typical of spoken and written language to produce text.
 	
   b. evaluate the impact of language as related to audience and purpose.
	English College Readiness Standards
	
	Topic Development in Terms of Purpose and Focus:
	
	Identify the basic purpose or role of a specified phrase or sentence
	
	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
	
	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement
	
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	
	Revise expressions that deviate from the style of an essay
	
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay
	
	Sentence Structure and Formation:
	
	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

4.3 Students use standard English for composing and revising written text.
 	
   a. recognize the difference between standard and nonstandard English and use language appropriately.
 	
   b. demonstrate proficient use of proper mechanics, usage and spelling skills.
 	
   c. use resources for proofreading and editing.
	English College Readiness Standards
	
	Sentence Structure and Formation:
	
	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

= Measured by EXPLORE English and/or Reading tests

CONNECTICUT Grade 8 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions	
	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
	Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence
	Conventions of Usage:
	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
	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
	Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead*
	Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
	Ensure that a verb agrees with its subject when there is some text between the two
	Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences
	Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of*
	Conventions of Punctuation:
	Delete commas that create basic sense problems (e.g., between verb and direct object)
	Provide appropriate punctuation in straightforward situations (e.g., items in a series)
	Delete commas that disturb the sentence flow (e.g., between modifier and modified element)
	Use commas to set off simple parenthetical phrases
	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)
	Use punctuation to set off complex parenthetical phrases
	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 *and*)
	Use apostrophes to indicate simple possessive nouns
	Recognize inappropriate uses of colons and semicolons

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.	

1.1 Students use appropriate strategies before, during and after reading in order to construct meaning.
 	
  a. activate prior knowledge, establish purposes for reading and adjust the purposes while reading.
 	
  b. determine and apply the most effective means of monitoring comprehension and apply the appropriate strategies.
 	
  c. select and organize relevant information from text to summarize.
 	
  d. identify, use and analyze text structures.
 	
  e. draw conclusions and use evidence to substantiate them by using texts heard, read and viewed.
 	
  f. make and justify inferences from explicit and or implicit information.
	Reading College Readiness Standards
	
	Main Ideas and Author's Approach:
	
	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
	
	Supporting Details:
	
	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
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Locate important details in uncomplicated passages
	
	Make simple inferences about how details are used in passages
	
	Locate and interpret minor or subtly stated details in uncomplicated passages
	
	Sequential, Comparative, and Cause-Effect Relationships:
	
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	
	Recognize clear cause-effect relationships described within a single sentence in a passage
	
	Identify relationships between main characters in uncomplicated literary narratives
	
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	
	Order simple sequences of events in uncomplicated literary narratives
	
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	
	Identify clear cause-effect relationships in uncomplicated passages
	
	Order sequences of events in uncomplicated passages
	
	Understand relationships between people, ideas, and so on in uncomplicated passages

= Measured by EXPLORE English and/or Reading tests

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation. a. generate and respond to questions. b. interpret information that is implied in a text. c. distinguish between fact and opinion. d. make, support and defend judgments about texts. e. discuss and respond to texts by making text-to-self, text-to-text and text-to-world connections. f. identify and discuss the underlying theme or main idea in texts. g. choose a variety of genres to read for personal enjoyment.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages
CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards

= Measured by EXPLORE English and/or Reading tests

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
1.3 Students select and apply strategies to facilitate word recognition and develop vocabulary in order to comprehend text. a. use phonetic, structural, syntactical and contextual clues to read and understand words. b. NA c. analyze the meaning of words and phrases in context. d. develop vocabulary through listening, speaking, reading and writing. e. use content vocabulary appropriately and accurately (math, music, science, social studies, etc.).	**Reading** College Readiness Standards **Meanings of Words:** 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
1.4 Students communicate with others to create interpretations of written, oral and visual texts. a. respond to the ideas of others and recognize the validity of differing views. b. persuade listeners about understandings and judgments of works read, written and viewed.	

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature Students read and respond to classical and contemporary texts from many cultures and literary periods.	

2.1 <mark>Students recognize</mark> how <mark>literary devices and conventions</mark> engage the reader.
 	
  a. identify the various conventions within a genre and apply this understanding to the evaluation of the text.
 	
  b. identify and analyze the differences between the structures of fiction and nonfiction.
 	
  c. explain and explore their own and others' aesthetic reactions to texts.
 	
  d. <mark>analyze literary conventions and devices an author uses and how they contribute meaning</mark> and appeal.
	Reading College Readiness Standards
	
	Supporting Details:
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Make simple inferences about how details are used in passages

2.2 Students explore multiple responses to literature.
 	
  a. develop and defend multiple responses to literature using individual connections and relevant text references.
 	
  b. develop a critical stance and cite evidence to support the stance.	

2.3 Students recognize and appreciate that contemporary and classical literature has shaped human thought.
 	
  a. discuss, <mark>analyze and evaluate how characters deal with</mark> the diversity of <mark>human experience and conflict</mark>.
 	
  b. compare/contrast and evaluate ideas, themes and/or issues across classical and contemporary texts.
 	
  c. create responses to texts and examine each work's contributions to an understanding of human experience across cultures.
	Reading College Readiness Standards
	
	Main Ideas and Author's Approach:
	
	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
	
	Supporting Details:
	
	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
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Locate important details in uncomplicated passages
	
	Make simple inferences about how details are used in passages
	
	Locate and interpret minor or subtly stated details in uncomplicated passages

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	
2.4 Students recognize that readers and authors are influenced by individual, social, cultural and historical contexts. a. <mark>analyze</mark> and evaluate <mark>the basic beliefs, perspectives and assumptions underlying an author's work.</mark> b. discuss how the experiences of an author influence the text. c. discuss how the experiences of a reader influence the interpretation of a text. d. analyze and evaluate themes and connections that cross cultures. e. interpret, analyze and evaluate the influence of culture, history and ethnicity on themes and issues in literature. f. evaluate the effectiveness of the choices that authors, illustrators and filmmakers make to express political and social issues.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Recognize a clear intent of an author or narrator 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 **Generalizations and Conclusions:** 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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 3: Communicating with Others Students produce written, oral and visual texts to express, develop and substantiate ideas and experiences.	

3.1 Students use descriptive, narrative, expository, persuasive and poetic modes.
 	
  a. use oral language with clarity, voice and fluency to communicate a message.
 	
  b. listen to or read a variety of genres to use as models for writing in different modes.
 	
  c. use the appropriate features of persuasive, narrative, expository or poetic writing.
 	
  d. write to delight in the imagination.	

3.2 ==Students prepare==, publish and/or present ==work appropriate to== audience, ==purpose and task.==
 	
  a. determine purpose, point of view and audience, and choose an appropriate written, oral or visual format.
 	
  b. apply the most effective processes to create and present a written, oral or visual piece.
 	
  c. ==revise texts for organization, elaboration, fluency and clarity.==
 	
  d. research information from multiple sources for a specific purpose.
 	
  e. evaluate the validity of primary and secondary sources of information to authenticate research.
 	
  f. publish and/or present final products in a myriad of ways, including the use of the arts and technology.
	English College Readiness Standards
	
	Topic Development in Terms of Purpose and Focus:
	
	Identify the basic purpose or role of a specified phrase or sentence
	
	Delete a clause or sentence because it is obviously irrelevant to the essay
	
	Identify the central idea or main topic of a straightforward piece of writing
	
	Determine relevancy when presented with a variety of sentence-level details
	
	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
	
	Delete material primarily because it disturbs the flow and development of the paragraph
	
	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement
	
	Organization, Unity, and Coherence:
	
	Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*)
	
	Select the most logical place to add a sentence in a paragraph
	
	Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*)
	
	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., *therefore*, *however*, *in addition*)
	
	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

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 3: Communicating with Others	
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	Revise sentences to correct awkward and confusing arrangements of sentence elements
	Revise vague nouns and pronouns that create obvious logic problems
	Delete obviously synonymous and wordy material in a sentence
	Revise expressions that deviate from the style of an essay
	Delete redundant material when information is repeated in different parts of speech (e.g., "alarmingly startled")
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	Determine the clearest and most logical conjunction to link clauses
	Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence
	Identify and correct ambiguous pronoun references
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions Students apply the conventions of standard English in oral, written and visual communication.	

4.1 Students use knowledge of their language and culture to improve competency in English.
 	
   a. read, listen to and tell stories from a variety of cultures, and identify the similarities and differences in the way language is used.
 	
   b. recognize and understand variations between language patterns.	

4.2 ==Students== speak and ==write using standard language structures and diction appropriate to== audience and task.
 	
   a. ==use sentence patterns typical of== spoken and ==written language== to produce text.
 	
   b. ==evaluate the impact of language as related to== audience and ==purpose.==
	English College Readiness Standards
	
	Topic Development in Terms of Purpose and Focus:
	
	Identify the basic purpose or role of a specified phrase or sentence
	
	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
	
	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement
	
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	
	Revise expressions that deviate from the style of an essay
	
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay
	
	Sentence Structure and Formation:
	
	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

4.3 ==Students use standard English for== composing and ==revising written text.==
 	
   a. ==recognize the difference between standard and nonstandard English and use language appropriately.==
 	
   b. ==demonstrate proficient use of proper mechanics, usage== and spelling skills.
 	
   c. use resources for proofreading and editing.
	English College Readiness Standards
	
	Sentence Structure and Formation:
	
	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

TABLE 1B

CONNECTICUT Grades 9–12 English Language Arts Standards	EXPLORE English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions	
	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
	Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence
	Conventions of Usage:
	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
	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
	Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead*
	Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
	Ensure that a verb agrees with its subject when there is some text between the two
	Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences
	Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of*
	Conventions of Punctuation:
	Delete commas that create basic sense problems (e.g., between verb and direct object)
	Provide appropriate punctuation in straightforward situations (e.g., items in a series)
	Delete commas that disturb the sentence flow (e.g., between modifier and modified element)
	Use commas to set off simple parenthetical phrases
	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)
	Use punctuation to set off complex parenthetical phrases
	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 *and*)
	Use apostrophes to indicate simple possessive nouns
	Recognize inappropriate uses of colons and semicolons

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 1: Reading and Responding Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.	
1.1 Students use appropriate strategies before, during and after reading in order to construct meaning. a. activate prior knowledge, establish purposes for reading and adjust the purposes while reading. b. determine and apply the most effective means of monitoring comprehension and apply the appropriate strategies. c. select and organize relevant information from text to summarize. d. identify, use and analyze text structures. e. draw conclusions and use evidence to substantiate them by using texts heard, read and viewed. f. make and justify inferences from explicit and or implicit information.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages **Sequential, Comparative, and Cause-Effect Relationships:** Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages Recognize clear cause-effect relationships described within a single sentence in a passage Identify relationships between main characters in uncomplicated literary narratives Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives Order simple sequences of events in uncomplicated literary narratives Identify clear relationships between people, ideas, and so on in uncomplicated passages Identify clear cause-effect relationships in uncomplicated passages Order sequences of events in uncomplicated passages Understand relationships between people, ideas, and so on in uncomplicated passages

☐ = Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation. a. generate and respond to questions. b. interpret information that is implied in a text. c. distinguish between fact and opinion. d. make, support and defend judgments about texts. e. discuss and respond to texts by making text-to-self, text-to-text and text-to-world connections. f. identify and discuss the underlying theme or main idea in texts. g. choose a variety of genres to read for personal enjoyment.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages

Connecticut English Language Arts Standards

= Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 1: Reading and Responding	
1.3 Students select and apply strategies to facilitate word recognition and develop vocabulary in order to comprehend text. a. use phonetic, structural, syntactical and contextual clues to read and understand words. b. NA c. analyze the meaning of words and phrases in context. d. develop vocabulary through listening, speaking, reading and writing. e. use content vocabulary appropriately and accurately (math, music, science, social studies, etc.).	**Reading** College Readiness Standards **Meanings of Words:** 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
1.4 Students communicate with others to create interpretations of written, oral and visual texts. a. respond to the ideas of others and recognize the validity of differing views. b. persuade listeners about understandings and judgments of works read, written and viewed.	

= Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature Students read and respond to classical and contemporary texts from many cultures and literary periods.	

2.1 ==Students recognize== how ==literary devices and conventions== engage the reader.
  a. identify the various conventions within a genre and apply this understanding to the evaluation of the text.
  b. identify and analyze the differences between the structures of fiction and nonfiction.
  c. explain and explore their own and others' aesthetic reactions to texts.
  d. ==analyze literary conventions and devices an author uses and how they contribute meaning== and appeal.
	Reading College Readiness Standards
	Supporting Details:
	Recognize a clear function of a part of an uncomplicated passage
	Make simple inferences about how details are used in passages

2.2 Students explore multiple responses to literature.
  a. develop and defend multiple responses to literature using individual connections and relevant text references.
  b. develop a critical stance and cite evidence to support the stance.	

