STATE MATCH SUPPLEMENT

South Dakota Standards

Reading/Language Arts,
Mathematics, and Science
Grades 8–12

and

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

March 2008

ACT®

List of Supplement Tables

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List of Supplement Tables

Preface

This document is a supplement to the *State Match South Dakota Standards Reading/Language Arts, Mathematics, and Science Grades 8–12 and ACT's EXPLORE, PLAN, the ACT, and WorkKeys (March 2008)*. This supplement identifies specific ACT College Readiness Standards that correspond to each South Dakota Performance Standard in a side-by-side format. The left side of each page presents the South Dakota 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 Level Skill(s) that correspond to each South Dakota Performance Standard.

South Dakota Standards listed here are from the South Dakota Standards as presented on the South Dakota Department of Education's website in February 2008.

SUPPLEMENT
TABLES 1A–1G:

READING/
LANGUAGE ARTS

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
Reading	
Indicator 1: Students can recognize and analyze words.	
8.R.1.1 Students can apply contextual knowledge of word origins to extend vocabulary. (Application)	
Indicator 2: Students can comprehend and fluently read text.	
8.R.2.1 Students can analyze text using comprehension strategies. (Analysis)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging 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

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	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
	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Identify clear cause-effect relationships in more challenging 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
	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging 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 simple generalizations and conclusions using details that support the main points of more challenging passages
	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
	Draw generalizations and conclusions about people, ideas, and so on in more challenging passages

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
8.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging 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

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	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 Identify clear relationships between characters, ideas, and so on in more challenging literary narratives Understand implied or subtly stated cause-effect relationships in uncomplicated passages Identify clear cause-effect relationships in more challenging 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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging 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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
8.R.3.1 Students can examine the author's use of literary elements in fiction, nonfiction, drama, and poetry. (Analysis)	**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 Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
8.R.3.2 Students can examine the effects of the author's use of literary devices. (Analysis)	**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 Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
8.R.4.1 Students can compare and contrast literature from different time periods and cultures dealing with similar themes and conflicts. (Analysis)	
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
8.R.5.1 Students can evaluate information and author's purpose about a topic gathered from informational text. (Evaluation)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	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 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 Identify clear cause-effect relationships in more challenging 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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging 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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
8.R.5.2 Students can recognize expository, persuasive, and procedural text. (Knowledge)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages
8.R.5.3 Students can combine new information with existing knowledge to enhance understanding. (Synthesis)	

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
Writing	
Indicator 1: Students can apply the writing process to compose text.	
8.W.1.1 Students can compose narrative, descriptive, expository, and persuasive text of five paragraphs. (Synthesis)	
8.W.1.2 Students can revise writing for ideas and content. (Evaluation)	**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 **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

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	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
8.W.1.3 Students can compose text using information from multiple sources to support a topic. (Synthesis)	
Indicator 2: Students can apply Standard English conventions in their writing.	
8.W.2.1 Students can edit text for run-on sentences and fragments. (Application)	**English** College Readiness Standards **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)
8.W.2.2 Students can identify and incorporate adverbs in the writing process. (Application)	**English** College Readiness Standards **Organization, Unity, and Coherence:** Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*) Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*) Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., *therefore*, *however*, *in addition*) **Sentence Structure and Formation:** 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

TABLE 1A

South Dakota Grade 8 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Conventions of Usage: 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
Listening, Viewing, and Speaking Standards	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
8.LVS.1.1 Students can evaluate information in auditory and visual communication. (Evaluation)	
8.LVS.1.2 Students can analyze audio/visual aids in presentations. (Analysis)	
8.LVS.1.3 Students can integrate verbal and nonverbal techniques to deliver an oral presentation for a specific audience and purpose. (Application)	
8.LVS.1.4 Students can deliver a persuasive presentation. (Synthesis)	

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
Reading	
Indicator 1: Students can recognize and analyze words.	
9.R.1.1 Students can apply example clues to extend vocabulary. (Application)	**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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages
Indicator 2: Students can comprehend and fluently read text.	
9.R.2.1 Students can evaluate text by applying comprehension strategies. (Evaluation)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **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

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Locate important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging 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 Identify clear relationships between characters, ideas, and so on in more challenging literary narratives Understand implied or subtly stated cause-effect relationships in uncomplicated passages Identify clear cause-effect relationships in more challenging 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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging 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

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	Draw generalizations and conclusions about people, ideas, and so on in uncomplicated passages Draw simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
9.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages **Sequential, Comparative, and Cause-Effect Relationships:** Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
	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
	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Identify clear cause-effect relationships in more challenging 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
	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging 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 simple generalizations and conclusions using details that support the main points of more challenging passages
	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives
	Draw generalizations and conclusions about people, ideas, and so on in more challenging passages
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
9.R.3.1 Students can analyze an author's use of literary elements in fiction. (Analysis)	**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 Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
9.R.4.1 Students can analyze text to determine the influence of time period, culture, geography, and author's background. (Analysis)	
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
9.R.5.1 Students can evaluate primary and secondary sources for credibility. (Evaluation)	
9.R.5.2 Students can interpret procedural text to complete a multiple-step task. (Application)	
Writing	
Indicator 1: Students can apply the writing process to compose text.	
9.W.1.1 Students can write a thesis statement for an expository or persuasive document. (Synthesis)	
9.W.1.2 Students can revise a document for sentence fluency. (Evaluation)	**English** College Readiness Standards **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise sentences to correct awkward and confusing arrangements of sentence elements Determine the clearest and most logical conjunction to link clauses **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
9.W.1.3 Students can write an informational document using primary and secondary sources that are listed on a reference page. (Synthesis)	

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
Indicator 2: Students can apply Standard English conventions in their writing.	
9.W.2.1 Students can revise text for the correct use of phrases. (Application)	**English** College Readiness Standards **Sentence Structure and Formation:** 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 **Conventions of Usage:** Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
9.W.2.2 Students can identify and incorporate prepositional phrases in the writing process. (Application)	**English** College Readiness Standards **Sentence Structure and Formation:** 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 **Conventions of Usage:** Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
9.LVS.1.1 Students can analyze the use of images, text, and sound in media for accuracy, validity, and influence. (Analysis)	
9.LVS.1.2 Students can implement organizational methods for informative presentations. (Synthesis)	

TABLE 1B

SOUTH DAKOTA Grade 9 Reading/Language Arts	EXPLORE English and/or Reading College Readiness Standards
9.LVS.1.3 Students can clarify and defend positions with precise and relevant evidence within an informal setting. (Application)	
9.LVS.1.4 Students can support a presentation with audio/visual aids and technology considering audience and purpose. (Application)	

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
Reading	
Indicator 1: Students can recognize and analyze words.	
10.R.1.1 Students can apply contrast clues to extend vocabulary. (Analysis)	**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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
Indicator 2: Students can comprehend and fluently read text.	
10.R.2.1 Students can formulate associations between texts and experiences. (Synthesis)	
10.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs **Supporting Details:** Locate basic facts (e.g., names, dates, events) clearly stated in a passage

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
	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 important details in more challenging passages
	Locate and interpret minor or subtly stated details in uncomplicated passages
	Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
	Locate and interpret minor or subtly stated details in more challenging 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
	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Identify clear cause-effect relationships in more challenging passages
	Order sequences of events in more challenging passages
	Understand the dynamics between people, ideas, and so on in more challenging passages
	Understand implied or subtly stated cause-effect relationships in more challenging passages
	Meanings of Words:
	Understand the implication of a familiar word or phrase and of simple descriptive language

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
	Use context to understand basic figurative language Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts **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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
10.R.3.1 Students can analyze an author's style. (Analysis)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **Supporting Details:** Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
	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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
10.R.4.1 Students can determine the author's purpose in multicultural, geographical, and historical texts. (Analysis)	**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 Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
10.R.5.1 Students can recognize logical fallacies in sources. (Comprehension)	**Reading** College Readiness Standards **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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
Writing	
Indicator 1: Students can apply the writing process to compose text.	
10.W.1.1 Students can write text using problem/solution and cause/effect organizational patterns. (Synthesis)	
10.W.1.2 Students can revise a document for voice. (Evaluation)	
10.W.1.3 Students can write a research document that cites sources to support a thesis. (Synthesis)	
Indicator 2: Students can apply Standard English conventions in their writing.	
10.W.2.1 Students can edit text for the correct use of active and passive voice. (Application)	**English** College Readiness Standards **Sentence Structure and Formation:** Decide the appropriate verb tense and voice by considering the meaning of the entire sentence
10.W.2.2 Students can edit text for the correct use of pronouns and pronoun case. (Evaluation)	**English** College Readiness Standards **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise vague nouns and pronouns that create obvious logic problems Identify and correct ambiguous pronoun references **Sentence Structure and Formation:** Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence 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 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* Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences Correctly use reflexive pronouns, the possessive pronouns *its* and *your*, and the relative pronouns *who* and *whom*
10.W.2.3 Students can edit text for the correct use of quotation marks and italics for quoted material, titles, emphasized words, and dialogue. (Evaluation)	

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
10.W.2.4 Students can identify and incorporate conjunctions in the writing process. (Application)	**English** College Readiness Standards **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise sentences to correct awkward and confusing arrangements of sentence elements Determine the clearest and most logical conjunction to link clauses **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 Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
10.LVS.1.1 Students can analyze visual and auditory impact on the credibility and reliability of the message. (Analysis)	
10.LVS.1.2 Students can evaluate the effectiveness of arguments used by speakers. (Evaluation)	
10.LVS.1.3 Students can analyze how verbal and nonverbal communication can influence the interpretation of the message. (Analysis)	
10.LVS.1.4 Students can clarify and defend positions with precise and relevant evidence in a formal presentation or speech. (Application)	
10.LVS.1.5 Students can monitor audience for nonverbal feedback and adjust delivery in a formal presentation or speech. (Synthesis)	
10.LVS.1.6 Students can evaluate the relationship among purpose, audience, and content of speeches or presentations. (Evaluation)	
10.LVS.1.7 Students can incorporate verbal techniques in formal speeches or presentations. (Application)	

TABLE 1C

SOUTH DAKOTA Grade 10 Reading/Language Arts	PLAN English and/or Reading College Readiness Standards
10.LVS.1.8 Students can construct and deliver a variety of formal speeches or presentations. (Synthesis)	

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
Reading	
Indicator 1: Students can recognize and analyze words.	
11.R.1.1 Students can apply cause and effect clues to extend vocabulary. (Application)	**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 Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
Indicator 2: Students can comprehend and fluently read text.	
11.R.2.1 Students can analyze how diction affects the interpretation of text. (Analysis)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **Supporting Details:** Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages **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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
11.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages Locate and interpret minor or subtly stated details in more challenging 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

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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
	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Identify clear cause-effect relationships in more challenging passages
	Order sequences of events in more challenging passages
	Understand the dynamics between people, ideas, and so on in more challenging passages
	Understand implied or subtly stated cause-effect relationships in more challenging 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
	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages
	Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
	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 simple generalizations and conclusions using details that support the main points of more challenging passages

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
11.R.3.1 Students can analyze and explain literary devices within text. (Analysis)	**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 Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
11.R.4.1 Students can analyze a text within cultural, geographical, and historical context. (Analysis)	
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
11.R.5.1 Students can analyze factors that influence the credibility of informational sources. (Analysis)	
Writing	
Indicator 1: Students can apply the writing process to compose text.	
11.W.1.1 Students can write text using comparison/contrast organizational patterns. (Synthesis)	**Writing** College Readiness Standards **Organizing Ideas:** Provide unity and coherence throughout the essay, sometimes with a logical progression of ideas Use relevant, though at times simple and obvious, transitional words and phrases to convey logical relationships between ideas Provide unity and coherence throughout the essay, often with a logical progression of ideas Use relevant transitional words, phrases, and sentences to convey logical relationships between ideas
11.W.1.2 Students can write a document analyzing how a work of literature mirrors the themes and issues of its historical period. (Synthesis)	

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
Indicator 2: Students can apply Standard English conventions in their writing.	
11.W.2.1 Students can edit text for the correct use of independent and subordinate clauses. (Evaluation)	**English** College Readiness Standards **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise sentences to correct awkward and confusing arrangements of sentence elements Determine the clearest and most logical conjunction to link clauses **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 Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs **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 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

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	• using a variety of kinds of sentence structures to vary pace and to support meaning
11.W.2.2 Students can edit for correct use of verbals and verbal phrases. (Evaluation)	**English** College Readiness Standards **Sentence Structure and Formation:** Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs **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 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

TABLE 1D

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
11.W.2.3 Students can edit for correct use of semicolons and colons. (Evaluation)	**English** College Readiness Standards **Conventions of Punctuation:** Recognize inappropriate uses of colons and semicolons Use a semicolon to indicate a relationship between closely related independent clauses **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 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
11.W.2.4 Students can edit for correct use of parentheses, dashes, hyphens, and ellipses. (Evaluation)	**English** College Readiness Standards **Conventions of Punctuation:** Use punctuation to set off complex parenthetical phrases **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

SOUTH DAKOTA Grade 11 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
11.LVS.1.1 Students can evaluate strategies used in auditory and visual communications to inform, to persuade, and to entertain. (Evaluation)	
11.LVS.1.2 Students can evaluate logical and critical thinking used in communication. (Evaluation)	
11.LVS.1.3 Students can implement rhetorical devices in oral presentations. (Application)	