2.3 Students recognize and appreciate that contemporary and classical literature has shaped human thought.
  a. discuss, ==analyze and evaluate how characters deal with== the diversity of ==human experience and conflict==.
  b. compare/contrast and evaluate ideas, themes and/or issues across classical and contemporary texts.
  c. create responses to texts and examine each work's contributions to an understanding of human experience across cultures.
	Reading College Readiness Standards
	Main Ideas and Author's Approach:
	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
	Supporting Details:
	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
	Recognize a clear function of a part of an uncomplicated passage
	Locate important details in uncomplicated passages
	Make simple inferences about how details are used in passages
	Locate and interpret minor or subtly stated details in uncomplicated passages

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

= Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 2: Exploring and Responding to Literature	
2.4 Students recognize that readers and authors are influenced by individual, social, cultural and historical contexts. a. ==analyze== and evaluate ==the basic beliefs, perspectives and assumptions underlying an author's work.== b. discuss how the experiences of an author influence the text. c. discuss how the experiences of a reader influence the interpretation of a text. d. analyze and evaluate themes and connections that cross cultures. e. interpret, analyze and evaluate the influence of culture, history and ethnicity on themes and issues in literature. f. evaluate the effectiveness of the choices that authors, illustrators and filmmakers make to express political and social issues.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Recognize a clear intent of an author or narrator 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 **Generalizations and Conclusions:** 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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

==▢== = Measured by PLAN English and/or Reading tests

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 3: Communicating with Others Students produce written, oral and visual texts to express, develop and substantiate ideas and experiences.	

3.1 Students use descriptive, narrative, expository, persuasive and poetic modes.
 	
  a. use oral language with clarity, voice and fluency to communicate a message.
 	
  b. listen to or read a variety of genres to use as models for writing in different modes.
 	
  c. use the appropriate features of persuasive, narrative, expository or poetic writing.
 	
  d. write to delight in the imagination.	

3.2 Students prepare, publish and/or present work appropriate to audience, purpose and task.
 	
  a. determine purpose, point of view and audience, and choose an appropriate written, oral or visual format.
 	
  b. apply the most effective processes to create and present a written, oral or visual piece.
 	
  c. revise texts for organization, elaboration, fluency and clarity.
 	
  d. research information from multiple sources for a specific purpose.
 	
  e. evaluate the validity of primary and secondary sources of information to authenticate research.
 	
  f. publish and/or present final products in a myriad of ways, including the use of the arts and technology.
	English College Readiness Standards
	
	Topic Development in Terms of Purpose and Focus:
	
	Identify the basic purpose or role of a specified phrase or sentence
	
	Delete a clause or sentence because it is obviously irrelevant to the essay
	
	Identify the central idea or main topic of a straightforward piece of writing
	
	Determine relevancy when presented with a variety of sentence-level details
	
	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
	
	Delete material primarily because it disturbs the flow and development of the paragraph
	
	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement
	
	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
	
	Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation
	
	Organization, Unity, and Coherence:
	
	Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*)
	
	Select the most logical place to add a sentence in a paragraph
	
	Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*)
	
	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., *therefore*, *however*, *in addition*)

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 3: Communicating with Others	
	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
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	Revise sentences to correct awkward and confusing arrangements of sentence elements
	Revise vague nouns and pronouns that create obvious logic problems
	Delete obviously synonymous and wordy material in a sentence
	Revise expressions that deviate from the style of an essay
	Delete redundant material when information is repeated in different parts of speech (e.g., "alarmingly startled")
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	Determine the clearest and most logical conjunction to link clauses
	Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence
	Identify and correct ambiguous pronoun references
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay

= Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions Students apply the conventions of standard English in oral, written and visual communication.	
4.1 Students use knowledge of their language and culture to improve competency in English. a. read, listen to and tell stories from a variety of cultures, and identify the similarities and differences in the way language is used. b. recognize and understand variations between language patterns.	
4.2 Students speak and write using standard language structures and diction appropriate to audience and task. a. use sentence patterns typical of spoken and written language to produce text. b. evaluate the impact of language as related to audience and purpose.	**English** College Readiness Standards **Topic Development in Terms of Purpose and Focus:** Identify the basic purpose or role of a specified phrase or sentence 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 Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise expressions that deviate from the style of an essay Use the word or phrase most consistent with the style and tone of a fairly straightforward essay Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay **Sentence Structure and Formation:** 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
4.3 Students use standard English for composing and revising written text. a. recognize the difference between standard and nonstandard English and use language appropriately. b. demonstrate proficient use of proper mechanics, usage and spelling skills. c. use resources for proofreading and editing.	**English** College Readiness Standards **Sentence Structure and Formation:** 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

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions	
	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
	Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence
	Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs
	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
	Conventions of Usage:
	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
	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
	Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead*
	Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
	Ensure that a verb agrees with its subject when there is some text between the two
	Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences
	Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of*
	Correctly use reflexive pronouns, the possessive pronouns *its* and *your*, and the relative pronouns *who* and *whom*
	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)
	Conventions of Punctuation:
	Delete commas that create basic sense problems (e.g., between verb and direct object)
	Provide appropriate punctuation in straightforward situations (e.g., items in a series)
	Delete commas that disturb the sentence flow (e.g., between modifier and modified element)

= Measured by PLAN English and/or Reading tests

TABLE 1C

CONNECTICUT Grades 9–12 English Language Arts Standards	PLAN English and/or Reading College Readiness Standards
Standard 4: Applying English Language Conventions	
	Use commas to set off simple parenthetical phrases
	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)
	Use punctuation to set off complex parenthetical phrases
	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 *and*)
	Use apostrophes to indicate simple possessive nouns
	Recognize inappropriate uses of colons and semicolons
	Use commas to set off a nonessential/nonrestrictive appositive or clause

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 1: Reading and Responding Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.	

1.1 Students use appropriate strategies before, during and after reading in order to construct meaning.
 	
  a. activate prior knowledge, establish purposes for reading and adjust the purposes while reading.
 	
  b. determine and apply the most effective means of monitoring comprehension and apply the appropriate strategies.
 	
  c. select and organize relevant information from text to summarize.
 	
  d. identify, use and analyze text structures.
 	
  e. draw conclusions and use evidence to substantiate them by using texts heard, read and viewed.
 	
  f. make and justify inferences from explicit and or implicit information.
	Reading College Readiness Standards
	
	Main Ideas and Author's Approach:
	
	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
	
	Supporting Details:
	
	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
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Locate important details in uncomplicated passages
	
	Make simple inferences about how details are used in passages
	
	Locate and interpret minor or subtly stated details in uncomplicated passages
	
	Sequential, Comparative, and Cause-Effect Relationships:
	
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	
	Recognize clear cause-effect relationships described within a single sentence in a passage
	
	Identify relationships between main characters in uncomplicated literary narratives
	
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	
	Order simple sequences of events in uncomplicated literary narratives
	
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	
	Identify clear cause-effect relationships in uncomplicated passages
	
	Order sequences of events in uncomplicated passages
	
	Understand relationships between people, ideas, and so on in uncomplicated passages

= Measured by ACT English, Reading, and/or Writing tests

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 1: Reading and Responding	
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation. a. generate and respond to questions. b. interpret information that is implied in a text. c. distinguish between fact and opinion. d. make, support and defend judgments about texts. e. discuss and respond to texts by making text-to-self, text-to-text and text-to-world connections. f. identify and discuss the underlying theme or main idea in texts. g. choose a variety of genres to read for personal enjoyment.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** 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 **Supporting Details:** 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 Recognize a clear function of a part of an uncomplicated passage Locate important details in uncomplicated passages Make simple inferences about how details are used in passages Locate and interpret minor or subtly stated details in uncomplicated passages

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 1: Reading and Responding	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

= Measured by ACT English, Reading, and/or Writing tests

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 1: Reading and Responding	
1.3 Students select and apply strategies to facilitate word recognition and develop vocabulary in order to comprehend text. a. use phonetic, structural, syntactical and contextual clues to read and understand words. b. NA c. analyze the meaning of words and phrases in context. d. develop vocabulary through listening, speaking, reading and writing. e. use content vocabulary appropriately and accurately (math, music, science, social studies, etc.).	**Reading** College Readiness Standards **Meanings of Words:** 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
1.4 Students communicate with others to create interpretations of written, oral and visual texts. a. respond to the ideas of others and recognize the validity of differing views. b. persuade listeners about understandings and judgments of works read, written and viewed.	

= Measured by ACT English, Reading, and/or Writing tests

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 2: Exploring and Responding to Literature Students read and respond to classical and contemporary texts from many cultures and literary periods.	

2.1 <mark>Students recognize</mark> how <mark>literary devices and conventions</mark> engage the reader.
 	
  a. identify the various conventions within a genre and apply this understanding to the evaluation of the text.
 	
  b. identify and analyze the differences between the structures of fiction and nonfiction.
 	
  c. explain and explore their own and others' aesthetic reactions to texts.
 	
  d. <mark>analyze literary conventions and devices an author uses and how they contribute meaning</mark> and appeal.
	Reading College Readiness Standards
	
	Supporting Details:
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Make simple inferences about how details are used in passages

2.2 Students explore multiple responses to literature.
 	
  a. develop and defend multiple responses to literature using individual connections and relevant text references.
 	
  b. develop a critical stance and cite evidence to support the stance.	

2.3 Students recognize and appreciate that contemporary and classical literature has shaped human thought.
 	
  a. discuss, <mark>analyze and evaluate how characters deal with</mark> the diversity of <mark>human experience and conflict</mark>.
 	
  b. compare/contrast and evaluate ideas, themes and/or issues across classical and contemporary texts.
 	
  c. create responses to texts and examine each work's contributions to an understanding of human experience across cultures.
	Reading College Readiness Standards
	
	Main Ideas and Author's Approach:
	
	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
	
	Supporting Details:
	
	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
	
	Recognize a clear function of a part of an uncomplicated passage
	
	Locate important details in uncomplicated passages
	
	Make simple inferences about how details are used in passages
	
	Locate and interpret minor or subtly stated details in uncomplicated passages

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 2: Exploring and Responding to Literature	
	Sequential, Comparative, and Cause-Effect Relationships:
	Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages
	Recognize clear cause-effect relationships described within a single sentence in a passage
	Identify relationships between main characters in uncomplicated literary narratives
	Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives
	Order simple sequences of events in uncomplicated literary narratives
	Identify clear relationships between people, ideas, and so on in uncomplicated passages
	Identify clear cause-effect relationships in uncomplicated passages
	Order sequences of events in uncomplicated passages
	Understand relationships between people, ideas, and so on in uncomplicated passages
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Meanings of Words:
	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
	Generalizations and Conclusions:
	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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 2: Exploring and Responding to Literature	
2.4 Students recognize that readers and authors are influenced by individual, social, cultural and historical contexts. a. <mark>analyze</mark> and evaluate <mark>the basic beliefs, perspectives and assumptions underlying an author's work.</mark> b. discuss how the experiences of an author influence the text. c. discuss how the experiences of a reader influence the interpretation of a text. d. analyze and evaluate themes and connections that cross cultures. e. interpret, analyze and evaluate the influence of culture, history and ethnicity on themes and issues in literature. f. evaluate the effectiveness of the choices that authors, illustrators and filmmakers make to express political and social issues.	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Recognize a clear intent of an author or narrator 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 **Generalizations and Conclusions:** 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 subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives

= Measured by ACT English, Reading, and/or Writing tests

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 3: Communicating with Others Students produce written, oral and visual texts to express, develop and substantiate ideas and experiences.	