TABLE 1E

SOUTH DAKOTA Grade 11 Reading/Language Arts	WorkKeys Reading For Information Level Skills
Reading	
Indicator 1: Students can recognize and analyze words.	
11.R.1.1 Students can apply cause and effect clues to extend vocabulary. (Application)	Choose the correct meaning of a word that is clearly defined in the reading 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 Identify the correct meaning of an acronym that is defined in the document Identify the paraphrased definition of a technical term or jargon that is defined in the document Apply technical terms and jargon and relate them to stated situations Use technical terms and jargon in new situations 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 Figure out the meaning of jargon or technical terms based on how they are used
Indicator 2: Students can comprehend and fluently read text.	
11.R.2.1 Students can analyze how diction affects the interpretation of text. (Analysis)	
11.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	Identify main ideas and clearly stated details Choose when to perform each step in a short series of steps Apply instructions to a situation that is the same as the one in the reading materials Identify important details that may not be clearly stated Apply instructions with several steps to a situation that is the same as the situation in the reading materials Choose what to do when changing conditions call for a different action (follow directions that include “if-then” statements) Apply straightforward instructions to a new situation that is similar to the one described in the material Apply complex instructions that include conditionals to situations described in the materials Apply complicated instructions to new situations Figure out the principles behind policies, rules, and procedures Apply general principles from the materials to similar and new situations Explain the rationale behind a procedure, policy, or communication Figure out the general principles behind the policies and apply them to situations that are quite different from any described in the materials

TABLE 1E

SOUTH DAKOTA Grade 11 Reading/Language Arts	WorkKeys Reading For Information Level Skills
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
11.R.3.1 Students can analyze and explain literary devices within text. (Analysis)	
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
11.R.4.1 Students can analyze a text within cultural, geographical, and historical context. (Analysis)	
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
11.R.5.1 Students can analyze factors that influence the credibility of informational sources. (Analysis)	
Writing	
Indicator 1: Students can apply the writing process to compose text.	
11.W.1.1 Students can write text using comparison/contrast organizational patterns. (Synthesis)	
11.W.1.2 Students can write a document analyzing how a work of literature mirrors the themes and issues of its historical period. (Synthesis)	
Indicator 2: Students can apply Standard English conventions in their writing.	
11.W.2.1 Students can edit text for the correct use of independent and subordinate clauses. (Evaluation)	
11.W.2.2 Students can edit for correct use of verbals and verbal phrases. (Evaluation)	
11.W.2.3 Students can edit for correct use of semicolons and colons. (Evaluation)	
11.W.2.4 Students can edit for correct use of parentheses, dashes, hyphens, and ellipses. (Evaluation)	
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
11.LVS.1.1 Students can evaluate strategies used in auditory and visual communications to inform, to persuade, and to entertain. (Evaluation)	
11.LVS.1.2 Students can evaluate logical and critical thinking used in communication. (Evaluation)	
11.LVS.1.3 Students can implement rhetorical devices in oral presentations. (Application)	

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
Reading	
Indicator 1: Students can recognize and analyze words.	
12.R.1.1 Students can interpret the meaning of unfamiliar words by selecting context clues. (Synthesis)	**Reading** College Readiness Standards **Meanings of Words:** Use context to understand basic figurative language Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in uncomplicated passages Use context to determine the appropriate meaning of virtually any word, phrase, or statement in uncomplicated passages Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
Indicator 2: Students can comprehend and fluently read text.	
12.R.2.1 Students can evaluate how style affects the meaning of text. (Evaluation)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **Supporting Details:** Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages **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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
12.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	**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 Infer the main idea or purpose of straightforward paragraphs in more challenging passages Summarize basic events and ideas in more challenging passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages Infer the main idea or purpose of more challenging passages or their paragraphs **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 important details in more challenging passages Locate and interpret minor or subtly stated details in uncomplicated passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages Locate and interpret minor or subtly stated details in more challenging 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

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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
	Identify clear relationships between characters, ideas, and so on in more challenging literary narratives
	Understand implied or subtly stated cause-effect relationships in uncomplicated passages
	Identify clear cause-effect relationships in more challenging passages
	Order sequences of events in more challenging passages
	Understand the dynamics between people, ideas, and so on in more challenging passages
	Understand implied or subtly stated cause-effect relationships in more challenging 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
	Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages
	Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts
	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 simple generalizations and conclusions using details that support the main points of more challenging passages

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
12.R.3.1 Students can evaluate text for the author's style. (Evaluation)	**Reading** College Readiness Standards **Main Ideas and Author's Approach:** Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in uncomplicated passages Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages **Supporting Details:** Recognize a clear function of a part of an uncomplicated passage Make simple inferences about how details are used in passages Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages **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 simple generalizations and conclusions using details that support the main points of more challenging passages Draw subtle generalizations and conclusions about characters, ideas, and so on in uncomplicated literary narratives Draw generalizations and conclusions about people, ideas, and so on in more challenging passages Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas, and so on
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
12.R.4.1 Students can evaluate the depiction of human experience in literary works from diverse cultures, locations, and time periods. (Evaluation)	

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
12.R.5.1 Students can synthesize information from multiple sources to analyze issues and to make decisions for research. (Synthesis)	
Writing	
Indicator 1: Students can apply the writing process to compose text.	
12.W.1.1 Students can generate correspondence for workplace or academic settings. (Synthesis)	
12.W.1.2 Students can write a research document which will defend a position or recommend a plan of action. (Synthesis)	**Writing** College Readiness Standards **Expressing Judgments:** 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 Show clear understanding of the persuasive purpose of the task by taking a position on the specific issue in the prompt and offering a broad context for discussion Show recognition of the complexity of the issue in the prompt by • partially evaluating implications and/or complications of the issue, and/or • posing and partially responding to counter-arguments to the writer's position Show clear understanding of the persuasive purpose of the task by taking a position on the specific issue in the prompt and offering a critical context for discussion Show understanding of the complexity of the issue in the prompt by • examining different perspectives, and/or • evaluating implications or complications of the issue, and/or • posing and fully discussing counterarguments to the writer's position **Developing a Position:** Develop ideas by using some specific reasons, details, and examples Develop most ideas fully, using some specific and relevant reasons, details, and examples Develop several ideas fully, using specific and relevant reasons, details, and examples

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
12.W.1.3 Students can revise document for ideas, organization, diction, fluency, voice, and presentation. (Evaluation)	**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 Add a phrase or sentence to accomplish a complex purpose, often expressed in terms of the main focus of the essay **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 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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
Indicator 2: Students can apply Standard English conventions in their writing.	
12.W.2.1 Students can edit a document for all conventions. (Evaluation)	**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

TABLE 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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)
	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 1F

SOUTH DAKOTA Grade 12 Reading/Language Arts	ACT English, Reading, and/or Writing College Readiness Standards
	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 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
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
12.LVS.1.1 Students can evaluate diction, tone, and syntax used in communication. (Evaluation)	
12.LVS.1.2 Students can evaluate the interactions between society and media. (Evaluation)	
12.LVS.1.3 Students can narrate a multimedia presentation that combines text, images, and sounds to reflect, to inform, to persuade, or to entertain. (Synthesis)	

TABLE 1G

SOUTH DAKOTA Grade 12 Reading/Language Arts	WorkKeys Reading For Information Level Skills
Reading	
Indicator 1: Students can recognize and analyze words.	
12.R.1.1 Students can interpret the meaning of unfamiliar words by selecting context clues. (Synthesis)	Choose the correct meaning of a word that is clearly defined in the reading 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 Identify the correct meaning of an acronym that is defined in the document Identify the paraphrased definition of a technical term or jargon that is defined in the document Apply technical terms and jargon and relate them to stated situations Use technical terms and jargon in new situations 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 Figure out the meaning of jargon or technical terms based on how they are used
Indicator 2: Students can comprehend and fluently read text.	
12.R.2.1 Students can evaluate how style affects the meaning of text. (Evaluation)	
12.R.2.2 Students can read fluently to comprehend grade-level text. (Application)	Identify main ideas and clearly stated details Choose when to perform each step in a short series of steps Apply instructions to a situation that is the same as the one in the reading materials Identify important details that may not be clearly stated Apply instructions with several steps to a situation that is the same as the situation in the reading materials Choose what to do when changing conditions call for a different action (follow directions that include “if-then” statements) Apply straightforward instructions to a new situation that is similar to the one described in the material Apply complex instructions that include conditionals to situations described in the materials Apply complicated instructions to new situations Figure out the principles behind policies, rules, and procedures Apply general principles from the materials to similar and new situations Explain the rationale behind a procedure, policy, or communication Figure out the general principles behind the policies and apply them to situations that are quite different from any described in the materials

TABLE 1G

SOUTH DAKOTA Grade 12 Reading/Language Arts	WorkKeys Reading For Information Level Skills
Indicator 3: Students can apply knowledge of text structures, literary devices, and literary elements to develop interpretations and form responses.	
12.R.3.1 Students can evaluate text for the author's style. (Evaluation)	
Indicator 4: Students can interpret and respond to diverse, multicultural, and time period texts.	
12.R.4.1 Students can evaluate the depiction of human experience in literary works from diverse cultures, locations, and time periods. (Evaluation)	
Indicator 5: Students can access, analyze, synthesize, and evaluate informational texts.	
12.R.5.1 Students can synthesize information from multiple sources to analyze issues and to make decisions for research. (Synthesis)	
Writing	
Indicator 1: Students can apply the writing process to compose text.	
12.W.1.1 Students can generate correspondence for workplace or academic settings. (Synthesis)	
12.W.1.2 Students can write a research document which will defend a position or recommend a plan of action. (Synthesis)	
12.W.1.3 Students can revise document for ideas, organization, diction, fluency, voice, and presentation. (Evaluation)	
Indicator 2: Students can apply Standard English conventions in their writing.	
12.W.2.1 Students can edit a document for all conventions. (Evaluation)	
Listening, Viewing, and Speaking	
Indicator 1: Students can listen, view, and speak to communicate, retrieve, interpret, and evaluate information.	
12.LVS.1.1 Students can evaluate diction, tone, and syntax used in communication. (Evaluation)	
12.LVS.1.2 Students can evaluate the interactions between society and media. (Evaluation)	
12.LVS.1.3 Students can narrate a multimedia presentation that combines text, images, and sounds to reflect, to inform, to persuade, or to entertain. (Synthesis)	

SUPPLEMENT
TABLES 2A–2I:
MATHEMATICS

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
8.A.1.1. Students are able to use properties to expand, combine, and simplify 1st degree algebraic expressions with the set of integers. (Application)	**Expressions, Equations, & Inequalities:** Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions
• Properties include associative, commutative, distributive, and identity properties.	**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:** Combine like terms (e.g., $2x + 5x$)
• Use order of operations with exponents and nested parentheses.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Work with squares and square roots of numbers Work problems involving positive integer exponents*
• Determine if two 1st degree algebraic expressions are equivalent.	**Expressions, Equations, & Inequalities:** Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
8.A.2.1. Students are able to write and solve two-step 1st degree equations, with one variable, and one-step inequalities, with one variable, using the set of integers. (Application)	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Solve one-step equations having integer or decimal answers Solve routine first-degree equations 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)
• Inverse operations.	**Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Solve one-step equations having integer or decimal answers Solve routine first-degree equations

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
• Addition property of equality.	**Expressions, Equations, & Inequalities:** Solve one-step equations having integer or decimal answers Solve routine first-degree equations
• Multiplication property of equality.	**Expressions, Equations, & Inequalities:** Solve one-step equations having integer or decimal answers Solve routine first-degree equations
Indicator 3: Interpret and develop mathematical models.	
8.A.3.1. Students are able to describe and determine linear relationships. (Comprehension)	
• Determine slope from a line or ordered pairs on a graph.	
• Identify x and y intercepts from a graph.	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
8.A.4.1. Students are able to create rules to explain the relationship between numbers when a change in the first variable affects the second variable. (Synthesis)	**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)
8.A.4.2. Students are able to describe and represent relations using tables, graphs, and rules. (Analysis)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs **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)
• Represent situations with patterns and relations to find exact or approximate solutions to problems.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs **Expressions, Equations, & Inequalities:** Solve routine first-degree equations Solve real-world problems using first-degree equations

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
	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)
• Make predictions relating two variables using a rule or a graph.	**Expressions, Equations, & Inequalities:** Solve real-world problems using first-degree equations **Graphical Representations:** Locate points in the coordinate plane
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
8.G.1.1. Students are able to describe and classify prisms, pyramids, cylinders, and cone. (Application)	
• Faces, edges, and vertices.	
8.G.1.2. Students, when given any two sides of an illustrated right triangle, are able to use the Pythagorean Theorem to find the third side. (Application)	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers **Measurement:** Use geometric formulas when all necessary information is given
• Given the formula.	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers **Measurement:** Use geometric formulas when all necessary information is given
• Using whole numbers for the known values.	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers **Expressions, Equations, & Inequalities:** Evaluate algebraic expressions by substituting integers for unknown quantities **Measurement:** Use geometric formulas when all necessary information is given
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
8.G.2.1. Students are able to write and solve proportions that express the relationships between corresponding parts of similar quadrilaterals and triangles. (Application)	**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 multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
	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)
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
8.M.1.1. Students are able to apply proportional reasoning to solve measurement problems with rational number measurements. (Application)	**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 **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)
• Conversion within measurement systems.	**Basic Operations & Applications:** Perform common conversions (e.g., inches to feet or hours to minutes)
• Use scale drawings to represent situations.	**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
• Indirect measurement.	**Basic Operations & Applications:** Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)
8.M.1.2. Students are able to find area, volume, and surface area with whole number measurements.	**Measurement:** 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
• Use appropriate unit of measure.	**Basic Operations & Applications:** Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)
• Apply strategies and/or formulas.	**Measurement:** Use geometric formulas when all necessary information is given
• Volume of rectangular prisms, rectangular pyramids, cylinders, and cones.	**Measurement:** Use geometric formulas when all necessary information is given