3.1 Students use descriptive, narrative, expository, persuasive and poetic modes.
  a. use oral language with clarity, voice and fluency to communicate a message.
  b. listen to or read a variety of genres to use as models for writing in different modes.
  c. use the appropriate features of persuasive, narrative, expository or poetic writing.
  d. write to delight in the imagination.
	Writing College Readiness Standards
	Expressing Judgments:
	Show a basic understanding of the persuasive purpose of the task by taking a position on the issue in the prompt but may not maintain that position
	
	Show a little recognition of the complexity of the issue in the prompt by acknowledging, but only briefly describing, a counterargument to the writer's position
	Show understanding of the persuasive purpose of the task by taking a position on the issue in the prompt
	Show some recognition of the complexity of the issue in the prompt by
	• acknowledging counterarguments to the writer's position
	• providing some response to counterarguments to the writer's position
	Focusing on the Topic:
	Maintain a focus on the general topic in the prompt throughout the essay
	Maintain a focus on the general topic in the prompt throughout the essay and attempt a focus on the specific issue in the prompt
	Present a thesis that establishes focus on the topic
	Maintain a focus on discussion of the specific topic and issue in the prompt throughout the essay
	Present a thesis that establishes a focus on the writer's position on the issue

3.2 Students prepare, publish and/or present work appropriate to audience, purpose and task.
  a. determine purpose, point of view and audience, and choose an appropriate written, oral or visual format.
  b. apply the most effective processes to create and present a written, oral or visual piece.
  c. revise texts for organization, elaboration, fluency and clarity.
  d. research information from multiple sources for a specific purpose.
  e. evaluate the validity of primary and secondary sources of information to authenticate research.
  f. publish and/or present final products in a myriad of ways, including the use of the arts and technology.
	English College Readiness Standards
	Topic Development in Terms of Purpose and Focus:
	Identify the basic purpose or role of a specified phrase or sentence
	Delete a clause or sentence because it is obviously irrelevant to the essay
	Identify the central idea or main topic of a straightforward piece of writing
	Determine relevancy when presented with a variety of sentence-level details
	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
	Delete material primarily because it disturbs the flow and development of the paragraph
	Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement

     = Measured by ACT English, Reading, and/or Writing tests

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 3: Communicating with Others	
	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
	Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation
	Organization, Unity, and Coherence:
	Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*)
	Select the most logical place to add a sentence in a paragraph
	Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*)
	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., *therefore*, *however*, *in addition*)
	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
	Word Choice in Terms of Style, Tone, Clarity, and Economy:
	Revise sentences to correct awkward and confusing arrangements of sentence elements
	Revise vague nouns and pronouns that create obvious logic problems
	Delete obviously synonymous and wordy material in a sentence
	Revise expressions that deviate from the style of an essay
	Delete redundant material when information is repeated in different parts of speech (e.g., "alarmingly startled")
	Use the word or phrase most consistent with the style and tone of a fairly straightforward essay
	Determine the clearest and most logical conjunction to link clauses
	Revise a phrase that is redundant in terms of the meaning and logic of the entire sentence
	Identify and correct ambiguous pronoun references
	Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 4: Applying English Language Conventions Students apply the conventions of standard English in oral, written and visual communication.	
4.1 Students use knowledge of their language and culture to improve competency in English. a. read, listen to and tell stories from a variety of cultures, and identify the similarities and differences in the way language is used. b. recognize and understand variations between language patterns.	
4.2 Students speak and write using standard language structures and diction appropriate to audience and task. a. use sentence patterns typical of spoken and written language to produce text. b. evaluate the impact of language as related to audience and purpose.	**English** College Readiness Standards **Topic Development in Terms of Purpose and Focus:** Identify the basic purpose or role of a specified phrase or sentence 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 Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise expressions that deviate from the style of an essay Use the word or phrase most consistent with the style and tone of a fairly straightforward essay Use the word or phrase most appropriate in terms of the content of the sentence and tone of the essay **Sentence Structure and Formation:** 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 **Writing** College Readiness Standards **Using Language:** Show adequate use of language to communicate by • correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding • using appropriate vocabulary • using some varied kinds of sentence structures to vary pace

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 4: Applying English Language Conventions	
	Show competent use of language to communicate ideas by • correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding • using some precise and varied vocabulary • using several kinds of sentence structures to vary pace and to support meaning Show effective use of language to clearly communicate ideas by • correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors • using precise and varied vocabulary • using a variety of kinds of sentence structures to vary pace and to support meaning
4.3 <mark>Students use standard English for</mark> composing and revising written text. a. <mark>recognize the difference between standard and nonstandard English and use language appropriately.</mark> b. <mark>demonstrate proficient use of proper mechanics, usage</mark> and spelling skills. c. use resources for proofreading and editing.	**English** College Readiness Standards **Sentence Structure and Formation:** 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 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 Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs 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 **Conventions of Usage:** 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

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 4: Applying English Language Conventions	
	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
	Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead*
	Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
	Ensure that a verb agrees with its subject when there is some text between the two
	Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences
	Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of*
	Correctly use reflexive pronouns, the possessive pronouns *its* and *your*, and the relative pronouns *who* and *whom*
	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)
	Conventions of Punctuation:
	Delete commas that create basic sense problems (e.g., between verb and direct object)
	Provide appropriate punctuation in straightforward situations (e.g., items in a series)
	Delete commas that disturb the sentence flow (e.g., between modifier and modified element)
	Use commas to set off simple parenthetical phrases
	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)
	Use punctuation to set off complex parenthetical phrases
	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 *and*)
	Use apostrophes to indicate simple possessive nouns
	Recognize inappropriate uses of colons and semicolons
	Use commas to set off a nonessential/nonrestrictive appositive or clause
	Writing College Readiness Standards
	Using Language:
	Show adequate use of language to communicate by
	• correctly employing many of the conventions of standard English grammar, usage, and mechanics, but with some distracting errors that may occasionally impede understanding

TABLE 1D

CONNECTICUT Grades 9–12 English Language Arts Standards	ACT English, Reading and/or Writing College Readiness Standards
Standard 4: Applying English Language Conventions	
	• using appropriate vocabulary
	• using some varied kinds of sentence structures to vary pace
	Show competent use of language to communicate ideas by
	• correctly employing most conventions of standard English grammar, usage, and mechanics, with a few distracting errors but none that impede understanding
	• using some precise and varied vocabulary
	• using several kinds of sentence structures to vary pace and to support meaning
	Show effective use of language to clearly communicate ideas by
	• correctly employing most conventions of standard English grammar, usage, and mechanics, with just a few, if any, errors
	• using precise and varied vocabulary
	• using a variety of kinds of sentence structures to vary pace and to support meaning

▭ = Measured by ACT English, Reading, and/or Writing tests

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 1: Reading and Responding Students read, comprehend and respond in individual, literal, critical and evaluative ways to literary, informational and persuasive texts in multimedia formats.	

1.1 Students use appropriate strategies before, during and after reading in order to construct meaning.
   a. activate prior knowledge, establish purposes for reading and adjust the purposes while reading.
   b. determine and apply the most effective means of monitoring comprehension and apply the appropriate strategies.
   c. select and organize relevant information from text to summarize.
   d. identify, use and analyze text structures.
   e. draw conclusions and use evidence to substantiate them by using texts heard, read and viewed.
   f. make and justify inferences from explicit and or implicit information.	

1.2 Students interpret, analyze and evaluate text in order to extend understanding and appreciation.
   a. generate and respond to questions.
   b. interpret information that is implied in a text.
   c. distinguish between fact and opinion.
   d. make, support and defend judgments about texts.
   e. discuss and respond to texts by making text-to-self, text-to-text and text-to-world connections.
   f. identify and discuss the underlying theme or main idea in texts.
   g. choose a variety of genres to read for personal enjoyment.
	Identify main ideas and clearly stated details
	Identify implied details

1.3 Students select and apply strategies to facilitate word recognition and develop vocabulary in order to comprehend text.
   a. use phonetic, structural, syntactical and contextual clues to read and understand words.
   b. NA
   c. analyze the meaning of words and phrases in context.
   d. develop vocabulary through listening, speaking, reading and writing.
   e. use content vocabulary appropriately and accurately (math, music, science, social studies, etc.).
	Choose the correct meaning of common, everyday and workplace words
	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

TABLE 1E

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 1: Reading and Responding	
1.4 Students communicate with others to create interpretations of written, oral and visual texts. a. respond to the ideas of others and recognize the validity of differing views. b. persuade listeners about understandings and judgments of works read, written and viewed.	

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 2: Exploring and Responding to Literature Students read and respond to classical and contemporary texts from many cultures and literary periods.	
2.1 Students recognize how literary devices and conventions engage the reader. a. identify the various conventions within a genre and apply this understanding to the evaluation of the text. b. identify and analyze the differences between the structures of fiction and nonfiction. c. explain and explore their own and others' aesthetic reactions to texts. d. analyze literary conventions and devices an author uses and how they contribute meaning and appeal.	
2.2 Students explore multiple responses to literature. a. develop and defend multiple responses to literature using individual connections and relevant text references. b. develop a critical stance and cite evidence to support the stance.	
2.3 Students recognize and appreciate that contemporary and classical literature has shaped human thought. a. discuss, analyze and evaluate how characters deal with the diversity of human experience and conflict. b. compare/contrast and evaluate ideas, themes and/or issues across classical and contemporary texts. c. create responses to texts and examine each work's contributions to an understanding of human experience across cultures.	

TABLE 1E

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 2: Exploring and Responding to Literature	
2.4 Students recognize that readers and authors are influenced by individual, social, cultural and historical contexts. a. analyze and evaluate the basic beliefs, perspectives and assumptions underlying an author's work. b. discuss how the experiences of an author influence the text. c. discuss how the experiences of a reader influence the interpretation of a text. d. analyze and evaluate themes and connections that cross cultures. e. interpret, analyze and evaluate the influence of culture, history and ethnicity on themes and issues in literature. f. evaluate the effectiveness of the choices that authors, illustrators and filmmakers make to express political and social issues.	

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 3: Communicating with Others Students produce written, oral and visual texts to express, develop and substantiate ideas and experiences.	

3.1 Students use descriptive, narrative, expository, persuasive and poetic modes.
 	
   a. use oral language with clarity, voice and fluency to communicate a message.
 	
   b. listen to or read a variety of genres to use as models for writing in different modes.
 	
   c. use the appropriate features of persuasive, narrative, expository or poetic writing.
 	
   d. write to delight in the imagination.	

3.2 Students prepare, publish and/or present work appropriate to audience, purpose and task.
 	
   a. determine purpose, point of view and audience, and choose an appropriate written, oral or visual format.
 	
   b. apply the most effective processes to create and present a written, oral or visual piece.
 	
   c. revise texts for organization, elaboration, fluency and clarity.
 	
   d. research information from multiple sources for a specific purpose.
 	
   e. evaluate the validity of primary and secondary sources of information to authenticate research.
 	
   f. publish and/or present final products in a myriad of ways, including the use of the arts and technology.	

CONNECTICUT Grades 9–12 English Language Arts Standards	WorkKeys Reading For Information Skills
Standard 4: Applying English Language Conventions Students apply the conventions of standard English in oral, written and visual communication.	

4.1 Students use knowledge of their language and culture to improve competency in English.
 	
  a. read, listen to and tell stories from a variety of cultures, and identify the similarities and differences in the way language is used.
 	
  b. recognize and understand variations between language patterns.	

4.2 Students speak and write using standard language structures and diction appropriate to audience and task.
 	
  a. use sentence patterns typical of spoken and written language to produce text.
 	
  b. evaluate the impact of language as related to audience and purpose.	

4.3 Students use standard English for composing and revising written text.
 	
  a. recognize the difference between standard and nonstandard English and use language appropriately.
 	
  b. demonstrate proficient use of proper mechanics, usage and spelling skills.
 	
  c. use resources for proofreading and editing.	

SUPPLEMENT TABLES 2A–2I:

MATHEMATICS

CONNECTICUT Grade 8 Mathematics Content Standards	EXPLORE Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
<mark>Patterns and functional relationships can be represented and analyzed using a variety of strategies,</mark> tools and technologies.	
1.1 <mark>Understand and describe patterns and functional relationships.</mark> a. <mark>Analyze physical phenomena, functions and patterns to identify relationships and make generalizations.</mark>	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** 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)
1.2 <mark>Represent and analyze quantitative relationships in a variety of ways.</mark> a. <mark>Describe the effects of characteristics of linear relationships on the way the relationships are represented verbally and in tables, graphs and equations.</mark>	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 **Expressions, Equations, & Inequalities:** 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)
1.3 <mark>Use operations, properties and algebraic symbols to determine equivalence and solve problems.</mark> a. <mark>Solve problems using various algebraic methods and properties.</mark>	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Perform straightforward word-to-symbol translations 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) Identify solutions to simple quadratic equations

TABLE 2A

CONNECTICUT Grade 8 Mathematics Content Standards	EXPLORE Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
<mark>Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies,</mark> tools and technologies.	