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
• Surface area of rectangular prisms and cylinders.	**Measurement:** Use geometric formulas when all necessary information is given
• Area of composite shapes.	**Measurement:** Use geometric formulas when all necessary information is given
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
8.N.1.1. Students are able to represent numbers in a variety of forms and identify the subsets of rational numbers. (Comprehension)	**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
• Exponents	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents*
• Scientific notation	**Numbers: Concepts & Properties:** Work with scientific notation
• Absolute value	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Radicals (perfect squares)	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers
• Graph on a number line	**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
Indicator 2: Apply number operations with real numbers and other number systems.	
8.N.2.1. Students are able to read, write, and compute within any subset of rational numbers. (Application)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
• Solve problems involving discount, markup, commission, profit, and simple interest.	**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
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
8.N.3.1. Students are able to use various strategies to solve multi-step problems involving rational numbers. (Application)	**Basic Operations & Applications:** 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)
• Explain strategies and justify answers.	
• Formulate rules to solve practical problems involving rational numbers.	**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 multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)
• Use estimation strategies to make predictions and test the reasonableness of the answer.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
8.S.1.1. Students are able to find the mean, median, mode, and range of a data set from a stem-and-leaf plot and a line plot. (Comprehension)	**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
8.S.1.2. Students are able to use a variety of visual representations to display data to make comparisons and predictions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs 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)

TABLE 2A

SOUTH DAKOTA Grade 8 Math	EXPLORE Mathematics College Readiness Standards
• Double bar graph	**Probability, Statistics, & Data Analysis:** Read tables and graphs
• Double line graph	**Probability, Statistics, & Data Analysis:** Read tables and graphs
• Scatterplot	**Probability, Statistics, & Data Analysis:** Read tables and graphs
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
8.S.2.1. Students are able to find the sample space and compute probability for two simultaneous independent events. (Comprehension)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Express probability as a ratio, decimal, or percent.	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations

TABLE 2B

SOUTH DAKOTA Grades 9-12 Core Math	EXPLORE Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1. Students are able to write equivalent forms of algebraic expressions using properties of the set of real numbers. (Comprehension)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions
• Evaluate algebraic expressions.	**Expressions, Equations, & Inequalities:** Evaluate algebraic expressions by substituting integers for unknown quantities
• Use laws of exponents.	
• Use conventional order of operations, including grouping and exponents.	**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:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree equations. (Comprehension)	**Expressions, Equations, & Inequalities:** Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations
9-12.A.2.2. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line. (Application)	**Graphical Representations:** Locate points on the number line and in the first quadrant
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1. Students are able to create linear models to represent problem situations. (Application)	**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)
• Calculate and interpret slope.	
9-12.A.3.2. Students are able to distinguish between linear and nonlinear models. (Comprehension)	

TABLE 2B

SOUTH DAKOTA Grades 9-12 Core Math	EXPLORE Mathematics College Readiness Standards
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1. Students are able to use graphs, tables, and equations to represent linear functions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs **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)
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1. Students are able to apply the properties of triangles and quadrilaterals to find unknown parts. (Application)	**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
9-12.G.1.2. Students are able to identify and apply relationships among triangles. (Application)	**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
• Definitions and postulates	**Properties of Plane Figures:** Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)
• Similarity theorems	
• Congruence theorems	
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1. Students are able to recognize the relationship between a three-dimensional figure and its two-dimensional representation. (Analysis)	
• Interpret floor plans.	
• Follow instructions for assembly of a product, e.g., “some assembly required.”	
9-12.G.2.2. Students are able to reflect across vertical or horizontal lines, and translate two-dimensional figures. (Application)	

TABLE 2B

SOUTH DAKOTA Grades 9-12 Core Math	EXPLORE Mathematics College Readiness Standards
• Identify lines of symmetry.	
• Use the coordinate plane.	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane
9-12.G.2.3. Students are able to use proportions to solve problems. (Application)	**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
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1. Students are able to choose appropriate unit label, scale, and precision. (Comprehension)	
• Determine appropriate scales for histograms, scatterplots, and other graphs.	
9-12.M.1.2. Students are able to use suitable units when describing rate of change. (Comprehension)	**Probability, Statistics, & Data Analysis:** Read tables and graphs
9-12.M.1.3. Students are able to use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures. (Application)	**Measurement:** Use geometric formulas when all necessary information is given
• Use algebraic expressions with geometric formulas.	
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1. Students are able to identify multiple representations of a real number. (Comprehension)	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Given a real number identify the subset(s) of real numbers to which it belongs.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Represent rational and irrational numbers in different forms.	**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 2B

SOUTH DAKOTA Grades 9-12 Core Math	EXPLORE Mathematics College Readiness Standards
9-12.N.1.2. Students are able to apply the concept of place value, magnitude, and relative magnitude of real numbers. (Comprehension)	
• Scientific notation	**Numbers: Concepts & Properties:** Work with scientific notation
• Infinitely many solutions	
• Completeness of the real numbers (density, i.e. between any two real numbers is another real number)	
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1. Students are able to add, subtract, multiply, and divide real numbers including integral exponents. (Comprehension)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents*
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
9-12.N.3.1. Students are able to use estimation strategies in problem situations to predict results and to check the reasonableness of results. (Analysis)	
• Use rounding as an estimation strategy.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Use non-routine estimation strategies.	
9-12.N.3.2. Students are able to select alternative computational strategies and explain the chosen strategy. (Comprehension)	
• Use properties of numbers that allow operational shortcuts for computational procedures.	**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 2B

SOUTH DAKOTA Grades 9-12 Core Math	EXPLORE Mathematics College Readiness Standards
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1. Students are able to draw conclusions from a set of data. (Analysis)	
• Determine and use appropriate statistical values.	
• Determine which questions can or cannot be answered from a given data set.	**Probability, Statistics, & Data Analysis:** Read tables and graphs
9-12.S.1.2. Students are able to compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median. (Comprehension)	
9-12.S.1.3. Represent a set of data in a variety of graphical forms and draw conclusions. (Analysis)	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a scatterplot to draw a regression line and make predictions.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a box-and-whisker plot to model a set of one-variable data.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a histogram from a frequency distribution.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1. Students are able to distinguish between experimental and theoretical probability. (Knowledge)	
9-12.S.2.2. Students are able to predict outcomes of simple events using given theoretical probabilities. (Comprehension)	
• Determine the sample space of an experiment.	

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1. Students are able to write equivalent forms of algebraic expressions using properties of the set of real numbers. (Comprehension)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Manipulate expressions and equations
• Evaluate algebraic expressions.	**Expressions, Equations, & Inequalities:** Evaluate algebraic expressions by substituting integers for unknown quantities
• Use laws of exponents.	**Numbers: Concepts & Properties:** Apply rules of exponents **Expressions, Equations, & Inequalities:** Multiply two binomials Manipulate expressions and equations
• Use conventional order of operations, including grouping and exponents.	**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:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Manipulate expressions and equations
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree equations. (Comprehension)	**Expressions, Equations, & Inequalities:** Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations Manipulate expressions and equations

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
9-12.A.2.2. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line. (Application)	**Graphical Representations:** Locate points on the number line and in the first quadrant **Expressions, Equations, & Inequalities:** Solve first-degree inequalities that do not require reversing the inequality sign Solve linear inequalities that require reversing the inequality sign
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1. Students are able to create linear models to represent problem situations. (Application)	**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
• Calculate and interpret slope.	**Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations Interpret and use information from graphs in the coordinate plane
9-12.A.3.2. Students are able to distinguish between linear and nonlinear models. (Comprehension)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1. Students are able to use graphs, tables, and equations to represent linear functions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs **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) **Graphical Representations:** Match linear graphs with their equations

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1. Students are able to apply the properties of triangles and quadrilaterals to find unknown parts. (Application)	**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
9-12.G.1.2. Students are able to identify and apply relationships among triangles. (Application)	**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
• Definitions and postulates	**Properties of Plane Figures:** Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
• Similarity theorems	**Properties of Plane Figures:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
• Congruence theorems	**Properties of Plane Figures:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1. Students are able to recognize the relationship between a three-dimensional figure and its two-dimensional representation. (Analysis)	
• Interpret floor plans.	
• Follow instructions for assembly of a product, e.g., “some assembly required.”	
9-12.G.2.2. Students are able to reflect across vertical or horizontal lines, and translate two-dimensional figures. (Application)	

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
• Identify lines of symmetry.	
• Use the coordinate plane.	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane
9-12.G.2.3. Students are able to use proportions to solve problems. (Application)	**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:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1. Students are able to choose appropriate unit label, scale, and precision. (Comprehension)	
• Determine appropriate scales for histograms, scatterplots, and other graphs.	
9-12.M.1.2. Students are able to use suitable units when describing rate of change. (Comprehension)	**Probability, Statistics, & Data Analysis:** Read tables and graphs
9-12.M.1.3. Students are able to use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures. (Application)	**Measurement:** Use geometric formulas when all necessary information is given
• Use algebraic expressions with geometric formulas.	
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1. Students are able to identify multiple representations of a real number. (Comprehension)	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Given a real number identify the subset(s) of real numbers to which it belongs.	**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

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
• Represent rational and irrational numbers in different forms.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
9-12.N.1.2. Students are able to apply the concept of place value, magnitude, and relative magnitude of real numbers. (Comprehension)	
• Scientific notation	**Numbers: Concepts & Properties:** Work with scientific notation
• Infinitely many solutions	
• Completeness of the real numbers (density, i.e. between any two real numbers is another real number)	
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1. Students are able to add, subtract, multiply, and divide real numbers including integral exponents. (Comprehension)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
9-12.N.3.1. Students are able to use estimation strategies in problem situations to predict results and to check the reasonableness of results. (Analysis)	
• Use rounding as an estimation strategy.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Use non-routine estimation strategies.	

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
9-12.N.3.2. Students are able to select alternative computational strategies and explain the chosen strategy. (Comprehension)	
• Use properties of numbers that allow operational shortcuts for computational procedures.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1. Students are able to draw conclusions from a set of data. (Analysis)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs
• Determine and use appropriate statistical values.	
• Determine which questions can or cannot be answered from a given data set.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs
9-12.S.1.2. Students are able to compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median. (Comprehension)	
9-12.S.1.3. Represent a set of data in a variety of graphical forms and draw conclusions. (Analysis)	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a scatterplot to draw a regression line and make predictions.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a box-and-whisker plot to model a set of one-variable data.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a histogram from a frequency distribution.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)

TABLE 2C

SOUTH DAKOTA Grades 9-12 Core Math	PLAN Mathematics College Readiness Standards
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1. Students are able to distinguish between experimental and theoretical probability. (Knowledge)	
9-12.S.2.2. Students are able to predict outcomes of simple events using given theoretical probabilities. (Comprehension)	**Probability, Statistics, & Data Analysis:** Compute a probability when the event and/or sample space are not given or obvious
• Determine the sample space of an experiment.	**Probability, Statistics, & Data Analysis:** Compute a probability when the event and/or sample space are not given or obvious

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1. Students are able to write equivalent forms of algebraic expressions using properties of the set of real numbers. (Comprehension)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Manipulate expressions and equations
• Evaluate algebraic expressions.	**Expressions, Equations, & Inequalities:** Evaluate algebraic expressions by substituting integers for unknown quantities
• Use laws of exponents.	**Numbers: Concepts & Properties:** Apply rules of exponents **Expressions, Equations, & Inequalities:** Multiply two binomials Manipulate expressions and equations
• Use conventional order of operations, including grouping and exponents.	**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:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Manipulate expressions and equations
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree equations. (Comprehension)	**Expressions, Equations, & Inequalities:** Solve one-step equations having integer or decimal answers Solve routine first-degree equations Solve real-world problems using first-degree equations Manipulate expressions and equations

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
9-12.A.2.2. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line. (Application)	**Graphical Representations:** Locate points on the number line and in the first quadrant **Expressions, Equations, & Inequalities:** Solve first-degree inequalities that do not require reversing the inequality sign Solve linear inequalities that require reversing the inequality sign
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1. Students are able to create linear models to represent problem situations. (Application)	**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
• Calculate and interpret slope.	**Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations Interpret and use information from graphs in the coordinate plane
9-12.A.3.2. Students are able to distinguish between linear and nonlinear models. (Comprehension)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1. Students are able to use graphs, tables, and equations to represent linear functions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph) Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs **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)

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
	Graphical Representations: Match linear graphs with their equations
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1. Students are able to apply the properties of triangles and quadrilaterals to find unknown parts. (Application)	**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
9-12.G.1.2. Students are able to identify and apply relationships among triangles. (Application)	**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
• Definitions and postulates	**Properties of Plane Figures:** Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use properties of isosceles triangles Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
• Similarity theorems	**Properties of Plane Figures:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
• Congruence theorems	**Properties of Plane Figures:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1. Students are able to recognize the relationship between a three-dimensional figure and its two-dimensional representation. (Analysis)	**Properties of Plane Figures:** Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
• Interpret floor plans.	
• Follow instructions for assembly of a product, e.g., “some assembly required.”	

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
9-12.G.2.2. Students are able to reflect across vertical or horizontal lines, and translate two-dimensional figures. (Application)	**Properties of Plane Figures:** Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
• Identify lines of symmetry.	**Graphical Representations:** Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
• Use the coordinate plane.	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane
9-12.G.2.3. Students are able to use proportions to solve problems. (Application)	**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:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1. Students are able to choose appropriate unit label, scale, and precision. (Comprehension)	
• Determine appropriate scales for histograms, scatterplots, and other graphs.	
9-12.M.1.2. Students are able to use suitable units when describing rate of change. (Comprehension)	**Probability, Statistics, & Data Analysis:** Read tables and graphs
9-12.M.1.3. Students are able to use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures. (Application)	**Measurement:** Use geometric formulas when all necessary information is given
• Use algebraic expressions with geometric formulas.	
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1. Students are able to identify multiple representations of a real number. (Comprehension)	**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 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
• Given a real number identify the subset(s) of real numbers to which it belongs.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Represent rational and irrational numbers in different forms.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
9-12.N.1.2. Students are able to apply the concept of place value, magnitude, and relative magnitude of real numbers. (Comprehension)	
• Scientific notation	**Numbers: Concepts & Properties:** Work with scientific notation
• Infinitely many solutions	
• Completeness of the real numbers (density, i.e. between any two real numbers is another real number)	
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1. Students are able to add, subtract, multiply, and divide real numbers including integral exponents. (Comprehension)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
9-12.N.3.1. Students are able to use estimation strategies in problem situations to predict results and to check the reasonableness of results. (Analysis)	
• Use rounding as an estimation strategy.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
• Use non-routine estimation strategies.	