2.1 <mark>Understand that a variety of numerical representations can be used to describe quantitative relationships.</mark>
 	
   a. <mark>Compare and order integers, powers and roots using number lines and grids.</mark>
 	
   b. <mark>Extend the understanding of scientific notation to very small numbers.</mark>
	Numbers: Concepts & Properties:
	Work with scientific notation
	Work with squares and square roots of numbers
	Graphical Representations:
	Identify the location of a point with a positive coordinate on the number line
	Locate points on the number line and in the first quadrant
	Locate points in the coordinate plane

2.2 <mark>Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.</mark>
 	
   a. <mark>Solve problems involving fractions, decimals, ratios and percents.</mark>
 	
   b. <mark>Make generalizations about operations with very large and very small numbers.</mark>
 	
   c. <mark>Connect the exponential growth and decay models to repeated multiplication by the same factor.</mark>
	Basic Operations & Applications:
	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)
	Numbers: Concepts & Properties:
	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

CONNECTICUT Grade 8 Mathematics Content Standards	EXPLORE Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Explore the relationships among sides, angles, perimeters, areas, surface areas and volumes of congruent and similar polygons and solids.	**Basic Operations & Applications:** 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 **Properties of Plane Figures:** 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
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Model geometric relationships in a variety of ways.	**Properties of Plane Figures:** 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 **Measurement:** Use geometric formulas when all necessary information is given
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Use a variety of concrete methods, including displacement, to find volumes of solids. b. Solve problems involving measurement through the use of appropriate tools, techniques and strategies.	**Properties of Plane Figures:** 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 **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure 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

CONNECTICUT Grade 8 Mathematics Content Standards	EXPLORE Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. 　a. Construct appropriate representations of data based on the size and kind of data set and the purpose for their use.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. 　a. Make and evaluate statistical claims and justify conclusions with evidence.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs
4.3 Understand and apply basic concepts of probability. 　a. Determine possible outcomes using a variety of counting techniques.	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Compute straightforward probabilities for common situations

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	EXPLORE Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** 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)
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and nonlinear functions and relations symbolically and with tables and graphs.	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 **Expressions, Equations, & Inequalities:** 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)
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Manipulate equations, inequalities and functions to solve problems.	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Perform straightforward word-to-symbol translations 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) Identify solutions to simple quadratic equations

TABLE 2B

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	EXPLORE Mathematics College Readiness Standards
Numerical and Proportional Reasoning Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	

2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships.
 	
   a. Extend the understanding of number to include integers, rational numbers and real numbers.
 	
   b. Interpret and represent large sets of numbers with the aid of technologies.
	Numbers: Concepts & Properties:
	
	Recognize equivalent fractions and fractions in lowest terms
	
	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
	
	Order fractions
	
	Work with scientific notation
	
	Work with squares and square roots of numbers
	
	Graphical Representations:
	
	Identify the location of a point with a positive coordinate on the number line
	
	Locate points on the number line and in the first quadrant
	
	Locate points in the coordinate plane

2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.
 	
   a. Develop strategies for computation and estimation using properties of number systems to solve problems.
 	
   b. Solve proportional reasoning problems.
	Basic Operations & Applications:
	
	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)
	
	Numbers: Concepts & Properties:
	
	Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

= Measured by EXPLORE Mathematics Test

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	EXPLORE Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. b. Develop and evaluate mathematical arguments using reasoning and proof.	**Basic Operations & Applications:** 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 **Properties of Plane Figures:** 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
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Verify geometric relationships using algebra, coordinate geometry, and transformations.	**Properties of Plane Figures:** 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 **Measurement:** Use geometric formulas when all necessary information is given
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Solve a variety of problems involving 1-, 2- and 3-dimensional measurements using geometric relationships and trigonometric ratios.	**Properties of Plane Figures:** 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 **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure 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

TABLE 2B

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	EXPLORE Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Create the appropriate visual or graphical representation of real data.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. a. Analyze real-world problems using statistical techniques.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs
4.3 Understand and apply basic concepts of probability. a. Understand and apply the principles of probability in a variety of situations.	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Compute straightforward probabilities for common situations

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions ==Patterns and functional relationships can be represented and analyzed using a variety of strategies==, tools and technologies.	
1.1 ==Understand and describe patterns and functional relationships.== a. ==Describe relationships and make generalizations about patterns and functions.==	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Interpret and use information from figures, tables, and graphs **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** 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
1.2 ==Represent and analyze quantitative relationships in a variety of ways.== a. ==Represent and analyze linear and nonlinear functions and relations symbolically and with tables and graphs.==	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 **Expressions, Equations, & Inequalities:** 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 **Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations Match linear graphs with their equations 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

TABLE 2C

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
1.3 <mark>Use operations, properties and algebraic symbols to determine equivalence and solve problems.</mark> a. <mark>Manipulate equations, inequalities and functions to solve problems.</mark>	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Perform straightforward word-to-symbol translations Multiply two binomials 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) Identify solutions to simple quadratic equations Add, subtract, and multiply polynomials 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 Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Solve linear inequalities that require reversing the inequality sign Solve absolute value equations Solve quadratic equations Find solutions to systems of linear equations **Graphical Representations:** Identify the graph of a linear inequality on the number line Match number line graphs with solution sets of linear inequalities

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Numerical and Proportional Reasoning Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.	**Numbers: Concepts & Properties:** Recognize equivalent fractions and fractions in lowest terms Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Determine when an expression is undefined Apply rules of exponents **Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.	**Basic Operations & Applications:** 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) Solve word problems containing several rates, proportions, or percentages **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

TABLE 2C

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. b. Develop and evaluate mathematical arguments using reasoning and proof.	**Basic Operations & Applications:** 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 **Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles **Measurement:** Use relationships involving area, perimeter, and volume of geometric figures to compute another measure
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Verify geometric relationships using algebra, coordinate geometry, and transformations.	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Use the distance formula Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point **Properties of Plane Figures:** 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 Recognize Pythagorean triples Use properties of isosceles triangles Use the Pythagorean theorem **Measurement:** Use geometric formulas when all necessary information is given

= Measured by PLAN Mathematics Test

TABLE 2C

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Geometry and Measurement	
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Solve a variety of problems involving 1-, 2- and 3-dimensional measurements using geometric relationships and trigonometric ratios.	**Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles Use the Pythagorean theorem **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure 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

TABLE 2C

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	PLAN Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Create the appropriate visual or graphical representation of real data.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. a. Analyze real-world problems using statistical techniques.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs Calculate or use a weighted average Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
4.3 Understand and apply basic concepts of probability. a. Understand and apply the principles of probability in a variety of situations.	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations Use Venn diagrams in counting Apply counting techniques Compute a probability when the event and/or sample space are not given or obvious

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers Exhibit knowledge of logarithms and geometric sequences **Expressions, Equations, & Inequalities:** 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
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and nonlinear functions and relations symbolically and with tables and graphs.	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 Analyze and draw conclusions based on information from figures, tables, and graphs **Expressions, Equations, & Inequalities:** 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

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
	Graphical Representations:
	Exhibit knowledge of slope
	Determine the slope of a line from points or equations
	Match linear graphs with their equations
	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
	Analyze and draw conclusions based on information from graphs in the coordinate plane
	Functions:
	Match graphs of basic trigonometric functions with their equations
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Manipulate equations, inequalities and functions to solve problems.	**Expressions, Equations, & Inequalities:**
	Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals
	Substitute whole numbers for unknown quantities to evaluate expressions
	Solve one-step equations having integer or decimal answers
	Combine like terms (e.g., $2x + 5x$)
	Evaluate algebraic expressions by substituting integers for unknown quantities
	Add and subtract simple algebraic expressions
	Solve routine first-degree equations
	Perform straightforward word-to-symbol translations
	Multiply two binomials
	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)
	Identify solutions to simple quadratic equations
	Add, subtract, and multiply polynomials
	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
	Manipulate expressions and equations
	Write expressions, equations, and inequalities for common algebra settings
	Solve linear inequalities that require reversing the inequality sign
	Solve absolute value equations
	Solve quadratic equations

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
	Find solutions to systems of linear equations
	Write equations and inequalities that require planning, manipulating, and/or solving
	Solve simple absolute value inequalities
	Graphical Representations:
	Identify the graph of a linear inequality on the number line
	Match number line graphs with solution sets of linear inequalities
	Match number line graphs with solution sets of simple quadratic inequalities
	Functions:
	Evaluate quadratic functions, expressed in function notation, at integer values
	Evaluate polynomial functions, expressed in function notation, at integer values
	Evaluate composite functions at integer values
	Write an expression for the composite of two simple functions

TABLE 2D

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include integers, rational numbers and real numbers. b. Interpret and represent large sets of numbers with the aid of technologies.	**Numbers: Concepts & Properties:** Recognize equivalent fractions and fractions in lowest terms Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Determine when an expression is undefined Apply rules of exponents Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers **Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane

= Measured by ACT Mathematics Test

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Develop strategies for computation and estimation using properties of number systems to solve problems. b. Solve proportional reasoning problems.	**Basic Operations & Applications:** 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) 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) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

= Measured by ACT Mathematics Test

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. b. Develop and evaluate mathematical arguments using reasoning and proof.	**Basic Operations & Applications:** 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 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) **Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, 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 **Measurement:** Use relationships involving area, perimeter, and volume of geometric figures to compute another measure Use scale factors to determine the magnitude of a size change
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Verify geometric relationships using algebra, coordinate geometry, and transformations.	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Use the distance formula Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Solve problems integrating multiple algebraic and/or geometric concepts **Properties of Plane Figures:** 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°)

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
	Use several angle properties to find an unknown angle measure
	Recognize Pythagorean triples
	Use properties of isosceles triangles
	Use the Pythagorean theorem
	Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
	Measurement:
	Use geometric formulas when all necessary information is given
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Solve a variety of problems involving 1-, 2- and 3-dimensional measurements using geometric relationships and trigonometric ratios.	**Properties of Plane Figures:**
	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
	Use properties of isosceles triangles
	Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
	Use the Pythagorean theorem
	Use relationships among angles, arcs, and distances in a circle
	Measurement:
	Estimate or calculate the length of a line segment based on other lengths given on a geometric figure
	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
	Use scale factors to determine the magnitude of a size change
	Compute the area of composite geometric figures when planning or visualization is required

TABLE 2D

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
	Functions:
	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
	Exhibit knowledge of unit circle trigonometry

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	ACT Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Create the appropriate visual or graphical representation of real data.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. a. Analyze real-world problems using statistical techniques.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs Calculate or use a weighted average Interpret and use information from figures, tables, and graphs Distinguish between mean, median, and mode for a list of numbers Analyze and draw conclusions based on information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane Analyze and draw conclusions based on information from graphs in the coordinate plane
4.3 Understand and apply basic concepts of probability. a. Understand and apply the principles of probability in a variety of situations.	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations Use Venn diagrams in counting Apply counting techniques Compute a probability when the event and/or sample space are not given or obvious Exhibit knowledge of conditional and joint probability

TABLE 2E

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	WorkKeys Applied Mathematics Level Skills
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Describe relationships and make generalizations about patterns and functions.	
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Represent and analyze linear and nonlinear functions and relations symbolically and with tables and graphs.	
1.3 ==Use operations, properties and algebraic symbols to determine equivalence and solve problems.== a. ==Manipulate equations,== inequalities ==and functions to solve problems.==	Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers Solve problems that require one or two operations Put the information in the right order before performing calculations Decide what information, calculations, or unit conversions to use to solve the problem 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

TABLE 2E

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	WorkKeys Applied Mathematics Level Skills
Numerical and Proportional Reasoning Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	

2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships.
 	
  a. Extend the understanding of number to include integers, rational numbers and real numbers.
 	
  b. Interpret and represent large sets of numbers with the aid of technologies.	

2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities.
 	
  a. Develop strategies for computation and estimation using properties of number systems to solve problems.
 	
  b. Solve proportional reasoning problems.
	Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers
	
	Change numbers from one form to another using whole numbers, fractions, decimals, or percentages
	
	Convert simple money and time units (e.g., hours to minutes)
	
	Solve problems that require one or two operations
	
	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals
	
	Add three fractions that share a common denominator
	
	Multiply a mixed number by a whole number or decimal
	
	Put the information in the right order before performing calculations
	
	Look up a formula and perform single-step conversions within or between systems of measurement
	
	Use fractions, negative numbers, ratios, percentages, or mixed numbers
	
	Rearrange a formula before solving a problem
	
	Use two formulas to change from one unit to another within the same system of measurement
	
	Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement
	
	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
	
	Calculate multiple rates
	
	Solve problems that include nonlinear functions and/or that involve more than one unknown
	
	Set up and manipulate complex ratios or proportions

CONNECTICUT Grades 9–12 Mathematics Core Content Standards	WorkKeys Applied Mathematics Level Skills
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. b. Develop and evaluate mathematical arguments using reasoning and proof.	
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Verify geometric relationships using algebra, coordinate geometry, and transformations.	
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Solve a variety of problems involving 1-, 2- and 3-dimensional measurements using geometric relationships and trigonometric ratios.	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Calculate perimeters and areas of basic shapes (rectangles and circles) 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 areas and volumes of spheres, cylinders, or cones
Working with Data: Probability and Statistics	
Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Create the appropriate visual or graphical representation of real data.	
4.2 Analyze data sets to form hypotheses and make predictions. a. Analyze real-world problems using statistical techniques.	
4.3 Understand and apply basic concepts of probability. a. Understand and apply the principles of probability in a variety of situations.	

TABLE 2F

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	EXPLORE Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** 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)
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 **Expressions, Equations, & Inequalities:** 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)
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Perform straightforward word-to-symbol translations 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) Identify solutions to simple quadratic equations

TABLE 2F

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	EXPLORE Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include the set of complex numbers.	**Numbers: Concepts & Properties:** Recognize equivalent fractions and fractions in lowest terms Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation Work with squares and square roots of numbers **Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Investigate mathematical properties and operations related to objects that are not numbers.	**Basic Operations & Applications:** 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) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

TABLE 2F

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	EXPLORE Mathematics College Readiness Standards
Geometry and Measurement Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures. b. Explore non-Euclidean geometries.	**Basic Operations & Applications:** 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 **Properties of Plane Figures:** 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
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Use a variety of coordinate systems and transformations to solve geometric problems in 2 and 3 dimensions using appropriate tools and technologies.	**Properties of Plane Figures:** 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 **Measurement:** Use geometric formulas when all necessary information is given
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.	**Properties of Plane Figures:** 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 **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure 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

TABLE 2F

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	EXPLORE Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Model real data graphically using appropriate tools, technologies and strategies.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. a. Describe and analyze sets of data using statistical models.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs
4.3 Understand and apply basic concepts of probability. a. Solve problems using the methods of discrete mathematics. b. Make statistical inferences through the use of probability.	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Compute straightforward probabilities for common situations

TABLE 2G

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Interpret and use information from figures, tables, and graphs **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** 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
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 **Expressions, Equations, & Inequalities:** 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 **Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations Match linear graphs with their equations 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

TABLE 2G

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
1.3 ==Use operations, properties and algebraic symbols to determine equivalence and solve problems.== a. ==Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.==	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Perform straightforward word-to-symbol translations Multiply two binomials 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) Identify solutions to simple quadratic equations Add, subtract, and multiply polynomials 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 Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Solve linear inequalities that require reversing the inequality sign Solve absolute value equations Solve quadratic equations Find solutions to systems of linear equations **Graphical Representations:** Identify the graph of a linear inequality on the number line Match number line graphs with solution sets of linear inequalities

TABLE 2G

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include the set of complex numbers.	**Numbers: Concepts & Properties:** Recognize equivalent fractions and fractions in lowest terms Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Determine when an expression is undefined Apply rules of exponents **Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Investigate mathematical properties and operations related to objects that are not numbers.	**Basic Operations & Applications:** 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) Solve word problems containing several rates, proportions, or percentages **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor

TABLE 2G

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures. b. Explore non-Euclidean geometries.	**Basic Operations & Applications:** 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 **Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles **Measurement:** Use relationships involving area, perimeter, and volume of geometric figures to compute another measure
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Use a variety of coordinate systems and transformations to solve geometric problems in 2 and 3 dimensions using appropriate tools and technologies.	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Use the distance formula Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point **Properties of Plane Figures:** 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 Recognize Pythagorean triples Use properties of isosceles triangles Use the Pythagorean theorem **Measurement:** Use geometric formulas when all necessary information is given

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Geometry and Measurement	
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.	**Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles Use the Pythagorean theorem **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure 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

TABLE 2G

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	PLAN Mathematics College Readiness Standards
Working with Data: Probability and Statistics Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Model real data graphically using appropriate tools, technologies and strategies.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs
4.2 Analyze data sets to form hypotheses and make predictions. a. Describe and analyze sets of data using statistical models.	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs Calculate or use a weighted average Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane

4.3 Understand and apply basic concepts of probability.
 	
   a. Solve problems using the methods of discrete mathematics.
 	
   b. Make statistical inferences through the use of probability.
	Probability, Statistics, & Data Analysis:
	 Use the relationship between the probability of an event and the probability of its complement
	 Determine the probability of a simple event
	 Exhibit knowledge of simple counting techniques
	 Compute straightforward probabilities for common situations
	 Use Venn diagrams in counting
	 Apply counting techniques
	 Compute a probability when the event and/or sample space are not given or obvious

= Measured by PLAN Mathematics Test

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers Exhibit knowledge of logarithms and geometric sequences **Expressions, Equations, & Inequalities:** 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
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.	**Probability, Statistics, & Data Analysis:** Perform computations on data from 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 Analyze and draw conclusions based on information from figures, tables, and graphs **Expressions, Equations, & Inequalities:** 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

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
	Graphical Representations:
	Exhibit knowledge of slope
	Determine the slope of a line from points or equations
	Match linear graphs with their equations
	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
	Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
	Analyze and draw conclusions based on information from graphs in the coordinate plane
	Functions:
	Match graphs of basic trigonometric functions with their equations
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.	**Numbers: Concepts & Properties:**
	Exhibit some knowledge of the complex numbers
	Multiply two complex numbers
	Apply properties of complex numbers
	Expressions, Equations, & Inequalities:
	Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals
	Substitute whole numbers for unknown quantities to evaluate expressions
	Solve one-step equations having integer or decimal answers
	Combine like terms (e.g., $2x + 5x$)
	Evaluate algebraic expressions by substituting integers for unknown quantities
	Add and subtract simple algebraic expressions
	Solve routine first-degree equations
	Perform straightforward word-to-symbol translations
	Multiply two binomials
	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)
	Identify solutions to simple quadratic equations
	Add, subtract, and multiply polynomials
	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
	Manipulate expressions and equations

TABLE 2H

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Algebraic Reasoning: Patterns and Functions	
	Write expressions, equations, and inequalities for common algebra settings
	Solve linear inequalities that require reversing the inequality sign
	Solve absolute value equations
	Solve quadratic equations
	Find solutions to systems of linear equations
	Write equations and inequalities that require planning, manipulating, and/or solving
	Solve simple absolute value inequalities
	Graphical Representations:
	Identify the graph of a linear inequality on the number line
	Match number line graphs with solution sets of linear inequalities
	Match number line graphs with solution sets of simple quadratic inequalities
	Solve problems integrating multiple algebraic and/or geometric concepts
	Properties of Plane Figures:
	Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
	Functions:
	Evaluate quadratic functions, expressed in function notation, at integer values
	Evaluate polynomial functions, expressed in function notation, at integer values
	Evaluate composite functions at integer values
	Write an expression for the composite of two simple functions
	Use trigonometric concepts and basic identities to solve problems

= Measured by ACT Mathematics Test

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include the set of complex numbers.	**Numbers: Concepts & Properties:** Recognize equivalent fractions and fractions in lowest terms Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Determine when an expression is undefined Exhibit some knowledge of the complex numbers Apply rules of exponents Multiply two complex numbers Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers Apply properties of complex numbers **Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Numerical and Proportional Reasoning	
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Investigate mathematical properties and operations related to objects that are not numbers.	**Basic Operations & Applications:** 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) 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) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	
3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems. a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures. b. Explore non-Euclidean geometries.	**Basic Operations & Applications:** 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 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) **Properties of Plane Figures:** 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 Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, 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 **Measurement:** Use relationships involving area, perimeter, and volume of geometric figures to compute another measure Use scale factors to determine the magnitude of a size change
3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Use a variety of coordinate systems and transformations to solve geometric problems in 2 and 3 dimensions using appropriate tools and technologies.	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Use the distance formula Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Solve problems integrating multiple algebraic and/or geometric concepts **Properties of Plane Figures:** 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°)

TABLE 2H

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
	Use several angle properties to find an unknown angle measure
	Recognize Pythagorean triples
	Use properties of isosceles triangles
	Use the Pythagorean theorem
	Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
	Measurement:
	Use geometric formulas when all necessary information is given
3.3 <mark>Develop and apply units, systems, formulas</mark> and appropriate tools <mark>to estimate and measure.</mark> a. <mark>Approximate measurements that cannot be directly determined with some degree of precision using appropriate</mark> tools, <mark>techniques and strategies.</mark>	**Properties of Plane Figures:** 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
	Use properties of isosceles triangles
	Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
	Use the Pythagorean theorem
	Use relationships among angles, arcs, and distances in a circle
	Measurement:
	Estimate or calculate the length of a line segment based on other lengths given on a geometric figure
	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
	Use scale factors to determine the magnitude of a size change
	Compute the area of composite geometric figures when planning or visualization is required

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Geometry and Measurement	
	Functions:
	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
	Exhibit knowledge of unit circle trigonometry

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Working with Data: Probability and Statistics ==Data can be analyzed to make informed decisions using a variety of strategies==, tools and technologies.	
4.1 Collect, ==organize and display data using appropriate statistical and graphical methods.== a. ==Model real data graphically using appropriate== tools, technologies and ==strategies.==	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs **Expressions, Equations, & Inequalities:** Write expressions that require planning and/or manipulating to accurately model a situation
4.2 ==Analyze data sets to form hypotheses and make predictions.== a. ==Describe and analyze sets of data using statistical models.==	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Perform a single computation using information from a table or chart Calculate the average of a list of numbers Calculate the average, given the number of data values and the sum of the data values Read tables and graphs Perform computations on data from tables and graphs Calculate the missing data value, given the average and all data values but one Calculate the average, given the frequency counts of all the data values Manipulate data from tables and graphs Calculate or use a weighted average Interpret and use information from figures, tables, and graphs Distinguish between mean, median, and mode for a list of numbers Analyze and draw conclusions based on information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane Analyze and draw conclusions based on information from graphs in the coordinate plane

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	ACT Mathematics College Readiness Standards
Working with Data: Probability and Statistics	
4.3 <mark>Understand and apply basic concepts of probability.</mark>	**Probability, Statistics, & Data Analysis:**
a. <mark>Solve problems using the methods of discrete mathematics.</mark>	Use the relationship between the probability of an event and the probability of its complement
b. <mark>Make statistical inferences through the use of probability.</mark>	Determine the probability of a simple event
	Exhibit knowledge of simple counting techniques
	Compute straightforward probabilities for common situations
	Use Venn diagrams in counting
	Apply counting techniques
	Compute a probability when the event and/or sample space are not given or obvious
	Exhibit knowledge of conditional and joint probability

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	WorkKeys Applied Mathematics Skills
Algebraic Reasoning: Patterns and Functions	
Patterns and functional relationships can be represented and analyzed using a variety of strategies, tools and technologies.	
1.1 Understand and describe patterns and functional relationships. a. Model real-world situations and make generalizations about mathematical relationships using a variety of patterns and functions.	
1.2 Represent and analyze quantitative relationships in a variety of ways. a. Relate the behavior of functions and relations to specific parameters and determine functions to model real-world situations.	
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems. a. Use and extend algebraic concepts to include real and complex numbers, vectors and matrices.	Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers Change numbers from one form to another using whole numbers, fractions, decimals, or percentages Convert simple money and time units (e.g., hours to minutes) Solve problems that require one or two operations Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals
Numerical and Proportional Reasoning	
Quantitative relationships can be expressed numerically in multiple ways in order to make connections and simplify calculations using a variety of strategies, tools and technologies.	
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships. a. Extend the understanding of number to include the set of complex numbers.	
2.2 Use numbers and their properties to compute flexibly and fluently, and to reasonably estimate measures and quantities. a. Investigate mathematical properties and operations related to objects that are not numbers.	

CONNECTICUT Grades 9–12 Mathematics Extended Content Standards	WorkKeys Applied Mathematics Skills
Geometry and Measurement	
Shapes and structures can be analyzed, visualized, measured and transformed using a variety of strategies, tools and technologies.	

3.1 Use properties and characteristics of two- and three-dimensional shapes and geometric theorems to describe relationships, communicate ideas and solve problems.
  a. Use methods of deductive and inductive reasoning to make, test and validate geometric conjectures.
  b. Explore non-Euclidean geometries.	

3.2 Use spatial reasoning, location and geometric relationships to solve problems. a. Use a variety of coordinate systems and transformations to solve geometric problems in 2 and 3 dimensions using appropriate tools and technologies.	
3.3 Develop and apply units, systems, formulas and appropriate tools to estimate and measure. a. Approximate measurements that cannot be directly determined with some degree of precision using appropriate tools, techniques and strategies.	
Working with Data: Probability and Statistics	
Data can be analyzed to make informed decisions using a variety of strategies, tools and technologies.	
4.1 Collect, organize and display data using appropriate statistical and graphical methods. a. Model real data graphically using appropriate tools, technologies and strategies.	
4.2 Analyze data sets to form hypotheses and make predictions. a. Describe and analyze sets of data using statistical models.	

4.3 Understand and apply basic concepts of probability.
  a. Solve problems using the methods of discrete mathematics.
  b. Make statistical inferences through the use of probability.	

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SUPPLEMENT
TABLES 3A–3K

SCIENCE

CONNECTICUT Grade 8 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
C INQ.1 Identify questions that can be answered through scientific investigation.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
C INQ.2 Read, interpret and examine the credibility of scientific claims in different sources of information.	**Interpretation of Data:** 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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
C INQ.3 Design and conduct appropriate types of scientific investigations to answer different questions.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
C INQ.4 Identify independent and dependent variables, and those variables that are kept constant, when designing an experiment.	**Scientific Investigation:** Understand a simple experimental design Identify a control in an experiment
C INQ.5 Use appropriate tools and techniques to make observations and gather data.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment

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TABLE 3A

CONNECTICUT Grade 8 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
C INQ.6 Use mathematical operations to analyze and interpret data.	**Interpretation of Data:**
	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
	Identify and/or use a simple (e.g., linear) mathematical relationship between data
C INQ.7 Identify and present relationships between variables in appropriate graphs.	**Interpretation of Data:**
	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
C INQ.8 Draw conclusions and identify sources of error.	**Scientific Investigation:**
	Understand the methods and tools used in a simple experiment
	Understand a simple experimental design
	Identify a control in an experiment
	Evaluation of Models, Inferences, and Experimental Results:
	Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
C INQ.9 Provide explanations to investigated problems or questions.	**Evaluation of Models, Inferences, and Experimental Results:**
	Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

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CONNECTICUT Grade 8 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
C INQ.10 <mark>Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.</mark>	**Interpretation of Data:** 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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

TABLE 3A

CONNECTICUT Grade 8 Science Content Standards	EXPLORE Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
8.1 An object's inertia causes it to continue moving the way it is moving unless it is acted upon by a force to change its motion. C 22. Calculate the average speed of a moving object and illustrate the motion of objects in graphs of distance over time. C 23. Describe the qualitative relationships among force, mass and changes in motion. C 24. Describe the forces acting on an object moving in a circular path.	
8.2 Reproduction is a characteristic of living systems and it is essential for the continuation of every species. C 25. Explain the similarities and differences in cell division in somatic and germ cells. C 26. Describe the structure and function of the male and female human reproductive systems, including the process of egg and sperm production. C 27. Describe how genetic information is organized in genes on chromosomes, and explain sex determination in humans.	
8.3 The solar system is composed of planets and other objects that orbit the sun. C 28. Explain the effect of gravity on the orbital movement of planets in the solar system. C 29. Explain how the regular motion and relative position of the sun, Earth and moon affect the seasons, phases of the moon and eclipses.	
8.4 In the design of structures there is a need to consider factors such as function, materials, safety, cost and appearance C 30. Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.	