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
9-12.N.3.2. Students are able to select alternative computational strategies and explain the chosen strategy. (Comprehension)	
• Use properties of numbers that allow operational shortcuts for computational procedures.	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1. Students are able to draw conclusions from a set of data. (Analysis)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs
• Determine and use appropriate statistical values.	**Probability, Statistics, & Data Analysis:** Distinguish between mean, median, and mode for a list of numbers
• Determine which questions can or cannot be answered from a given data set.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs
9-12.S.1.2. Students are able to compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median. (Comprehension)	**Probability, Statistics, & Data Analysis:** Analyze and draw conclusions based on information from figures, tables, and graphs
9-12.S.1.3. Represent a set of data in a variety of graphical forms and draw conclusions. (Analysis)	**Probability, Statistics, & Data Analysis:** Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a scatterplot to draw a regression line and make predictions.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a box-and-whisker plot to model a set of one-variable data.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)
• Make a histogram from a frequency distribution.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Translate from one representation of data to another (e.g., a bar graph to a circle graph)

TABLE 2D

SOUTH DAKOTA Grades 9-12 Core Math	ACT Mathematics College Readiness Standards
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1. Students are able to distinguish between experimental and theoretical probability. (Knowledge)	
9-12.S.2.2. Students are able to predict outcomes of simple events using given theoretical probabilities. (Comprehension)	**Probability, Statistics, & Data Analysis:** Compute a probability when the event and/or sample space are not given or obvious
• Determine the sample space of an experiment.	**Probability, Statistics, & Data Analysis:** Compute a probability when the event and/or sample space are not given or obvious

TABLE 2E

SOUTH DAKOTA Grades 9-12 Core Math	WorkKeys Applied Mathematics Level Skills
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1. Students are able to write equivalent forms of algebraic expressions using properties of the set of real numbers. (Comprehension)	Put the information in the right order before performing calculations 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 Solve problems that include nonlinear functions and/or that involve more than one unknown Set up and manipulate complex ratios or proportions
• Evaluate algebraic expressions.	Put the information in the right order before performing calculations 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
• Use laws of exponents.	
• Use conventional order of operations, including grouping and exponents.	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 Set up and manipulate complex ratios or proportions
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree equations. (Comprehension)	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
9-12.A.2.2. Students are able to use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line. (Application)	
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1. Students are able to create linear models to represent problem situations. (Application)	
• Calculate and interpret slope.	
9-12.A.3.2. Students are able to distinguish between linear and nonlinear models. (Comprehension)	
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1. Students are able to use graphs, tables, and equations to represent linear functions. (Application)	

TABLE 2E

SOUTH DAKOTA Grades 9-12 Core Math	WorkKeys Applied Mathematics Level Skills
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1. Students are able to apply the properties of triangles and quadrilaterals to find unknown parts. (Application)	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
9-12.G.1.2. Students are able to identify and apply relationships among triangles. (Application)	
• Definitions and postulates	
• Similarity theorems	
• Congruence theorems	
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1. Students are able to recognize the relationship between a three-dimensional figure and its two-dimensional representation. (Analysis)	
• Interpret floor plans.	
• Follow instructions for assembly of a product, e.g., “some assembly required.”	
9-12.G.2.2. Students are able to reflect across vertical or horizontal lines, and translate two-dimensional figures. (Application)	
• Identify lines of symmetry.	
• Use the coordinate plane.	
9-12.G.2.3. Students are able to use proportions to solve problems. (Application)	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Use fractions, negative numbers, ratios, percentages, or mixed numbers Set up and manipulate complex ratios or proportions
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1. Students are able to choose appropriate unit label, scale, and precision. (Comprehension)	
• Determine appropriate scales for histograms, scatterplots, and other graphs.	
9-12.M.1.2. Students are able to use suitable units when describing rate of change. (Comprehension)	

TABLE 2E

SOUTH DAKOTA Grades 9-12 Core Math	WorkKeys Applied Mathematics Level Skills
9-12.M.1.3. Students are able to use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures. (Application)	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) 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
• Use algebraic expressions with geometric formulas.	Put the information in the right order before performing calculations Decide what information, calculations, or unit conversions to use to solve the problem 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
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1. Students are able to identify multiple representations of a real number. (Comprehension)	
• Given a real number identify the subset(s) of real numbers to which it belongs.	
• Represent rational and irrational numbers in different forms.	Change numbers from one form to another using whole numbers, fractions, decimals, or percentages Use fractions, negative numbers, ratios, percentages, or mixed numbers 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
9-12.N.1.2. Students are able to apply the concept of place value, magnitude, and relative magnitude of real numbers. (Comprehension)	
• Scientific notation	
• Infinitely many solutions	
• Completeness of the real numbers (density, i.e. between any two real numbers is another real number)	

TABLE 2E

SOUTH DAKOTA Grades 9-12 Core Math	WorkKeys Applied Mathematics Level Skills
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1. Students are able to add, subtract, multiply, and divide real numbers including integral exponents. (Comprehension)	Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers Add or subtract negative numbers Multiply negative numbers 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 Divide negative numbers Find the best deal using one- and two-step calculations and then comparing results
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
9-12.N.3.1. Students are able to use estimation strategies in problem situations to predict results and to check the reasonableness of results. (Analysis)	
• Use rounding as an estimation strategy.	
• Use non-routine estimation strategies.	
9-12.N.3.2. Students are able to select alternative computational strategies and explain the chosen strategy. (Comprehension)	
• Use properties of numbers that allow operational shortcuts for computational procedures.	
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1. Students are able to draw conclusions from a set of data. (Analysis)	
• Determine and use appropriate statistical values.	
• Determine which questions can or cannot be answered from a given data set.	
9-12.S.1.2. Students are able to compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median. (Comprehension)	
9-12.S.1.3. Represent a set of data in a variety of graphical forms and draw conclusions. (Analysis)	
• Make a scatterplot to draw a regression line and make predictions.	

TABLE 2E

SOUTH DAKOTA Grades 9-12 Core Math	WorkKeys Applied Mathematics Level Skills
• Make a box-and-whisker plot to model a set of one-variable data.	
• Make a histogram from a frequency distribution.	
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1. Students are able to distinguish between experimental and theoretical probability. (Knowledge)	
9-12.S.2.2. Students are able to predict outcomes of simple events using given theoretical probabilities. (Comprehension)	
• Determine the sample space of an experiment.	

TABLE 2F

SOUTH DAKOTA Grades 9-12 Advanced Math	EXPLORE Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1A. Students are able to write equivalent forms of rational algebraic expressions using properties of real numbers. (Application)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Combine like terms (e.g., $2x + 5x$) Add and subtract simple algebraic expressions
9-12.A.1.2A. Students are able to extend the use of real number properties to expressions involving complex numbers. (Application)	
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1A. Students are able to determine solutions of quadratic equations. (Analysis)	
• Use the quadratic formula.	
• Use the discriminant, $b^2 - 4ac$, to describe the nature of the roots.	
9-12.A.2.2A. Students are able to determine the solution of systems of equations and systems of inequalities. (Application)	
9-12.A.2.3A. Students are able to determine solutions to absolute value statements. (Application)	
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1A. Students are able to distinguish between linear, quadratic, inverse variation, and exponential models. (Analysis)	
9-12.A.3.2A. Students are able to create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. (Synthesis)	**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)
9-12.A.3.3A. Students are able to use sequences and series to model relationships. (Analysis)	**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)
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1A. Students are able to determine the domain, range, and intercepts of a function. (Analysis)	
9-12.A.4.2A. Students are able to describe the behavior of a polynomial, given the leading coefficient, roots, and degree. (Analysis)	

TABLE 2F

SOUTH DAKOTA Grades 9-12 Advanced Math	EXPLORE Mathematics College Readiness Standards
9-12.A.4.3A. Students are able to apply transformations to graphs and describe the results. (Analysis)	
• Change coefficients and/or constants.	
• Graph the inverse of a function.	
9-12.A.4.4A. Students are able to apply properties and definitions of trigonometric, exponential, and logarithmic expressions. (Application)	
9-12.A.4.5A. Students are able to describe characteristics of nonlinear functions and relations. (Analysis)	
• Conic sections	
• Trigonometric functions	
• Exponential and logarithmic functions	
9-12.A.4.6A. Students are able to graph solutions to linear inequalities. (Application)	
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1A. Students are able to justify properties of geometric figures. (Evaluation)	
9-12.G.1.2A. Students are able to determine the values of the sine, cosine, and tangent ratios of right triangles. (Evaluation)	
9-12.G.1.3A. Students are able to apply properties associated with circles. (Application)	
9-12.G.1.4A. Students are able to use formulas for surface area and volume to solve problems involving three-dimensional figures. (Analysis)	**Measurement:** Use geometric formulas when all necessary information is given
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1A. Students are able to use Cartesian coordinates to verify geometric properties. (Synthesis)	
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1A. Students are able to use dimensional analysis to check answers and determine units of a problem solution. (Application)	
9-12.M.1.2A. Students are able to use indirect measurement in problem situations that defy direct measurement. (Analysis)	

TABLE 2F

SOUTH DAKOTA Grades 9-12 Advanced Math	EXPLORE Mathematics College Readiness Standards
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1A. Students are able to describe the relationship of the real number system to the complex number system. (Comprehension)	
9-12.N.1.2A. Students are able to apply properties and axioms of the real number system to various subsets, e.g., axioms of order, closure. (Application)	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1A. Students are able to add, subtract, multiply, and divide real numbers including rational exponents. (Application)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents*
• Simplify numeric expressions with radicals.	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1A. Students are able to analyze and evaluate the design of surveys and experiments. (Evaluation)	
9-12.S.1.2A. Students are able to analyze and evaluate graphical displays of data. (Evaluation)	
9-12.S.1.3A. Students are able to compare multiple one-variable data sets, using standard deviation and variance. (Analysis)	
• Calculate the standard deviation and variance of a data set.	
9-12.S.1.4A. Students are able to describe the normal curve and use it to make predictions.	

TABLE 2F

SOUTH DAKOTA Grades 9-12 Advanced Math	EXPLORE Mathematics College Readiness Standards
9-12.S.1.5A. Students are able to use scatterplots, best-fit lines, and correlation coefficients to model data and support conclusions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Perform computations on data from tables and graphs
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1A. Students are able to use probabilities to solve problems. (Application)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Compute combinations, permutations.	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Interpret tables.	**Probability, Statistics, & Data Analysis:** Read tables and graphs
• Create and use tree diagrams.	**Probability, Statistics, & Data Analysis:** Read tables and graphs
9-12.S.2.2A. Students are able to determine probability of compound, complementary, independent, and mutually exclusive events. (Application)	**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
9-12.S.2.3A. Students are able to generate data and use the data to determine empirical (experimental) probabilities. (Analysis)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations

TABLE 2G

SOUTH DAKOTA Grades 9-12 Advanced Math	PLAN Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1A. Students are able to write equivalent forms of rational algebraic expressions using properties of real numbers. (Application)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as *b* + *g*) Combine like terms (e.g., 2*x* + 5*x*) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Manipulate expressions and equations
9-12.A.1.2A. Students are able to extend the use of real number properties to expressions involving complex numbers. (Application)	
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1A. Students are able to determine solutions of quadratic equations. (Analysis)	**Expressions, Equations, & Inequalities:** Solve quadratic equations
• Use the quadratic formula.	**Expressions, Equations, & Inequalities:** Solve quadratic equations
• Use the discriminant, $b^2 - 4ac$, to describe the nature of the roots.	**Expressions, Equations, & Inequalities:** Solve quadratic equations
9-12.A.2.2A. Students are able to determine the solution of systems of equations and systems of inequalities. (Application)	**Expressions, Equations, & Inequalities:** Find solutions to systems of linear equations
9-12.A.2.3A. Students are able to determine solutions to absolute value statements. (Application)	**Expressions, Equations, & Inequalities:** Solve absolute value equations
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1A. Students are able to distinguish between linear, quadratic, inverse variation, and exponential models. (Analysis)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
9-12.A.3.2A. Students are able to create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. (Synthesis)	**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)

TABLE 2G

SOUTH DAKOTA Grades 9-12 Advanced Math	PLAN Mathematics College Readiness Standards
9-12.A.3.3A. Students are able to use sequences and series to model relationships. (Analysis)	**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
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1A. Students are able to determine the domain, range, and intercepts of a function. (Analysis)	
9-12.A.4.2A. Students are able to describe the behavior of a polynomial, given the leading coefficient, roots, and degree. (Analysis)	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane
9-12.A.4.3A. Students are able to apply transformations to graphs and describe the results. (Analysis)	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane
• Change coefficients and/or constants.	
• Graph the inverse of a function.	
9-12.A.4.4A. Students are able to apply properties and definitions of trigonometric, exponential, and logarithmic expressions. (Application)	
9-12.A.4.5A. Students are able to describe characteristics of nonlinear functions and relations. (Analysis)	
• Conic sections	**Graphical Representations:** Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)
• Trigonometric functions	
• Exponential and logarithmic functions	
9-12.A.4.6A. Students are able to graph solutions to linear inequalities. (Application)	**Graphical Representations:** Match number line graphs with solution sets of linear inequalities
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1A. Students are able to justify properties of geometric figures. (Evaluation)	
9-12.G.1.2A. Students are able to determine the values of the sine, cosine, and tangent ratios of right triangles. (Evaluation)	