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TABLE 3B

CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
D INQ.1 Identify questions that can be answered through scientific investigation.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.	**Interpretation of Data:** 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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.3 Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.4 Design and conduct appropriate types of scientific investigations to answer different questions.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
D INQ.5 Identify independent and dependent variables, including those that are kept constant and those used as controls.	**Scientific Investigation:** Understand a simple experimental design Identify a control in an experiment

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TABLE 3B

CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
D INQ.6 Use appropriate tools and techniques to make observations and gather data.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
D INQ.7 Assess the reliability of the data that was generated in the investigation.	**Interpretation of Data:** 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 **Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.8 Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.	**Interpretation of Data:** 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 Identify and/or use a simple (e.g., linear) mathematical relationship between data

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CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.	**Interpretation of Data:** 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 **Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.10 Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.	**Interpretation of Data:** 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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

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TABLE 3B

CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
Strand I: Energy Transformations	
9.1 Energy cannot be created or destroyed; however, energy can be converted from one form to another.	
D 1. Describe the effects of adding energy to matter in terms of the motion of atoms and molecules, and the resulting phase changes.	
D 2. Explain how energy is transferred by conduction, convection and radiation.	
D 3. Describe energy transformations among heat, light, electricity and motion.	
9.2 The electrical force is a universal force that exists between any two charged objects.	
D 4. Explain the relationship among voltage, current and resistance in a simple series circuit.	
D 5. Explain how electricity is used to produce heat and light in incandescent bulbs and heating elements.	
D 6. Describe the relationship between current and magnetism.	
9.3 Various sources of energy are used by humans and all have advantages and disadvantages.	
D 7. Explain how heat is used to generate electricity.	
D 8. Describe the availability, current uses and environmental issues related to the use of fossil and nuclear fuels to produce electricity.	
D 9. Describe the availability, current uses and environmental issues related to the use of hydrogen fuel cells, wind and solar energy to produce electricity.	
Strand II: Chemical Structures and Properties	
9.4 Atoms react with one another to form new molecules.	
D 10. Describe the general structure of the atom, and explain how the properties of the first 20 elements in the Periodic Table are related to their atomic structures.	
D 11. Describe how atoms combine to form new substances by transferring electrons (ionic bonding) or sharing electrons (covalent bonding).	
D 12. Explain the chemical composition of acids and bases, and explain the change of pH in neutralization reactions.	

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CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
9.5 Due to its unique chemical structure, carbon forms many organic and inorganic compounds. D 13. Explain how the structure of the carbon atom affects the type of bonds it forms in organic and inorganic molecules. D 14. Describe combustion reactions of hydrocarbons and their resulting by-products. D 15. Explain the general formation and structure of carbon-based polymers, including synthetic polymers, such as polyethylene, and biopolymers, such as carbohydrate.	
9.6 Chemical technologies present both risks and benefits to the health and well-being of humans, plants and animals. D 16. Explain how simple chemical monomers can be combined to create linear, branched and/or cross-linked polymers. D 17. Explain how the chemical structure of polymers affects their physical properties. D 18. Explain the short- and long-term impacts of landfills and incineration of waste materials on the quality of the environment.	
Strand III: Global Interdependence	
9.7 Elements on Earth move among reservoirs in the solid earth, oceans, atmosphere and organisms as part of biogeochemical cycles. D 19. Explain how chemical and physical processes cause carbon to cycle through the major earth reservoirs. D 20. Explain how solar energy causes water to cycle through the major earth reservoirs. D 21. Explain how internal energy of the Earth causes matter to cycle through the magma and the solid earth.	
9.8 The use of resources by human populations may affect the quality of the environment. D 22. Explain how the release of sulfur dioxide (SO_2) into the atmosphere can form acid rain, and how acid rain affects water sources, organisms and human-made structures. D 23. Explain how the accumulation of carbon dioxide (CO_2) in the atmosphere increases Earth's "greenhouse" effect and may cause climate changes. D 24. Explain how the accumulation of mercury, phosphates and nitrates affects the quality of water and the organisms that live in rivers, lakes and oceans.	
CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards

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CONNECTICUT Grade 9 Science Content Standards	EXPLORE Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
9.9 <u>Some materials can be recycled, but others accumulate in the environment and may affect the balance of the Earth systems.</u> D 25. <u>Explain how land development, transportation options and consumption of resources may affect the environment.</u> D 26. <u>Describe human efforts to reduce the consumption of raw materials and improve air and water quality.</u>	

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<u>   </u> = Content sampled by EXPLORE Science Test

TABLE 3C

CONNECTICUT Grade 10 Science Content Standards	PLAN Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
D INQ.1 Identify questions that can be answered through scientific investigation.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the hypothesis for an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.2 Read, interpret and examine the credibility and validity of scientific claims in different sources of information.	**Interpretation of Data:** 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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.3 Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the hypothesis for an experiment **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.4 Design and conduct appropriate types of scientific investigations to answer different questions.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment Determine the hypothesis for an experiment

= Measured by PLAN Science Test

= Content sampled by PLAN Science Test

CONNECTICUT Grade 10 Science Content Standards	PLAN Science College Readiness Standards
Scientific Inquiry, Literacy and Numeracy	
	Identify and/or use a simple (e.g., linear) mathematical relationship between data
D INQ.9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.	**Interpretation of Data:**
	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
	Scientific Investigation:
	Understand the methods and tools used in a simple experiment
	Understand a simple experimental design
	Identify a control in an experiment
	Evaluation of Models, Inferences, and Experimental Results:
	Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
D INQ.10 Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.	**Interpretation of Data:**
	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
	Evaluation of Models, Inferences, and Experimental Results:
	Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

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TABLE 3C

CONNECTICUT Grade 10 Science Content Standards	PLAN Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
Strand IV: Cell Chemistry and Biotechnology	
10.1 Fundamental life processes depend on the physical structure and the chemical activities of the cell.	
D 27. Describe significant similarities and differences in the basic structure of plant and animal cells.	
D 28. Describe the general role of DNA and RNA in protein synthesis.	
D 29. Describe the general role of enzymes in metabolic cell processes.	
D 30. Explain the role of the cell membrane in supporting cell functions.	
10.2 Microorganisms have an essential role in life processes and cycles on Earth.	
D 31. Describe the similarities and differences between bacteria and viruses.	
D 32. Describe how bacterial and viral infectious diseases are transmitted, and explain the roles of sanitation, vaccination and antibiotic medications in the prevention and treatment of infectious diseases.	
D 33. Explain how bacteria and yeasts are used to produce foods for human consumption.	
10.3 Similarities in the chemical and structural properties of DNA in all living organisms allow the transfer of genes from one organism to another.	
D 34. Describe, in general terms, how the genetic information of organisms can be altered to make them produce new materials.	
D 35. Explain the risks and benefits of altering the genetic composition and cell products of existing organisms.	

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CONNECTICUT Grade 10 Science Content Standards	PLAN Science College Readiness Standards
Core Themes, Content Standards and Expected Performances	
Strand V: Genetics, Evolution and Biodiversity	
10.4 In sexually reproducing organisms, each offspring contains a mix of characteristics inherited from both parents. D 36. Explain how meiosis contributes to the genetic variability of organisms. D 37. Use the Punnet Square technique to predict the distribution of traits in mono- and di-hybrid crossings. D 38. Deduce the probable mode of inheritance of traits (e.g., recessive/dominant, sex-linked) from pedigree diagrams showing phenotypes. D 39. Describe the difference between genetic disorders and infectious diseases.	
10.5 Evolution and biodiversity are the result of genetic changes that occur over time in constantly changing environments. D 40. Explain how the processes of genetic mutation and natural selection are related to the evolution of species. D 41. Explain how the current theory of evolution provides a scientific explanation for fossil records of ancient life forms. D 42. Describe how structural and behavioral adaptations increase the chances for organisms to survive in their environments.	
10.6 Living organisms have the capability of producing populations of unlimited size, but the environment can support only a limited number of individuals from each species. D 43. Describe the factors that affect the carrying capacity of the environment. D 44. Explain how change in population density is affected by emigration, immigration, birth rate and death rate, and relate these factors to the exponential growth of human populations. D 45. Explain how technological advances have affected the size and growth rate of human populations throughout history.	

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CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Cell Biology	
The fundamental life processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of the organism's cells.	
• Cells are enclosed within semipermeable membranes that regulate their interaction with their surroundings.	
• Enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions and the pH of the surroundings.	
• Prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure.	
• The central dogma of molecular biology outlines the flow of information from transcription of ribonucleic acid (RNA) in the nucleus to translation of proteins on ribosomes in the cytoplasm.	
• The endoplasmic reticulum and Golgi apparatus have a role in the secretion of proteins.	
• Usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide.	
• The role of the mitochondria is to make stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide.	
• Most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.	

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TABLE 3D

CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Genetics	
Mutation and sexual reproduction lead to genetic variation in a population. • Meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type. • Only certain cells in a multicellular organism undergo meiosis. • Random chromosome segregation explains the probability that a particular allele will be in a gamete. • New combinations of alleles may be generated in a zygote through the fusion of male and female gametes (fertilization). • Approximately half of an individual's DNA sequence comes from each parent. • Genes on specific chromosomes determine an individual's sex. • Possible combinations of alleles in a zygote can be predicted from the genetic makeup of the parents.	
A multicellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization. • The probable outcome of phenotypes in a genetic cross can be predicted from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive). • Mendel's laws of segregation and independent assortment are the basis of genetics. • The probable mode of inheritance can be predicted from a pedigree diagram showing phenotypes. • Data on frequency of recombination at meiosis can be used to estimate genetic distances between loci and to interpret genetic maps of chromosomes.	

= Measured by ACT Science Test
= Content sampled by ACT Science Test

TABLE 3D

CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Genetics	
Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. • Ribosomes synthesize proteins, using tRNAs to translate genetic information in the mRNA. • The sequence of amino acids in a protein can be predicted from the sequence of codons in the RNA, by applying universal genetic coding rules. • Mutations in the DNA sequence of a gene may or may not affect the expression of the gene or the sequence of amino acids in an encoded protein. • Specialization of cells in multicellular organisms is usually due to different patterns of gene expression rather than to differences of the genes themselves. • Proteins can differ from one another in the number and sequence of amino acids. • Proteins having different amino acid sequences typically have different shapes and chemical properties.	
The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells. • Base-pairing rules are used to explain the precise copying of DNA during semiconservative replication and transcription of information from DNA into mRNA. • Genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products. • DNA technology (restriction digestion by endonucleases, gel electrophoresis, ligation and transformation) is used to construct recombinant DNA molecules. • Exogenous DNA can be inserted into bacterial cells to alter their genetic makeup and support expression of new protein products.	

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TABLE 3D

CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Ecology	
Stability in an ecosystem is a balance between competing effects. • Biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats. • Changes in an ecosystem can result from changes in climate, human activity, introduction of nonnative species, or changes in population size. • Fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration and death. • Water, carbon and nitrogen cycle between abiotic resources and organic matter in the ecosystem and oxygen cycles through photosynthesis and respiration. • A vital part of an ecosystem is the stability of its producers and decomposers. • At each link in a food web some energy is stored in newly made structures, but much energy is dissipated into the environment as heat. • The accommodation of an individual organism to its environment is different from the gradual adaptation of a lineage of organisms through genetic change.	

TABLE 3D

CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Evolution	
The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. • Natural selection acts on the phenotype rather than the genotype of an organism. • Alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool. • New mutations are constantly being generated in a gene pool. • Variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.	
Evolution is the result of genetic changes that occur in constantly changing environments. • Natural selection determines the differential survival of groups of organisms. • A great diversity of species increases the chance that at least some organisms survive major changes in the environment. • Genetic drift affects the diversity of organisms in a population. • Reproductive or geographic isolation affects speciation. • Fossil evidence contributes to our understanding of biological diversity, episodic speciation and mass extinction. • Several independent molecular clocks, calibrated against each other and combined with evidence from the fossil record, can help to estimate how long ago various groups of organisms diverged evolutionarily from one another.	

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CONNECTICUT High School Biology Content Standards	ACT Science College Readiness Standards
Physiology	
As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. • The complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide. • The nervous system mediates communication between different parts of the body and the body's interactions with the environment. • Feedback loops in the nervous and endocrine systems regulate conditions in the body. • The neurons transmit electrochemical impulses. • Sensory neurons, interneurons and motor neurons all have a role in sensation, thought and response. • Digestion includes the secretion of stomach acid, digestive enzymes (amylases, proteases, nucleases, lipases) and bile salts into the digestion system. • The kidneys have a homeostatic role in the removal of nitrogenous wastes from the blood. • The liver has a homeostatic role in detoxification and keeping the blood glucose balance. • Actin, myosin, Ca2 and ATP have a role in the cellular and molecular basis of muscle contraction. • Hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms.	
Organisms have a variety of mechanisms to combat disease. • The skin provides nonspecific defenses against infection. • Antibodies have a role in the body's response to infection. • Vaccination protects an individual from infectious diseases. • There are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections. • An individual with a compromised immune system (for example, a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign. • Phagocytes, B-lymphocytes and T-lymphocytes have a role in the immune system.	

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CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Cell Biology	
The fundamental life processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of the organism's cells. • Cells are enclosed within semipermeable membranes that regulate their interaction with their surroundings. • Enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions and the pH of the surroundings. • Prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure. • The central dogma of molecular biology outlines the flow of information from transcription of ribonucleic acid (RNA) in the nucleus to translation of proteins on ribosomes in the cytoplasm. • The endoplasmic reticulum and Golgi apparatus have a role in the secretion of proteins. • Usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide. • The role of the mitochondria is to make stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide. • Most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.	

TABLE 3E

CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Genetics	
Mutation and sexual reproduction lead to genetic variation in a population. • Meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type. • Only certain cells in a multicellular organism undergo meiosis. • Random chromosome segregation explains the probability that a particular allele will be in a gamete. • New combinations of alleles may be generated in a zygote through the fusion of male and female gametes (fertilization). • Approximately half of an individual's DNA sequence comes from each parent. • Genes on specific chromosomes determine an individual's sex. • Possible combinations of alleles in a zygote can be predicted from the genetic makeup of the parents.	Draw conclusions based on one complicated graphic or several related graphics
A multicellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization. • The probable outcome of phenotypes in a genetic cross can be predicted from the genotypes of the parents and mode of inheritance (autosomal or X-linked, dominant or recessive). • Mendel's laws of segregation and independent assortment are the basis of genetics. • The probable mode of inheritance can be predicted from a pedigree diagram showing phenotypes. • Data on frequency of recombination at meiosis can be used to estimate genetic distances between loci and to interpret genetic maps of chromosomes.	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

CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Genetics	
Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. • Ribosomes synthesize proteins, using tRNAs to translate genetic information in the mRNA. • The sequence of amino acids in a protein can be predicted from the sequence of codons in the RNA, by applying universal genetic coding rules. • Mutations in the DNA sequence of a gene may or may not affect the expression of the gene or the sequence of amino acids in an encoded protein. • Specialization of cells in multicellular organisms is usually due to different patterns of gene expression rather than to differences of the genes themselves. • Proteins can differ from one another in the number and sequence of amino acids. • Proteins having different amino acid sequences typically have different shapes and chemical properties.	Draw conclusions based on one complicated graphic or several related graphics
The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells. • Base-pairing rules are used to explain the precise copying of DNA during semiconservative replication and transcription of information from DNA into mRNA. • Genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products. • DNA technology (restriction digestion by endonucleases, gel electrophoresis, ligation and transformation) is used to construct recombinant DNA molecules. • Exogenous DNA can be inserted into bacterial cells to alter their genetic makeup and support expression of new protein products.	

TABLE 3E

CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Ecology	
Stability in an ecosystem is a balance between competing effects. • Biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats. • Changes in an ecosystem can result from changes in climate, human activity, introduction of nonnative species, or changes in population size. • Fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration and death. • Water, carbon and nitrogen cycle between abiotic resources and organic matter in the ecosystem and oxygen cycles through photosynthesis and respiration. • A vital part of an ecosystem is the stability of its producers and decomposers. • At each link in a food web some energy is stored in newly made structures, but much energy is dissipated into the environment as heat. • The accommodation of an individual organism to its environment is different from the gradual adaptation of a lineage of organisms through genetic change.	

CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Evolution	
The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. • Natural selection acts on the phenotype rather than the genotype of an organism. • Alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool. • New mutations are constantly being generated in a gene pool. • Variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.	
Evolution is the result of genetic changes that occur in constantly changing environments. • Natural selection determines the differential survival of groups of organisms. • A great diversity of species increases the chance that at least some organisms survive major changes in the environment. • Genetic drift affects the diversity of organisms in a population. • Reproductive or geographic isolation affects speciation. • Fossil evidence contributes to our understanding of biological diversity, episodic speciation and mass extinction. • Several independent molecular clocks, calibrated against each other and combined with evidence from the fossil record, can help to estimate how long ago various groups of organisms diverged evolutionarily from one another.	

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CONNECTICUT High School Biology Content Standards	WorkKeys Locating Information Skills
Physiology	
As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. • The complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide. • The nervous system mediates communication between different parts of the body and the body's interactions with the environment. • Feedback loops in the nervous and endocrine systems regulate conditions in the body. • The neurons transmit electrochemical impulses. • Sensory neurons, interneurons and motor neurons all have a role in sensation, thought and response. • Digestion includes the secretion of stomach acid, digestive enzymes (amylases, proteases, nucleases, lipases) and bile salts into the digestion system. • The kidneys have a homeostatic role in the removal of nitrogenous wastes from the blood. • The liver has a homeostatic role in detoxification and keeping the blood glucose balance. • Actin, myosin, Ca2 and ATP have a role in the cellular and molecular basis of muscle contraction. • Hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms.	
Organisms have a variety of mechanisms to combat disease. • The skin provides nonspecific defenses against infection. • Antibodies have a role in the body's response to infection. • Vaccination protects an individual from infectious diseases. • There are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections. • An individual with a compromised immune system (for example, a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign. • Phagocytes, B-lymphocytes and T-lymphocytes have a role in the immune system.	

TABLE 3F

CONNECTICUT High School Earth Science Content Standards	ACT Science College Readiness Skills
Earth's Place in the Universe	
Earth-based and space-based astronomy reveal the structure, scale and changes in stars, galaxies and the universe over time. • The differences and similarities among the sun, the terrestrial planets and the gas planets may have been established during the formation of the solar system. • Evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago. • Evidence from geological studies of Earth and other planets suggests that the early Earth was very different from Earth today. • The sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium. • Asteroids and meteorites had a significant role in shaping the surface of planets and their moons and in mass extinctions of life on Earth. • The solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years. • Galaxies are made of billions of stars and comprise most of the visible mass of the universe. • Evidence indicates that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars. Visual, radio and X-ray telescopes may be used to collect data that reveal those differences in the life cycles of stars. • The "big bang" model suggests that the universe has been expanding for 10 to 20 billion years.	
Dynamic Earth Processes	
Plate tectonics operating over geologic time has changed the patterns of land, sea and mountains on Earth's surface. • Features of the ocean floor, as well as the shape and rock composition of the major plates, provide evidence of plate tectonics. • Volcanic eruptions and earthquakes are the result of the movement of matter and energy within the Earth. • The properties of rocks and minerals can be explained based on the physical and chemical conditions in which they were formed, including plate tectonic processes.	

TABLE 3F

CONNECTICUT High School Earth Science Content Standards	ACT Science College Readiness Skills
Energy in the Earth System	
Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. • The sun is a major source of energy for Earth and other planets. • Some of the solar radiation is reflected back into the atmosphere and some is absorbed by matter and photosynthetic processes. • Different atmospheric gases absorb the Earth's thermal radiation. • The greenhouse effect may cause climatic changes.	
Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. • Differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat. • The rotation of Earth influences the circular motions of ocean currents and air. • Properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms. • The interaction of wind patterns, ocean currents, and the distribution of land masses result in a global pattern of latitudinal bands of rain forests and deserts.	
Climate is the long-term average of a region's weather and depends on many factors. • Weather and climate involve the transfer of energy into and out of the atmosphere. • Latitude, elevation, topography, proximity to large bodies of water, and cold or warm ocean currents affect the climate. • Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition and other factors, such as solar radiation and plate movement.	
Biogeochemical Cycles	
Each element on Earth moves among reservoirs which exist in the solid earth, in oceans, in the atmosphere, and within and among organisms as part of biogeochemical cycles. • The movement of matter among reservoirs is driven by Earth's internal and external sources of energy. • Carbon cycles through the reservoirs of the atmosphere, lithosphere, hydrosphere and biosphere.	

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CONNECTICUT High School Earth Science Content Standards	ACT Science College Readiness Skills
Structure and Composition of the Atmosphere	
<u>Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life.</u> • <u>The atmosphere has specific thermal structure and chemical composition.</u> • <u>The composition of Earth's atmosphere has evolved over geologic time.</u> • <u>The origin of atmospheric oxygen is photosynthetic processes.</u> • <u>The ozone layer in the upper atmosphere absorbs ultraviolet radiation. This layer varies both naturally and in response to human activities.</u>	

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CONNECTICUT High School Earth Science Content Standards	WorkKeys Locating Information Skills
Earth's Place in the Universe	
Earth-based and space-based astronomy reveal the structure, scale and changes in stars, galaxies and the universe over time. ● The differences and similarities among the sun, the terrestrial planets and the gas planets may have been established during the formation of the solar system. ● Evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago. ● Evidence from geological studies of Earth and other planets suggests that the early Earth was very different from Earth today. ● The sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium. ● Asteroids and meteorites had a significant role in shaping the surface of planets and their moons and in mass extinctions of life on Earth. ● The solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years. ● Galaxies are made of billions of stars and comprise most of the visible mass of the universe. ● Evidence indicates that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars. Visual, radio and X-ray telescopes may be used to collect data that reveal those differences in the life cycles of stars. ● The "big bang" model suggests that the universe has been expanding for 10 to 20 billion years.	
Dynamic Earth Processes	
Plate tectonics operating over geologic time has changed the patterns of land, sea and mountains on Earth's surface. ● Features of the ocean floor, as well as the shape and rock composition of the major plates, provide evidence of plate tectonics. ● Volcanic eruptions and earthquakes are the result of the movement of matter and energy within the Earth. ● The properties of rocks and minerals can be explained based on the physical and chemical conditions in which they were formed, including plate tectonic processes.	

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CONNECTICUT High School Earth Science Content Standards	WorkKeys Locating Information Skills
Energy in the Earth System	
Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. • The sun is a major source of energy for Earth and other planets. • Some of the solar radiation is reflected back into the atmosphere and some is absorbed by matter and photosynthetic processes. • Different atmospheric gases absorb the Earth's thermal radiation. • The greenhouse effect may cause climatic changes.	
Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. • Differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat. • The rotation of Earth influences the circular motions of ocean currents and air. • Properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms. • The interaction of wind patterns, ocean currents, and the distribution of land masses result in a global pattern of latitudinal bands of rain forests and deserts.	
Climate is the long-term average of a region's weather and depends on many factors. • Weather and climate involve the transfer of energy into and out of the atmosphere. • Latitude, elevation, topography, proximity to large bodies of water, and cold or warm ocean currents affect the climate. • Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition and other factors, such as solar radiation and plate movement.	
Biogeochemical Cycles	
Each element on Earth moves among reservoirs which exist in the solid earth, in oceans, in the atmosphere, and within and among organisms as part of biogeochemical cycles. • The movement of matter among reservoirs is driven by Earth's internal and external sources of energy. • Carbon cycles through the reservoirs of the atmosphere, lithosphere, hydrosphere and biosphere.	

▨ = Measured by WorkKeys Locating Information Test

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CONNECTICUT High School Earth Science Content Standards	WorkKeys Locating Information Skills
Structure and Composition of the Atmosphere	
Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life. • The atmosphere has specific thermal structure and chemical composition. • The composition of Earth's atmosphere has evolved over geologic time. • The origin of atmospheric oxygen is photosynthetic processes. • The ozone layer in the upper atmosphere absorbs ultraviolet radiation. This layer varies both naturally and in response to human activities.	