TABLE 2G

SOUTH DAKOTA Grades 9-12 Advanced Math	PLAN Mathematics College Readiness Standards
9-12.G.1.3A. Students are able to apply properties associated with circles. (Application)	
9-12.G.1.4A. Students are able to use formulas for surface area and volume to solve problems involving three-dimensional figures. (Analysis)	**Measurement:** Use geometric formulas when all necessary information is given
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1A. Students are able to use Cartesian coordinates to verify geometric properties. (Synthesis)	**Graphical Representations:** Determine the slope of a line from points or equations Find the midpoint of a line segment 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
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1A. Students are able to use dimensional analysis to check answers and determine units of a problem solution. (Application)	
9-12.M.1.2A. Students are able to use indirect measurement in problem situations that defy direct measurement. (Analysis)	
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1A. Students are able to describe the relationship of the real number system to the complex number system. (Comprehension)	
9-12.N.1.2A. Students are able to apply properties and axioms of the real number system to various subsets, e.g., axioms of order, closure. (Application)	**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

SOUTH DAKOTA Grades 9-12 Advanced Math	PLAN Mathematics College Readiness Standards
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1A. Students are able to add, subtract, multiply, and divide real numbers including rational exponents. (Application)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents
• Simplify numeric expressions with radicals.	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work with cubes and cube roots of numbers
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1A. Students are able to analyze and evaluate the design of surveys and experiments. (Evaluation)	
9-12.S.1.2A. Students are able to analyze and evaluate graphical displays of data. (Evaluation)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs
9-12.S.1.3A. Students are able to compare multiple one-variable data sets, using standard deviation and variance. (Analysis)	
• Calculate the standard deviation and variance of a data set.	
9-12.S.1.4A. Students are able to describe the normal curve and use it to make predictions.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Perform computations on data from tables and graphs Manipulate data from tables and graphs

TABLE 2G

SOUTH DAKOTA Grades 9-12 Advanced Math	PLAN Mathematics College Readiness Standards
9-12.S.1.5A. Students are able to use scatterplots, best-fit lines, and correlation coefficients to model data and support conclusions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Perform computations on data from tables and graphs Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1A. Students are able to use probabilities to solve problems. (Application)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Compute combinations, permutations.	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Interpret tables.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs
• Create and use tree diagrams.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs
9-12.S.2.2A. Students are able to determine probability of compound, complementary, independent, and mutually exclusive events. (Application)	**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 Compute a probability when the event and/or sample space are not given or obvious
9-12.S.2.3A. Students are able to generate data and use the data to determine empirical (experimental) probabilities. (Analysis)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations Compute a probability when the event and/or sample space are not given or obvious

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1A. Students are able to write equivalent forms of rational algebraic expressions using properties of real numbers. (Application)	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as *b* + *g*) Combine like terms (e.g., 2*x* + 5*x*) Add and subtract simple algebraic expressions Multiply two binomials Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Manipulate expressions and equations
9-12.A.1.2A. Students are able to extend the use of real number properties to expressions involving complex numbers. (Application)	**Numbers: Concepts & Properties:** Exhibit some knowledge of the complex numbers
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1A. Students are able to determine solutions of quadratic equations. (Analysis)	**Expressions, Equations, & Inequalities:** Solve quadratic equations
• Use the quadratic formula.	**Expressions, Equations, & Inequalities:** Solve quadratic equations
• Use the discriminant, $b^2 - 4ac$, to describe the nature of the roots.	**Expressions, Equations, & Inequalities:** Solve quadratic equations
9-12.A.2.2A. Students are able to determine the solution of systems of equations and systems of inequalities. (Application)	**Expressions, Equations, & Inequalities:** Find solutions to systems of linear equations
9-12.A.2.3A. Students are able to determine solutions to absolute value statements. (Application)	**Expressions, Equations, & Inequalities:** Solve absolute value equations Solve simple absolute value inequalities
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1A. Students are able to distinguish between linear, quadratic, inverse variation, and exponential models. (Analysis)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs 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

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
9-12.A.3.2A. Students are able to create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. (Synthesis)	**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 equations and inequalities that require planning, manipulating, and/or solving **Properties of Plane Figures:** Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas **Functions:** Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths
9-12.A.3.3A. Students are able to use sequences and series to model relationships. (Analysis)	**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 **Numbers: Concepts & Properties:** Exhibit knowledge of logarithms and geometric sequences
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1A. Students are able to determine the domain, range, and intercepts of a function. (Analysis)	
9-12.A.4.2A. Students are able to describe the behavior of a polynomial, given the leading coefficient, roots, and degree. (Analysis)	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$ Analyze and draw conclusions based on information from graphs in the coordinate plane

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
9-12.A.4.3A. Students are able to apply transformations to graphs and describe the results. (Analysis)	**Graphical Representations:** Interpret and use information from graphs in the coordinate plane Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$ Analyze and draw conclusions based on information from graphs in the coordinate plane
• Change coefficients and/or constants.	**Graphical Representations:** 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
• Graph the inverse of a function.	**Graphical Representations:** Solve problems integrating multiple algebraic and/or geometric concepts
9-12.A.4.4A. Students are able to apply properties and definitions of trigonometric, exponential, and logarithmic expressions. (Application)	**Numbers: Concepts & Properties:** Exhibit knowledge of logarithms and geometric sequences **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
9-12.A.4.5A. Students are able to describe characteristics of nonlinear functions and relations. (Analysis)	**Graphical Representations:** Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
• Conic sections	**Graphical Representations:** Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle) Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
• Trigonometric functions	
• Exponential and logarithmic functions	**Numbers: Concepts & Properties:** Exhibit knowledge of logarithms and geometric sequences **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
9-12.A.4.6A. Students are able to graph solutions to linear inequalities. (Application)	**Graphical Representations:** Match number line graphs with solution sets of linear inequalities

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1A. Students are able to justify properties of geometric figures. (Evaluation)	
9-12.G.1.2A. Students are able to determine the values of the sine, cosine, and tangent ratios of right triangles. (Evaluation)	**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
9-12.G.1.3A. Students are able to apply properties associated with circles. (Application)	**Graphical Representations:** Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)
9-12.G.1.4A. Students are able to use formulas for surface area and volume to solve problems involving three-dimensional figures. (Analysis)	**Measurement:** Use geometric formulas when all necessary information is given
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1A. Students are able to use Cartesian coordinates to verify geometric properties. (Synthesis)	**Graphical Representations:** Determine the slope of a line from points or equations Find the midpoint of a line segment 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 Analyze and draw conclusions based on information from graphs in the coordinate plane
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1A. Students are able to use dimensional analysis to check answers and determine units of a problem solution. (Application)	
9-12.M.1.2A. Students are able to use indirect measurement in problem situations that defy direct measurement. (Analysis)	**Properties of Plane Figures:** Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1A. Students are able to describe the relationship of the real number system to the complex number system. (Comprehension)	**Numbers: Concepts & Properties:** Exhibit some knowledge of the complex numbers
9-12.N.1.2A. Students are able to apply properties and axioms of the real number system to various subsets, e.g., axioms of order, closure. (Application)	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1A. Students are able to add, subtract, multiply, and divide real numbers including rational exponents. (Application)	**Basic Operations & Applications:** Perform one-operation computation with whole numbers and decimals Solve problems in one or two steps using whole numbers Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems **Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Apply rules of exponents
• Simplify numeric expressions with radicals.	**Numbers: Concepts & Properties:** Work with squares and square roots of numbers Work with cubes and cube roots of numbers
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1A. Students are able to analyze and evaluate the design of surveys and experiments. (Evaluation)	**Probability, Statistics, & Data Analysis:** Analyze and draw conclusions based on information from figures, tables, and graphs
9-12.S.1.2A. Students are able to analyze and evaluate graphical displays of data. (Evaluation)	**Probability, Statistics, & Data Analysis:** Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
9-12.S.1.3A. Students are able to compare multiple one-variable data sets, using standard deviation and variance. (Analysis)	
• Calculate the standard deviation and variance of a data set.	
9-12.S.1.4A. Students are able to describe the normal curve and use it to make predictions.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Perform computations on data from tables and graphs Manipulate data from tables and graphs
9-12.S.1.5A. Students are able to use scatterplots, best-fit lines, and correlation coefficients to model data and support conclusions. (Application)	**Probability, Statistics, & Data Analysis:** Read tables and graphs Perform computations on data from tables and graphs Interpret and use information from figures, tables, and graphs **Graphical Representations:** Interpret and use information from graphs in the coordinate plane
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1A. Students are able to use probabilities to solve problems. (Application)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Compute combinations, permutations.	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations
• Interpret tables.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs
• Create and use tree diagrams.	**Probability, Statistics, & Data Analysis:** Read tables and graphs Interpret and use information from figures, tables, and graphs

TABLE 2H

SOUTH DAKOTA Grades 9-12 Advanced Math	ACT Mathematics College Readiness Standards
9-12.S.2.2A. Students are able to determine probability of compound, complementary, independent, and mutually exclusive events. (Application)	**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 Compute a probability when the event and/or sample space are not given or obvious
9-12.S.2.3A. Students are able to generate data and use the data to determine empirical (experimental) probabilities. (Analysis)	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Compute straightforward probabilities for common situations Compute a probability when the event and/or sample space are not given or obvious

TABLE 2I

SOUTH DAKOTA Grades 9-12 Advanced Math	WorkKeys Applied Mathematics Level Skills
Algebra	
Indicator 1: Use procedures to transform algebraic expressions.	
9-12.A.1.1A. Students are able to write equivalent forms of rational algebraic expressions using properties of real numbers. (Application)	
9-12.A.1.2A. Students are able to extend the use of real number properties to expressions involving complex numbers. (Application)	
Indicator 2: Use a variety of algebraic concepts and methods to solve equations and inequalities.	
9-12.A.2.1A. Students are able to determine solutions of quadratic equations. (Analysis)	
• Use the quadratic formula.	
• Use the discriminant, $b^2 - 4ac$, to describe the nature of the roots.	
9-12.A.2.2A. Students are able to determine the solution of systems of equations and systems of inequalities. (Application)	
9-12.A.2.3A. Students are able to determine solutions to absolute value statements. (Application)	
Indicator 3: Interpret and develop mathematical models.	
9-12.A.3.1A. Students are able to distinguish between linear, quadratic, inverse variation, and exponential models. (Analysis)	
9-12.A.3.2A. Students are able to create formulas to model relationships that are algebraic, geometric, trigonometric, and exponential. (Synthesis)	
9-12.A.3.3A. Students are able to use sequences and series to model relationships. (Analysis)	
Indicator 4: Describe and use properties and behaviors of relations, functions, and inverses.	
9-12.A.4.1A. Students are able to determine the domain, range, and intercepts of a function. (Analysis)	
9-12.A.4.2A. Students are able to describe the behavior of a polynomial, given the leading coefficient, roots, and degree. (Analysis)	
9-12.A.4.3A. Students are able to apply transformations to graphs and describe the results. (Analysis)	
• Change coefficients and/or constants.	
• Graph the inverse of a function.	

TABLE 2I

SOUTH DAKOTA Grades 9-12 Advanced Math	WorkKeys Applied Mathematics Level Skills
9-12.A.4.4A. Students are able to apply properties and definitions of trigonometric, exponential, and logarithmic expressions. (Application)	
9-12.A.4.5A. Students are able to describe characteristics of nonlinear functions and relations. (Analysis)	
• Conic sections	
• Trigonometric functions	
• Exponential and logarithmic functions	
9-12.A.4.6A. Students are able to graph solutions to linear inequalities. (Application)	
Geometry	
Indicator 1: Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	
9-12.G.1.1A. Students are able to justify properties of geometric figures. (Evaluation)	
9-12.G.1.2A. Students are able to determine the values of the sine, cosine, and tangent ratios of right triangles. (Evaluation)	
9-12.G.1.3A. Students are able to apply properties associated with circles. (Application)	
9-12.G.1.4A. Students are able to use formulas for surface area and volume to solve problems involving three-dimensional figures. (Analysis)	Put the information in the right order before performing calculations Decide what information, calculations, or unit conversions to use to solve the problem Rearrange a formula before solving a problem Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Find the volume of rectangular solids Solve problems that include nonlinear functions and/or that involve more than one unknown Calculate multiple areas and volumes of spheres, cylinders, or cones
Indicator 2: Use properties of geometric figures to solve problems from a variety of perspectives.	
9-12.G.2.1A. Students are able to use Cartesian coordinates to verify geometric properties. (Synthesis)	
Measurement	
Indicator 1: Apply measurement concepts in practical applications.	
9-12.M.1.1A. Students are able to use dimensional analysis to check answers and determine units of a problem solution. (Application)	

TABLE 2I

SOUTH DAKOTA Grades 9-12 Advanced Math	WorkKeys Applied Mathematics Level Skills
9-12.M.1.2A. Students are able to use indirect measurement in problem situations that defy direct measurement. (Analysis)	
Number Sense	
Indicator 1: Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	
9-12.N.1.1A. Students are able to describe the relationship of the real number system to the complex number system. (Comprehension)	
9-12.N.1.2A. Students are able to apply properties and axioms of the real number system to various subsets, e.g., axioms of order, closure. (Application)	
Indicator 2: Apply number operations with real numbers and other number systems.	
9-12.N.2.1A. Students are able to add, subtract, multiply, and divide real numbers including rational exponents. (Application)	
• Simplify numeric expressions with radicals.	
Indicator 3: Develop conjectures, predictions, or estimations to solve problems and verify or justify the results.	
Statistics & Probability	
Indicator 1: Use statistical models to gather, analyze, and display data to draw conclusions.	
9-12.S.1.1A. Students are able to analyze and evaluate the design of surveys and experiments. (Evaluation)	
9-12.S.1.2A. Students are able to analyze and evaluate graphical displays of data. (Evaluation)	
9-12.S.1.3A. Students are able to compare multiple one-variable data sets, using standard deviation and variance. (Analysis)	
• Calculate the standard deviation and variance of a data set.	
9-12.S.1.4A. Students are able to describe the normal curve and use it to make predictions.	
9-12.S.1.5A. Students are able to use scatterplots, best-fit lines, and correlation coefficients to model data and support conclusions. (Application)	
Indicator 2: Apply the concepts of probability to predict events/outcomes and solve problems.	
9-12.S.2.1A. Students are able to use probabilities to solve problems. (Application)	
• Compute combinations, permutations.	