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CONNECTICUT High School Chemistry Content Standards	ACT Science College Readiness Skills
Atomic and Molecular Structure	
The periodic table displays the elements in increasing atomic number and shows how periodicity of the physical and chemical properties of the elements relates to atomic structure. • The nucleus of the atom is much smaller than the atom, yet contains most of its mass. • The quantum model of the atom is based on experiments and analyses by many scientists, including Dalton, Thomson, Bohr, Rutherford, Millikan and Einstein. • The position of an element in the periodic table is related to its atomic number. • The periodic table can be used to identify metals, semimetals, non-metals and halogens. • The periodic table can be used to identify trends in ionization energy, electronegativity, the relative sizes of ions and atoms, and the number of electrons available for bonding. • The electronic configuration of elements and their reactivity can be identified based on their position in the periodic table.	
Chemical Bonds	
Biological, chemical and physical properties of matter result from the ability of atoms to form bonds from electrostatic forces between electrons and protons and between atoms and molecules. • Atoms combine to form molecules by sharing electrons to form covalent or metallic bonds or by exchanging electrons to form ionic bonds. • Chemical bonds between atoms in molecules such as H_2, CH_4, NH_3, H_2CCH_2, N_2, Cl_2, and many large biological molecules are covalent. • Salt crystals, such as NaCl, are repeating patterns of positive and negative ions held together by electrostatic attraction. • The atoms and molecules in liquids move in a random pattern relative to one another because the intermolecular forces are too weak to hold the atoms or molecules in a solid form. • Lewis dot structures can provide models of atoms and molecules. • The shape of simple molecules and their polarity can be predicted from Lewis dot structures. • Electronegativity and ionization energy are related to bond formation. • Solids and liquids held together by Van der Waals forces or hydrogen bonds are affected by volatility and boiling/melting point temperatures.	

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= Content sampled by ACT Science Test

TABLE 3H

CONNECTICUT High School Chemistry Content Standards	ACT Science College Readiness Skills
Conservation of Matter and Stoichiometry	
The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants. • Chemical reactions can be described by writing balanced equations. • The quantity one mole is set by defining one mole of carbon-12 atoms to have a mass of exactly 12 grams. • One mole equals 6.02×10^{23} particles (atoms or molecules). • The molar mass of a molecule can be determined from its chemical formula and a table of atomic masses. • The mass of a molecular substance can be converted to moles, number of particles, or volume of gas at standard temperature and pressure. • Hess's law is used to calculate enthalpy change in a reaction.	
Reaction Rates	
Chemical reaction rates depend on factors that influence the frequency of collision of reactant molecules. • The rate of reaction is the decrease in concentration of reactants or the increase in concentration of products with time. • Reaction rates depend on factors such as concentration, temperature and pressure. • Equilibrium is established when forward and reverse reaction rates are equal. • Catalysts play a role in increasing the reaction rate by changing the activation energy in a chemical reaction.	
Organic Chemistry and Biochemistry	
The bonding characteristics of carbon allow the formation of many different organic molecules of varied sizes, shapes and chemical properties, and provide the biochemical basis of life. • Large molecules (polymers), such as proteins, nucleic acids and starch, are formed by repetitive combinations of organic monomers. • The bonding characteristics of carbon result in the formation of a large variety of structures, ranging from simple hydrocarbons to complex biological molecules and synthetic polymers. • Amino acids are the building blocks of proteins.	

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CONNECTICUT High School Chemistry Content Standards	WorkKeys Locating Information Skills
Atomic and Molecular Structure	
The periodic table displays the elements in increasing atomic number and shows how periodicity of the physical and chemical properties of the elements relates to atomic structure. • The nucleus of the atom is much smaller than the atom, yet contains most of its mass. • The quantum model of the atom is based on experiments and analyses by many scientists, including Dalton, Thomson, Bohr, Rutherford, Millikan and Einstein. • The position of an element in the periodic table is related to its atomic number. • The periodic table can be used to identify metals, semimetals, non-metals and halogens. • The periodic table can be used to identify trends in ionization energy, electronegativity, the relative sizes of ions and atoms, and the number of electrons available for bonding. • The electronic configuration of elements and their reactivity can be identified based on their position in the periodic table.	Understand how graphics are related to each other Identify trends shown in one or more detailed or complicated graphics
Chemical Bonds	
Biological, chemical and physical properties of matter result from the ability of atoms to form bonds from electrostatic forces between electrons and protons and between atoms and molecules. • Atoms combine to form molecules by sharing electrons to form covalent or metallic bonds or by exchanging electrons to form ionic bonds. • Chemical bonds between atoms in molecules such as H_2, CH_4, NH_3, H_2CCH_2, N_2, Cl_2, and many large biological molecules are covalent. • Salt crystals, such as NaCl, are repeating patterns of positive and negative ions held together by electrostatic attraction. • The atoms and molecules in liquids move in a random pattern relative to one another because the intermolecular forces are too weak to hold the atoms or molecules in a solid form. • Lewis dot structures can provide models of atoms and molecules. • The shape of simple molecules and their polarity can be predicted from Lewis dot structures. • Electronegativity and ionization energy are related to bond formation. • Solids and liquids held together by Van der Waals forces or hydrogen bonds are affected by volatility and boiling/melting point temperatures.	

TABLE 3I

CONNECTICUT High School Chemistry Content Standards	WorkKeys Locating Information Skills
Conservation of Matter and Stoichiometry	
The conservation of atoms in chemical reactions leads to the principle of conservation of matter and the ability to calculate the mass of products and reactants. • Chemical reactions can be described by writing balanced equations. • The quantity one mole is set by defining one mole of carbon; 12 atoms to have a mass of exactly 12 grams. • One mole equals 6.02.x 1023 particles (atoms or molecules). • The molar mass of a molecule can be determined from its chemical formula and a table of atomic masses. • The mass of a molecular substance can be converted to moles, number of particles, or volume of gas at standard temperature and pressure. • Hess's law is used to calculate enthalpy change in a reaction.	
Reaction Rates	
Chemical reaction rates depend on factors that influence the frequency of collision of reactant molecules. • The rate of reaction is the decrease in concentration of reactants or the increase in concentration of products with time. • Reaction rates depend on factors such as concentration, temperature and pressure. • Equilibrium is established when forward and reverse reaction rates are equal. • Catalysts play a role in increasing the reaction rate by changing the activation energy in a chemical reaction.	
Organic Chemistry and Biochemistry	
The bonding characteristics of carbon allow the formation of many different organic molecules of varied sizes, shapes and chemical properties, and provide the biochemical basis of life. • Large molecules (polymers), such as proteins, nucleic acids and starch, are formed by repetitive combinations of organic monomers. • The bonding characteristics of carbon result in the formation of a large variety of structures, ranging from simple hydrocarbons to complex biological molecules and synthetic polymers. • Amino acids are the building blocks of proteins.	

TABLE 3J

CONNECTICUT High School Physics Content Standards	ACT Science College Readiness Standards
Motion and Forces	
Newton's laws predict the motion of most objects. • When forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest. • The law $F = ma$ is used to solve motion problems that involve constant forces. • When one object exerts a force on a second object, the second object always exerts a force of equal magnitude and in the opposite direction. • Applying a force to an object perpendicular to the direction of its motion causes the object to change direction. • Circular motion requires the application of a constant force directed toward the center of the circle. • Newton's laws are not exact, but provide very good approximations unless an object is small enough that quantum effects become important.	
Conservation of Energy and Momentum	
The laws of conservation of energy and momentum provide a way to predict and describe the movement of objects. • Kinetic energy can be calculated by using the formula $E = \left(\frac{1}{2}\right) mv^2$. • Changes in gravitational potential energy near Earth can be calculated by using the formula (change in potential energy) = mgh. • Momentum is calculated as the product mv. • Momentum is a separately conserved quantity different from energy. • An unbalanced force on an object produces a change in its momentum. • The principles of conservation of momentum and energy can be used to solve problems involving elastic and inelastic collisions.	

CONNECTICUT High School Physics Content Standards	ACT Science College Readiness Standards
Heat and Thermodynamics	
Energy cannot be created or destroyed although, in many processes, energy is transferred to the environment as heat. • Heat flow and work are two forms of energy transfer between systems. • The work done by a heat engine that is working in a cycle is the difference between the heat flow into the engine at high temperature and the heat flow out at a lower temperature. • The internal energy of an object includes the energy of random motion of the object's atoms and molecules. The greater the temperature of the object, the greater the energy of motion of the atoms and molecules that make up the object. • Most processes tend to decrease the order of a system over time, so that energy levels eventually are distributed more uniformly.	
Waves	
Waves have characteristic properties that do not depend on the type of wave. • Waves carry energy from one place to another. • Transverse and longitudinal waves exist in mechanical media, such as springs and ropes, and in the Earth as seismic waves. • Wavelength, frequency and wave speed are related. • Sound is a longitudinal wave whose speed depends on the properties of the medium in which it propagates. • Radio waves, light and X-rays are different wavelength bands in the spectrum of electromagnetic waves, the speed of which in a vacuum is approximately 3 x 10^8 m/s, and less when passing through other media. • Waves have characteristic behaviors, such as interference, diffraction, refraction and polarization. • Beats and the Doppler Effect result from the characteristic behavior of waves.	

■ = Measured by ACT Science Test
___ = Content sampled by ACT Science Test

TABLE 3J

CONNECTICUT High School Physics Content Standards	ACT Science College Readiness Standards
Electric and Magnetic Phenomena	
Electric and magnetic phenomena are related and have many practical applications. • The voltage or current in simple direct current (DC) electric circuits constructed from batteries, wires, resistors and capacitors can be predicted using Ohm's law. • Any resistive element in a DC circuit dissipates energy, which heats the resistor. • The power in any resistive circuit element can be calculated by using the formula Power = I^2R. • Charged particles are sources of electric fields and are subject to the forces of the electric fields from other charges. • Magnetic materials and electric currents (moving electric charges) are sources of magnetic fields and are subject to forces arising from the magnetic fields of other sources. • Changing magnetic fields produce electric fields, thereby inducing currents in nearby conductors. • Plasmas, the fourth state of matter, contain ions, or free electrons or both and conduct electricity.	

= Measured by ACT Science Test
= Content sampled by ACT Science Test

TABLE 3K

CONNECTICUT High School Physics Content Standards	WorkKeys Locating Information Skills
Motion and Forces	
Newton's laws predict the motion of most objects. • When forces are balanced, no acceleration occurs; thus an object continues to move at a constant speed or stays at rest. • The law $F = ma$ is used to solve motion problems that involve constant forces. • When one object exerts a force on a second object, the second object always exerts a force of equal magnitude and in the opposite direction. • Applying a force to an object perpendicular to the direction of its motion causes the object to change direction. • Circular motion requires the application of a constant force directed toward the center of the circle. • Newton's laws are not exact, but provide very good approximations unless an object is small enough that quantum effects become important.	
Conservation of Energy and Momentum	
The laws of conservation of energy and momentum provide a way to predict and describe the movement of objects. • Kinetic energy can be calculated by using the formula $E = \left(\frac{1}{2}\right) mv^2$. • Changes in gravitational potential energy near Earth can be calculated by using the formula (change in potential energy) = mgh. • Momentum is calculated as the product mv. • Momentum is a separately conserved quantity different from energy. • An unbalanced force on an object produces a change in its momentum. • The principles of conservation of momentum and energy can be used to solve problems involving elastic and inelastic collisions.	

    S-142   ▮ = Measured by WorkKeys Locating Information Test

CONNECTICUT High School Physics Content Standards	WorkKeys Locating Information Skills
Heat and Thermodynamics	
Energy cannot be created or destroyed although, in many processes, energy is transferred to the environment as heat. • Heat flow and work are two forms of energy transfer between systems. • The work done by a heat engine that is working in a cycle is the difference between the heat flow into the engine at high temperature and the heat flow out at a lower temperature. • The internal energy of an object includes the energy of random motion of the object's atoms and molecules. The greater the temperature of the object, the greater the energy of motion of the atoms and molecules that make up the object. • Most processes tend to decrease the order of a system over time, so that energy levels eventually are distributed more uniformly.	
Waves	
Waves have characteristic properties that do not depend on the type of wave. • Waves carry energy from one place to another. • Transverse and longitudinal waves exist in mechanical media, such as springs and ropes, and in the Earth as seismic waves. • Wavelength, frequency and wave speed are related. • Sound is a longitudinal wave whose speed depends on the properties of the medium in which it propagates. • Radio waves, light and X-rays are different wavelength bands in the spectrum of electromagnetic waves, the speed of which in a vacuum is approximately $3 \times 10^8 m/s$, and less when passing through other media. • Waves have characteristic behaviors, such as interference, diffraction, refraction and polarization. • Beats and the Doppler Effect result from the characteristic behavior of waves.	Understand how graphics are related to each other

= Measured by WorkKeys Locating Information Test

TABLE 3K

CONNECTICUT High School Physics Content Standards	WorkKeys Locating Information Skills
Electric and Magnetic Phenomena	
Electric and magnetic phenomena are related and have many practical applications. • The voltage or current in simple direct current (DC) electric circuits constructed from batteries, wires, resistors and capacitors can be predicted using Ohm's law. • Any resistive element in a DC circuit dissipates energy, which heats the resistor. • The power in any resistive circuit element can be calculated by using the formula Power = I^2R. • Charged particles are sources of electric fields and are subject to the forces of the electric fields from other charges. • Magnetic materials and electric currents (moving electric charges) are sources of magnetic fields and are subject to forces arising from the magnetic fields of other sources. • Changing magnetic fields produce electric fields, thereby inducing currents in nearby conductors. • Plasmas, the fourth state of matter, contain ions, or free electrons or both and conduct electricity.	

     ▢ = Measured by WorkKeys Locating Information Test