TABLE 2I

SOUTH DAKOTA Grades 9-12 Advanced Math	WorkKeys Applied Mathematics Level Skills
• Interpret tables.	
• Create and use tree diagrams.	
9-12.S.2.2A. Students are able to determine probability of compound, complementary, independent, and mutually exclusive events. (Application)	
9-12.S.2.3A. Students are able to generate data and use the data to determine empirical (experimental) probabilities. (Analysis)	

Supplement
TABLES 3A–3I

Science

TABLE 3A

SOUTH DAKOTA Grade 8 Science	EXPLORE Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
8.N.1.1. Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations. (Comprehension)	
• Define fact, predictions, theory, and law/principle.	
• Discuss how theory can become law.	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
8.N.2.1. Students are able to design a replicable scientific investigation. (Synthesis)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design
• Use appropriate supportive technologies.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Assess the limits of accuracy inherent in a particular measuring device or procedure.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Control variables to test hypotheses by repeated trials and by identifying sources of experimental error.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
• Interpret data to justify predictions or conclusions.	**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

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TABLE 3A

SOUTH DAKOTA Grade 8 Science	EXPLORE Science College Readiness Standards
	Evaluation of Models, Inferences, and Experimental Results: Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
• Use research methods to investigate practical and/or personal scientific problems and questions.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand a simple experimental design Identify a control in an experiment
• Select appropriate scientific equipment and technologies for investigations and experiments.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Use proper safety procedures in all investigations.	
• Wear appropriate attire.	
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
8.P.1.1. Students are able to classify matter as elements, compounds, or mixtures. (Analysis)	
8.P.1.2. Students are able to use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals. (Application)	
• Describe the relationship between the organization and the predictive nature of the Periodic Table.	
• Use the Bohr model to show the arrangement of the subatomic particles of atomic numbers 1 through 18.	
8.P.1.3. Students are able to compare properties of matter resulting from physical and chemical changes. (Comprehension)	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
Indicator 3: Analyze interactions of energy and matter.	

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TABLE 3A

SOUTH DAKOTA Grade 8 Science	EXPLORE Science College Readiness Standards
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
8.E.1.1. Students are able to identify and classify minerals and rocks. (Application)	
• Rocks as sedimentary, igneous, or metamorphic.	
• Rock Cycle	
• Minerals as carbonates (CO3) or Silicates (SiO2)	
8.E.1.2. Students are able to explain the role of plate tectonics in shaping Earth. (Analysis)	
• Plates boundaries	
• Volcanoes	
• Earthquakes	
• Seismic waves	
• Mountains	
• Convection currents in the mantle	
• Changes over time	
8.E.1.3. Students are able to explain the factors that create weather and the instruments and technologies that assess it. (Analysis)	
• Differentiate between climate and climate zones.	
8.E.1.4. Students are able to examine the chemical and physical properties of the ocean to determine causes and effects of currents and waves. (Application)	
8.E.1.5. Students are able to explain the impact of weathering and erosion on the Earth. (Analysis)	
• Soil formation	
• Deposition (deltas)	
• Land transformations (Grand Canyon)	
• Glaciation	

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TABLE 3A

SOUTH DAKOTA Grade 8 Science	EXPLORE Science College Readiness Standards
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
8.E.2.1. Students are able to compare celestial bodies within the solar system using composition, size, and orbital motion. (Analysis)	
• Describe the composition of the Sun, the planets, asteroids, and comets.	
8.E.2.2. Students are able to differentiate the influences of the relative positions of the Earth, Moon, and Sun. (Analysis)	
• Lunar and solar eclipses, moon phases, tides, seasons	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
8.S.1.1. Students are able to describe how science and technology have been influenced by social needs, attitudes, and values. (Comprehension)	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	
8.S.2.1. Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.	

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
9-12.N.1.1. Students are able to evaluate a scientific discovery to determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations. (Evaluation)	
• Recognize scientific knowledge is not merely a set of static facts but is dynamic and affords the best current explanations.	
• Discuss how progress in science can be affected by social issues.	
9-12.N.1.2. Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws. (Synthesis)	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
• Research, communicate, and support a scientific argument.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
• Recognize and analyze alternative explanations and models.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models Identify strengths and weaknesses in one or more models Identify similarities and differences between models

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Evaluate the scientific accuracy of information relevant to a specific issue (pseudo-science).	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Determine which model(s) is(are) supported or weakened by new information
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1. Students are able to apply science process skills to design and conduct student investigations. (Synthesis)	**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 **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
• Identify the questions and concepts to guide the development of hypotheses.	**Scientific Investigation:** Understand a simple experimental design

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Analyze primary sources of information to guide the development of the procedure.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
• Select and use appropriate instruments to extend observations and measurements.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Revise explanations and models based on evidence and logic.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Identify similarities and differences between models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Use technology and mathematic skills to enhance investigations, communicate results, and defend conclusions.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
9-12.N.2.2. Students are able to practice safe and effective laboratory techniques. (Application)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Handle hazardous materials properly.	
• Use safety equipment correctly.	
• Practice emergency procedure.	
• Wear appropriate attire.	
• Practice safe behaviors.	

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
9-12.P.1.1. Students are able to use the Periodic Table to determine the atomic structure of elements, valence number, family relationships, and regions (metals, nonmetals, and metalloids). (Analysis)	
• Determine protons, neutrons, electrons, mass number, and atomic number from the Periodic Table.	
• Determine the number of valence electrons for elements in the main (s&p) blocks of the Periodic Table.	
• Identify the relative metallic character of an element based on its location on the Periodic Table.	
9-12.P.1.2. Students are able to describe ways that atoms combine. (Comprehension)	
• Name and write formulas for binary ionic and covalent compounds.	
• Compare the roles of electrons in covalent, ionic, and metallic bonding.	
• Discuss the special nature of carbon covalent bonds.	
9-12.P.1.3. Students are able to predict whether reactions will speed up or slow down as conditions change. (Application)	
9-12.P.1.4. Students are able to balance chemical equations by applying the Law of Conservation of Matter. (Application)	
• Trace number of particles in diagrams and pictures of balanced equations.	
9-12.P.1.5. Students are able to distinguish among chemical, physical, and nuclear changes. (Comprehension)	
• Differentiate between physical and chemical properties used to describe matter.	
• Identify key indicators of chemical and physical changes.	
• Describe the effects of changing pressure, volume, or temperature upon gases.	

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Identify characteristics of a solution and factors that affect the rate of solution formation.	
• Explain the differences among nuclear, chemical, and physical changes at the atomic level.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1. Students are able to apply concepts of distance and time to the quantitative relationships of motion using appropriate mathematical formulas, equations, and units. (Analysis)	
• Evaluate speed, velocity, and acceleration both qualitatively and quantitatively.	
• Given distance and time, calculate the velocity or speed of an object.	
• Create and interpret graphs of linear motion.	
• Distinguish between velocity and acceleration as related to force.	
9-12.P.2.2. Students are able to predict motion of an object using Newton's Laws. (Application)	
• Describe how inertia is related to Newton's First Law.	
• Explain the effect of balanced and unbalanced forces.	
• Identify the forces at work on action/reaction pairs as distinguished from balanced forces.	
• Explain how force, mass, and acceleration are related.	
9-12.P.2.3. Students are able to relate concepts of force, distance, and time to the quantitative relationships of work, energy, and power. (Application)	
• Apply appropriate mathematical formulas and equations to concepts using appropriate units.	

TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1. Students are able to describe the relationships among potential energy, kinetic energy, and work as applied to the Law of Conservation of Energy. (Application)	
• Describe how energy can be transferred and transformed to produce useful work.	
• Given the formulas, calculate the mechanical advantage and efficiency of selected systems.	
• Explain methods of heat transfer.	
9-12.P.3.2. Students are able to describe how characteristics of waves are related to one another. (Comprehension)	
• Relate wavelength, speed, and frequency ($v = f$).	
• Distinguish between transverse and longitudinal waves.	
9-12.P.3.3. Students are able to describe electrical effects in terms of motion and concentrations of charged particles. (Application)	
• Relate potential difference to current.	
• Describe how static electricity is different from current electricity.	
• Interpret and apply Ohm's Law.	
• Describe electrical attractions and repulsions.	
• Describe how magnetism originates from motion of charged particles.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1. Students are able to relate cellular functions and processes to specialized structures within cells. (Analysis)	
• Transport	
• Photosynthesis and respiration	
• Storage and transfer of genetic information	

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Cell life cycles	
9-12.L.1.2. Students are able to classify organisms using characteristics and evolutionary relationship of major taxa. (Application)	
• Kingdoms	
• Phyla	
9-12.L.1.3. Students are able to identify structures and function relationships within major taxa. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1. Students are able to predict inheritance patterns using a single allele. (Application)	
• Solve problems involving simple dominance, co-dominance, and sex-linked traits using Punnett squares for F1 and F2 generations.	
• Discuss disorders resulting from alteration of a single gene.	
9-12.L.2.2. Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species. (Synthesis)	
• Use comparative anatomy to support evolutionary relationships.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1. Students are able to identify factors that can cause changes in stability of populations, communities, and ecosystems. (Comprehension)	
• Define populations, communities, ecosystems, niches and symbiotic relationships.	
• Predict the results of biotic and abiotic interactions.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1. Students are able to explain how elements and compounds cycle between living and non-living systems. (Comprehension)	
• Diagram and describe the N, C, O and H_2O cycles.	

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TABLE 3B

SOUTH DAKOTA Grades 9-12 Core Science	EXPLORE Science College Readiness Standards
• Describe the importance of the N, C, O and H_2O cycles to life on this planet.	
9-12.E.1.2. Students are able to describe how atmospheric chemistry may affect global climate. (Application)	
9-12.E.1.3. Students are able to assess how human activity has changed the land, ocean, and atmosphere of Earth. (Analysis)	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1. Students are able to recognize how Newtonian mechanics can be applied to the study of the motions of the solar system. (Comprehension)	
• Given a set of possible explanations of orbital motion (revolution), identify those that make use of gravitational forces and inertia.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
9-12.S.1.1. Students are able to explain ethical roles and responsibilities of scientists and scientific research. (Application)	
9-12.S.1.2. Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues. (Evaluation)	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	
9-12.S.2.1. Students are able to describe immediate and long-term consequences of potential solutions for technological issues. (Evaluation)	
• Describe how the pertinent technological system operates.	
9-12.S.2.2. Students are able to analyze factors that could limit technological design. (Analysis)	
9-12.S.2.3. Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources. (Synthesis)	

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_____ = Content sampled by EXPLORE Science Test

TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
9-12.N.1.1. Students are able to evaluate a scientific discovery to determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations. (Evaluation)	
• Recognize scientific knowledge is not merely a set of static facts but is dynamic and affords the best current explanations.	
• Discuss how progress in science can be affected by social issues.	
9-12.N.1.2. Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws. (Synthesis)	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion Determine whether new information supports or weakens a model, and why
• Research, communicate, and support a scientific argument.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
• Recognize and analyze alternative explanations and models.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models Identify strengths and weaknesses in one or more models Identify similarities and differences between models

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Evaluate the scientific accuracy of information relevant to a specific issue (pseudo-science).	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Determine which model(s) is(are) supported or weakened by new information
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1. Students are able to apply science process skills to design and conduct student investigations. (Synthesis)	**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 **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 Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why
• Identify the questions and concepts to guide the development of hypotheses.	**Scientific Investigation:** Understand a simple experimental design Determine the hypothesis for an experiment

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Analyze primary sources of information to guide the development of the procedure.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
• Select and use appropriate instruments to extend observations and measurements.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Revise explanations and models based on evidence and logic.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Identify similarities and differences between models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion Determine whether new information supports or weakens a model, and why

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Use technology and mathematic skills to enhance investigations, communicate results, and defend conclusions.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
9-12.N.2.2. Students are able to practice safe and effective laboratory techniques. (Application)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Handle hazardous materials properly.	
• Use safety equipment correctly.	
• Practice emergency procedure.	
• Wear appropriate attire.	
• Practice safe behaviors.	

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter	
9-12.P.1.1. Students are able to use the Periodic Table to determine the atomic structure of elements, valence number, family relationships, and regions (metals, nonmetals, and metalloids). (Analysis)	
• Determine protons, neutrons, electrons, mass number, and atomic number from the Periodic Table.	
• Determine the number of valence electrons for elements in the main (s&p) blocks of the Periodic Table.	
• Identify the relative metallic character of an element based on its location on the Periodic Table.	
9-12.P.1.2. Students are able to describe ways that atoms combine. (Comprehension)	
• Name and write formulas for binary ionic and covalent compounds.	
• Compare the roles of electrons in covalent, ionic, and metallic bonding.	
• Discuss the special nature of carbon covalent bonds.	
9-12.P.1.3. Students are able to predict whether reactions will speed up or slow down as conditions change. (Application)	
9-12.P.1.4. Students are able to balance chemical equations by applying the Law of Conservation of Matter. (Application)	
• Trace number of particles in diagrams and pictures of balanced equations.	
9-12.P.1.5. Students are able to distinguish among chemical, physical, and nuclear changes. (Comprehension)	
• Differentiate between physical and chemical properties used to describe matter.	
• Identify key indicators of chemical and physical changes.	
• Describe the effects of changing pressure, volume, or temperature upon gases.	

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Identify characteristics of a solution and factors that affect the rate of solution formation.	
• Explain the differences among nuclear, chemical, and physical changes at the atomic level.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1. Students are able to apply concepts of distance and time to the quantitative relationships of motion using appropriate mathematical formulas, equations, and units. (Analysis)	
• Evaluate speed, velocity, and acceleration both qualitatively and quantitatively.	
• Given distance and time, calculate the velocity or speed of an object.	
• Create and interpret graphs of linear motion.	
• Distinguish between velocity and acceleration as related to force.	
9-12.P.2.2. Students are able to predict motion of an object using Newton's Laws. (Application)	
• Describe how inertia is related to Newton's First Law.	
• Explain the effect of balanced and unbalanced forces.	
• Identify the forces at work on action/reaction pairs as distinguished from balanced forces.	
• Explain how force, mass, and acceleration are related.	
9-12.P.2.3. Students are able to relate concepts of force, distance, and time to the quantitative relationships of work, energy, and power. (Application)	
• Apply appropriate mathematical formulas and equations to concepts using appropriate units.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1. Students are able to describe the relationships among potential energy, kinetic energy, and work as applied to the Law of Conservation of Energy. (Application)	

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Describe how energy can be transferred and transformed to produce useful work.	
• Given the formulas, calculate the mechanical advantage and efficiency of selected systems.	
• Explain methods of heat transfer.	
9-12.P.3.2. Students are able to describe how characteristics of waves are related to one another. (Comprehension)	
• Relate wavelength, speed, and frequency ($v = f$).	
• Distinguish between transverse and longitudinal waves.	
9-12.P.3.3. Students are able to describe electrical effects in terms of motion and concentrations of charged particles. (Application)	
• Relate potential difference to current.	
• Describe how static electricity is different from current electricity.	
• Interpret and apply Ohm's Law.	
• Describe electrical attractions and repulsions.	
• Describe how magnetism originates from motion of charged particles.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1. Students are able to relate cellular functions and processes to specialized structures within cells. (Analysis)	
• Transport	
• Photosynthesis and respiration	
• Storage and transfer of genetic information	
• Cell life cycles	
9-12.L.1.2. Students are able to classify organisms using characteristics and evolutionary relationship of major taxa. (Application)	

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
• Kingdoms	
• Phyla	
9-12.L.1.3. Students are able to identify structures and function relationships within major taxa. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1. Students are able to predict inheritance patterns using a single allele. (Application)	
• Solve problems involving simple dominance, co-dominance, and sex-linked traits using Punnett squares for F1 and F2 generations.	
• Discuss disorders resulting from alteration of a single gene.	
9-12.L.2.2. Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species. (Synthesis)	
• Use comparative anatomy to support evolutionary relationships.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1. Students are able to identify factors that can cause changes in stability of populations, communities, and ecosystems. (Comprehension)	
• Define populations, communities, ecosystems, niches and symbiotic relationships.	
• Predict the results of biotic and abiotic interactions.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1. Students are able to explain how elements and compounds cycle between living and non-living systems. (Comprehension)	
• Diagram and describe the N, C, O and H_2O cycles.	
• Describe the importance of the N, C, O and H_2O cycles to life on this planet.	
9-12.E.1.2. Students are able to describe how atmospheric chemistry may affect global climate. (Application)	

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TABLE 3C

SOUTH DAKOTA Grades 9-12 Core Science	PLAN Science College Readiness Standards
9-12.E.1.3. Students are able to assess how human activity has changed the land, ocean, and atmosphere of Earth. (Analysis)	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1. Students are able to recognize how Newtonian mechanics can be applied to the study of the motions of the solar system. (Comprehension)	
• Given a set of possible explanations of orbital motion (revolution), identify those that make use of gravitational forces and inertia.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
9-12.S.1.1. Students are able to explain ethical roles and responsibilities of scientists and scientific research. (Application)	
9-12.S.1.2. Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues. (Evaluation)	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	
9-12.S.2.1. Students are able to describe immediate and long-term consequences of potential solutions for technological issues. (Evaluation)	
• Describe how the pertinent technological system operates.	
9-12.S.2.2. Students are able to analyze factors that could limit technological design. (Analysis)	
9-12.S.2.3. Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources. (Synthesis)	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
9-12.N.1.1. Students are able to evaluate a scientific discovery to determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations. (Evaluation)	
• Recognize scientific knowledge is not merely a set of static facts but is dynamic and affords the best current explanations.	
• Discuss how progress in science can be affected by social issues.	
9-12.N.1.2. Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws. (Synthesis)	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion Determine whether new information supports or weakens a model, and why
• Research, communicate, and support a scientific argument.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
• Recognize and analyze alternative explanations and models.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models Identify strengths and weaknesses in one or more models Identify similarities and differences between models

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Evaluate the scientific accuracy of information relevant to a specific issue (pseudo-science).	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Determine which model(s) is(are) supported or weakened by new information
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1. Students are able to apply science process skills to design and conduct student investigations. (Synthesis)	**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 **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 Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why
• Identify the questions and concepts to guide the development of hypotheses.	**Scientific Investigation:** Understand a simple experimental design Determine the hypothesis for an experiment

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Analyze primary sources of information to guide the development of the procedure.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model
• Select and use appropriate instruments to extend observations and measurements.	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Revise explanations and models based on evidence and logic.	**Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Identify key issues or assumptions in a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Identify strengths and weaknesses in one or more models Identify similarities and differences between models Determine which model(s) is(are) supported or weakened by new information Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion Determine whether new information supports or weakens a model, and why

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Use technology and mathematic skills to enhance investigations, communicate results, and defend conclusions.	**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 **Evaluation of Models, Inferences, and Experimental Results:** Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model Determine whether given information supports or contradicts a simple hypothesis or conclusion, and why Select a data presentation or a model that supports or contradicts a hypothesis, prediction, or conclusion
9-12.N.2.2. Students are able to practice safe and effective laboratory techniques. (Application)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment
• Handle hazardous materials properly.	
• Use safety equipment correctly.	
• Practice emergency procedure.	
• Wear appropriate attire.	
• Practice safe behaviors.	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter	
9-12.P.1.1. Students are able to use the Periodic Table to determine the atomic structure of elements, valence number, family relationships, and regions (metals, nonmetals, and metalloids). (Analysis)	
• Determine protons, neutrons, electrons, mass number, and atomic number from the Periodic Table.	
• Determine the number of valence electrons for elements in the main (s&p) blocks of the Periodic Table.	
• Identify the relative metallic character of an element based on its location on the Periodic Table.	
9-12.P.1.2. Students are able to describe ways that atoms combine. (Comprehension)	
• Name and write formulas for binary ionic and covalent compounds.	
• Compare the roles of electrons in covalent, ionic, and metallic bonding.	
• Discuss the special nature of carbon covalent bonds.	
9-12.P.1.3. Students are able to predict whether reactions will speed up or slow down as conditions change. (Application)	
9-12.P.1.4. Students are able to balance chemical equations by applying the Law of Conservation of Matter. (Application)	
• Trace number of particles in diagrams and pictures of balanced equations.	
9-12.P.1.5. Students are able to distinguish among chemical, physical, and nuclear changes. (Comprehension)	
• Differentiate between physical and chemical properties used to describe matter.	
• Identify key indicators of chemical and physical changes.	
• Describe the effects of changing pressure, volume, or temperature upon gases.	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Identify characteristics of a solution and factors that affect the rate of solution formation.	
• Explain the differences among nuclear, chemical, and physical changes at the atomic level.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1. Students are able to apply concepts of distance and time to the quantitative relationships of motion using appropriate mathematical formulas, equations, and units. (Analysis)	
• Evaluate speed, velocity, and acceleration both qualitatively and quantitatively.	
• Given distance and time, calculate the velocity or speed of an object.	
• Create and interpret graphs of linear motion.	
• Distinguish between velocity and acceleration as related to force.	
9-12.P.2.2. Students are able to predict motion of an object using Newton's Laws. (Application)	
• Describe how inertia is related to Newton's First Law.	
• Explain the effect of balanced and unbalanced forces.	
• Identify the forces at work on action/reaction pairs as distinguished from balanced forces.	
• Explain how force, mass, and acceleration are related.	
9-12.P.2.3. Students are able to relate concepts of force, distance, and time to the quantitative relationships of work, energy, and power. (Application)	
• Apply appropriate mathematical formulas and equations to concepts using appropriate units.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1. Students are able to describe the relationships among potential energy, kinetic energy, and work as applied to the Law of Conservation of Energy. (Application)	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Describe how energy can be transferred and transformed to produce useful work.	
• Given the formulas, calculate the mechanical advantage and efficiency of selected systems.	
• Explain methods of heat transfer.	
9-12.P.3.2. Students are able to describe how characteristics of waves are related to one another. (Comprehension)	
• Relate wavelength, speed, and frequency ($v = f$).	
• Distinguish between transverse and longitudinal waves.	
9-12.P.3.3. Students are able to describe electrical effects in terms of motion and concentrations of charged particles. (Application)	
• Relate potential difference to current.	
• Describe how static electricity is different from current electricity.	
• Interpret and apply Ohm's Law.	
• Describe electrical attractions and repulsions.	
• Describe how magnetism originates from motion of charged particles.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1. Students are able to relate cellular functions and processes to specialized structures within cells. (Analysis)	
• Transport	
• Photosynthesis and respiration	
• Storage and transfer of genetic information	
• Cell life cycles	
9-12.L.1.2. Students are able to classify organisms using characteristics and evolutionary relationship of major taxa. (Application)	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
• Kingdoms	
• Phyla	
9-12.L.1.3. Students are able to identify structures and function relationships within major taxa. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1. Students are able to predict inheritance patterns using a single allele. (Application)	
• Solve problems involving simple dominance, co-dominance, and sex-linked traits using Punnett squares for F1 and F2 generations.	
• Discuss disorders resulting from alteration of a single gene.	
9-12.L.2.2. Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species. (Synthesis)	
• Use comparative anatomy to support evolutionary relationships.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1. Students are able to identify factors that can cause changes in stability of populations, communities, and ecosystems. (Comprehension)	
• Define populations, communities, ecosystems, niches and symbiotic relationships.	
• Predict the results of biotic and abiotic interactions.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1. Students are able to explain how elements and compounds cycle between living and non-living systems. (Comprehension)	
• Diagram and describe the N, C, O and H_2O cycles.	
• Describe the importance of the N, C, O and H_2O cycles to life on this planet.	
9-12.E.1.2. Students are able to describe how atmospheric chemistry may affect global climate. (Application)	

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TABLE 3D

SOUTH DAKOTA Grades 9-12 Core Science	ACT Science College Readiness Standards
9-12.E.1.3. Students are able to assess how human activity has changed the land, ocean, and atmosphere of Earth. (Analysis)	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1. Students are able to recognize how Newtonian mechanics can be applied to the study of the motions of the solar system. (Comprehension)	
• Given a set of possible explanations of orbital motion (revolution), identify those that make use of gravitational forces and inertia.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
9-12.S.1.1. Students are able to explain ethical roles and responsibilities of scientists and scientific research. (Application)	
9-12.S.1.2. Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues. (Evaluation)	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	
9-12.S.2.1. Students are able to describe immediate and long-term consequences of potential solutions for technological issues. (Evaluation)	
• Describe how the pertinent technological system operates.	
9-12.S.2.2. Students are able to analyze factors that could limit technological design. (Analysis)	
9-12.S.2.3. Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources. (Synthesis)	

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TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
9-12.N.1.1. Students are able to evaluate a scientific discovery to determine and describe how societal, cultural, and personal beliefs influence scientific investigations and interpretations. (Evaluation)	
• Recognize scientific knowledge is not merely a set of static facts but is dynamic and affords the best current explanations.	
• Discuss how progress in science can be affected by social issues.	
9-12.N.1.2. Students are able to describe the role of observation and evidence in the development and modification of hypotheses, theories, and laws. (Synthesis)	
• Research, communicate, and support a scientific argument.	
• Recognize and analyze alternative explanations and models.	
• Evaluate the scientific accuracy of information relevant to a specific issue (pseudo-science).	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1. Students are able to apply science process skills to design and conduct student investigations. (Synthesis)	
• Identify the questions and concepts to guide the development of hypotheses.	
• Analyze primary sources of information to guide the development of the procedure.	
• Select and use appropriate instruments to extend observations and measurements.	
• Revise explanations and models based on evidence and logic.	
• Use technology and mathematic skills to enhance investigations, communicate results, and defend conclusions.	
9-12.N.2.2. Students are able to practice safe and effective laboratory techniques. (Application)	
• Handle hazardous materials properly.	
• Use safety equipment correctly.	

TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
• Practice emergency procedure.	
• Wear appropriate attire.	
• Practice safe behaviors.	
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter	
9-12.P.1.1. Students are able to use the Periodic Table to determine the atomic structure of elements, valence number, family relationships, and regions (metals, nonmetals, and metalloids). (Analysis)	
• Determine protons, neutrons, electrons, mass number, and atomic number from the Periodic Table.	
• Determine the number of valence electrons for elements in the main (s&p) blocks of the Periodic Table.	
• Identify the relative metallic character of an element based on its location on the Periodic Table.	
9-12.P.1.2. Students are able to describe ways that atoms combine. (Comprehension)	
• Name and write formulas for binary ionic and covalent compounds.	
• Compare the roles of electrons in covalent, ionic, and metallic bonding.	
• Discuss the special nature of carbon covalent bonds.	
9-12.P.1.3. Students are able to predict whether reactions will speed up or slow down as conditions change. (Application)	
9-12.P.1.4. Students are able to balance chemical equations by applying the Law of Conservation of Matter. (Application)	
• Trace number of particles in diagrams and pictures of balanced equations.	
9-12.P.1.5. Students are able to distinguish among chemical, physical, and nuclear changes. (Comprehension)	
• Differentiate between physical and chemical properties used to describe matter.	

TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
• Identify key indicators of chemical and physical changes.	
• Describe the effects of changing pressure, volume, or temperature upon gases.	
• Identify characteristics of a solution and factors that affect the rate of solution formation.	
• Explain the differences among nuclear, chemical, and physical changes at the atomic level.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1. Students are able to apply concepts of distance and time to the quantitative relationships of motion using appropriate mathematical formulas, equations, and units. (Analysis)	
• Evaluate speed, velocity, and acceleration both qualitatively and quantitatively.	
• Given distance and time, calculate the velocity or speed of an object.	
• Create and interpret graphs of linear motion.	
• Distinguish between velocity and acceleration as related to force.	
9-12.P.2.2. Students are able to predict motion of an object using Newton's Laws. (Application)	
• Describe how inertia is related to Newton's First Law.	
• Explain the effect of balanced and unbalanced forces.	
• Identify the forces at work on action/reaction pairs as distinguished from balanced forces.	
• Explain how force, mass, and acceleration are related.	
9-12.P.2.3. Students are able to relate concepts of force, distance, and time to the quantitative relationships of work, energy, and power. (Application)	
• Apply appropriate mathematical formulas and equations to concepts using appropriate units.	

TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1. Students are able to describe the relationships among potential energy, kinetic energy, and work as applied to the Law of Conservation of Energy. (Application)	
• Describe how energy can be transferred and transformed to produce useful work.	
• Given the formulas, calculate the mechanical advantage and efficiency of selected systems.	
• Explain methods of heat transfer.	
9-12.P.3.2. Students are able to describe how characteristics of waves are related to one another. (Comprehension)	
• Relate wavelength, speed, and frequency ($v = f$).	
• Distinguish between transverse and longitudinal waves.	
9-12.P.3.3. Students are able to describe electrical effects in terms of motion and concentrations of charged particles. (Application)	
• Relate potential difference to current.	
• Describe how static electricity is different from current electricity.	
• Interpret and apply Ohm's Law.	
• Describe electrical attractions and repulsions.	
• Describe how magnetism originates from motion of charged particles.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1. Students are able to relate cellular functions and processes to specialized structures within cells. (Analysis)	
• Transport	
• Photosynthesis and respiration	
• Storage and transfer of genetic information	
• Cell life cycles	

TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
9-12.L.1.2. Students are able to classify organisms using characteristics and evolutionary relationship of major taxa. (Application)	
• Kingdoms	
• Phyla	
9-12.L.1.3. Students are able to identify structures and function relationships within major taxa. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1. Students are able to predict inheritance patterns using a single allele. (Application)	
• Solve problems involving simple dominance, co-dominance, and sex-linked traits using Punnett squares for F1 and F2 generations.	
• Discuss disorders resulting from alteration of a single gene.	
9-12.L.2.2. Students are able to describe how genetic recombination, mutations, and natural selection lead to adaptations, evolution, extinction, or the emergence of new species. (Synthesis)	
• Use comparative anatomy to support evolutionary relationships.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1. Students are able to identify factors that can cause changes in stability of populations, communities, and ecosystems. (Comprehension)	
• Define populations, communities, ecosystems, niches and symbiotic relationships.	
• Predict the results of biotic and abiotic interactions.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1. Students are able to explain how elements and compounds cycle between living and non-living systems. (Comprehension)	
• Diagram and describe the N, C, O and H_2O cycles.	

TABLE 3E

SOUTH DAKOTA Grades 9-12 Core Science	WorkKeys Locating Information Level Skills
• Describe the importance of the N, C, O and H_2O cycles to life on this planet.	
9-12.E.1.2. Students are able to describe how atmospheric chemistry may affect global climate. (Application)	
9-12.E.1.3. Students are able to assess how human activity has changed the land, ocean, and atmosphere of Earth. (Analysis)	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1. Students are able to recognize how Newtonian mechanics can be applied to the study of the motions of the solar system. (Comprehension)	
• Given a set of possible explanations of orbital motion (revolution), identify those that make use of gravitational forces and inertia.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
9-12.S.1.1. Students are able to explain ethical roles and responsibilities of scientists and scientific research. (Application)	
9-12.S.1.2. Students are able to evaluate and describe the impact of scientific discoveries on historical events and social, economic, and ethical issues. (Evaluation)	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	
9-12.S.2.1. Students are able to describe immediate and long-term consequences of potential solutions for technological issues. (Evaluation)	
• Describe how the pertinent technological system operates.	
9-12.S.2.2. Students are able to analyze factors that could limit technological design. (Analysis)	
9-12.S.2.3. Students are able to analyze and describe the benefits, limitations, cost, and consequences involved in using, conserving, or recycling resources. (Synthesis)	

TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1A. Students are able to manipulate multiple variables with repeated trials. (Synthesis)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand the methods and tools used in a moderately complex experiment Understand a simple experimental design Identify a control in an experiment Understand the methods and tools used in a complex experiment Understand a complex experimental design
• Use a control and change one variable at a time.	**Scientific Investigation:** Understand a simple experimental design Identify a control in an experiment
9-12.N.2.2A. Students are able to use statistical analysis of data to evaluate the validity of results. (Evaluation)	**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
• Use correlation coefficient with graphs.	
9-12.N.2.3A. Students are able to demonstrate correct precision in measurements and calculations. (Analysis)	
• Use significant digits to illustrate precision in measurement.	

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TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
• Factor label conversion, scientific notation.	**Interpretation of Data:** Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
9-12.P.1.1A. Students are able to distinguish between the changing models of the atom using the historical experimental evidence. (Analysis)	
9-12.P.1.2A. Students are able to predict electron configuration, ion formation, reactivity, compound formation, periodic trends, and types of compounds formed based on location on the Periodic Table. (Synthesis)	
9-12.P.1.3A. Students are able to identify five basic types of chemical reactions and predict the products. (Synthesis)	
• Single replacement, double replacement, synthesis, decomposition, and combustion reactions	
• Describe the properties and interactions of acids, bases, and salts.	
• Calculate pH, pOH, $[H_3O^+]$, $[OH^-]$.	
• Distinguish between Arrhenius, Bronsted-Lowry, and Lewis definitions of acids and bases.	
9-12.P.1.4A. Students are able to describe factors that affect solution interactions. (Synthesis)	
• Calculate concentration of solutions.	
• "Like dissolves like"	
• Vander Waal's forces	
9-12.P.1.5A. Students are able to examine energy transfer as matter changes. (Application)	
• Describe physical and chemical processes that result in endothermic and exothermic changes.	
• Describe energy transfer as matter changes from one phase to another.	
9-12.P.1.6A. Students are able to perform stoichiometric calculations. (Application)	

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TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
• Convert between moles, mass, particles, volume.	
• Calculate empirical and molecular formulas from mass percents.	
• Determine limiting and excess reactants and percent yield in chemical reactions.	
9-12.P.1.7A. Students are able to apply the kinetic molecular theory to solve quantitative problems involving pressure, volume, temperature, and number of moles of gas. (Application)	
• Apply Boyle's Law, Charles' Law, Gay-Lussac's Law, Combined Gas Law, and Ideal Gas Law.	
9-12.P.1.8A. Students are able to use models to make predictions about molecular structure, chemical bonds, chemical reactivity, and polarity of molecules. (Synthesis)	
• Create Lewis structures for molecules and polyatomic ions.	
• Determine molecular shape using VSEPR theory.	
• Determine the polarity of a molecule.	
9-12.P.1.9A. Students are able to describe the characteristics of equilibria. (Analysis)	
• Apply LeChatelier's principle to equilibrium reactions.	
• Identify factors that drive reactions toward completion.	
• Calculate K_{eq} values for equilibrium reactions.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1A. Students are able to solve vector problems graphically and analytically. (Synthesis)	
• Define and manipulate vectors and scalars.	
• Determine if an object is in equilibrium and distinguish among stable, neutral, and unstable equilibria.	
9-12.P.2.2A. Students are able to relate gravitational or centripetal force to projectile or uniform circular motion. (Analysis)	

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TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
• Analyze and graph projectile motion.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1A. Students are able to explain wave behavior in the fundamental processes of reflection, refraction, diffraction, interference, resonance, and image formation. (Synthesis)	
• Construct ray diagrams to show the relationship between image and focal point.	
• Compare properties of images (real vs virtual).	
• Identify situations when diffraction occurs.	
• Identify conditions necessary for refraction to occur.	
9-12.P.3.2A. Students are able to describe the relationship between charged particles, static electricity, and electric fields. (Application)	
• Use Coulomb's Law to calculate forces.	
• Explain methods of transferring charge.	
• Describe the direction and general shape of electric fields.	
9-12.P.3.3A. Students are able to describe the relationship between changing magnetic and electric fields. (Analysis)	
• Explain the properties of magnetic fields.	
• Describe how electric and magnetic fields can induce each other.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1A. Students are able to explain the physical and chemical processes of photosynthesis and cell respiration and their importance to plant and animal life. (Synthesis)	
9-12.L.1.2A. Students are able to describe how living systems use biofeedback mechanisms to maintain homeostasis. (Synthesis)	
9-12.L.1.3A. Students are able to explain how gene expression regulates cell growth and differentiation. (Synthesis)	

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TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
9-12.L.1.4A. Students are able to identify factors that change the rates of enzyme catalyzed reactions. (Application)	
9-12.L.1.5A. Students are able to classify organisms using characteristics and evolutionary relationships of domains. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1A. Students are able to predict the results of complex inheritance patterns involving multiple alleles and genes. (Synthesis)	
• Relate crossing over to genetic variation.	
• Evaluate changes in gene frequencies in populations to see if Hardy-Weinberg equilibrium exists or evolution has occurred.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1A. Students are able to relate genetic, instinct, and behavior patterns to biodiversity and survival of species. (Synthesis)	
• Compare and contrast learned behavior vs instinct.	
• Relate the introduction of non-native species to the disruption of an ecosystem.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1A. Students are able to explain how elements and compounds cycle between living and non-living systems. (Application)	
• Diagram and describe the P, S, and Ca cycles.	
9-12.E.1.2A. Students are able to compare, quantitatively and qualitatively, methods used to determine geological time. (Analysis)	
• Construct a geologic time scale over the past 4.8 billion years.	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1A. Students are able to describe the evidence supporting the Big Bang theory. (Analysis)	
• Describe the four fundamental forces.	

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TABLE 3F

SOUTH DAKOTA Grades 9-12 Advanced Science	EXPLORE Science College Readiness Standards
• Describe the organization of the solar system, the Milky Way galaxy, and the universe of galaxies.	
• Examine the changing model of the universe using historical experimental evidence.	
9-12.E.2.2A. Students are able to describe the physical and nuclear dynamics involved in the formation, evolution, and death of a star. (Analysis)	
• Use the H-R diagram to determine the life stage of a star.	
• Discuss how gravitational forces and the products of nuclear fusion reactions affect the dynamics of a star.	
9-12.E.2.3A. Students are able to describe various ways data about the universe is collected. (Application)	
• Describe how information is collected from star light.	
• Describe the use of instruments to collect data.	
• Describe methods of measuring astronomical distance.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1A. Students are able to manipulate multiple variables with repeated trials. (Synthesis)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand the methods and tools used in a moderately complex experiment Understand a simple experimental design Identify a control in an experiment Understand the methods and tools used in a complex experiment Understand a complex experimental design
• Use a control and change one variable at a time.	**Scientific Investigation:** Understand a simple experimental design Identify a control in an experiment
9-12.N.2.2A. Students are able to use statistical analysis of data to evaluate the validity of results. (Evaluation)	**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
• Use correlation coefficient with graphs.	
9-12.N.2.3A. Students are able to demonstrate correct precision in measurements and calculations. (Analysis)	
• Use significant digits to illustrate precision in measurement.	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
• Factor label conversion, scientific notation.	**Interpretation of Data:** Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
9-12.P.1.1A. Students are able to distinguish between the changing models of the atom using the historical experimental evidence. (Analysis)	
9-12.P.1.2A. Students are able to predict electron configuration, ion formation, reactivity, compound formation, periodic trends, and types of compounds formed based on location on the Periodic Table. (Synthesis)	
9-12.P.1.3A. Students are able to identify five basic types of chemical reactions and predict the products. (Synthesis)	
• Single replacement, double replacement, synthesis, decomposition, and combustion reactions	
• Describe the properties and interactions of acids, bases, and salts.	
• Calculate pH, pOH, $[H_3O^+]$, $[OH^-]$.	
• Distinguish between Arrhenius, Bronsted-Lowry, and Lewis definitions of acids and bases.	
9-12.P.1.4A. Students are able to describe factors that affect solution interactions. (Synthesis)	
• Calculate concentration of solutions.	
• "Like dissolves like"	
• Vander Waal's forces	
9-12.P.1.5A. Students are able to examine energy transfer as matter changes. (Application)	
• Describe physical and chemical processes that result in endothermic and exothermic changes.	
• Describe energy transfer as matter changes from one phase to another.	
9-12.P.1.6A. Students are able to perform stoichiometric calculations. (Application)	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
• Convert between moles, mass, particles, volume.	
• Calculate empirical and molecular formulas from mass percents.	
• Determine limiting and excess reactants and percent yield in chemical reactions.	
9-12.P.1.7A. Students are able to apply the kinetic molecular theory to solve quantitative problems involving pressure, volume, temperature, and number of moles of gas. (Application)	
• Apply Boyle's Law, Charles' Law, Gay-Lussac's Law, Combined Gas Law, and Ideal Gas Law.	
9-12.P.1.8A. Students are able to use models to make predictions about molecular structure, chemical bonds, chemical reactivity, and polarity of molecules. (Synthesis)	
• Create Lewis structures for molecules and polyatomic ions.	
• Determine molecular shape using VSEPR theory.	
• Determine the polarity of a molecule.	
9-12.P.1.9A. Students are able to describe the characteristics of equilibria. (Analysis)	
• Apply LeChatelier's principle to equilibrium reactions.	
• Identify factors that drive reactions toward completion.	
• Calculate K_{eq} values for equilibrium reactions.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1A. Students are able to solve vector problems graphically and analytically. (Synthesis)	
• Define and manipulate vectors and scalars.	
• Determine if an object is in equilibrium and distinguish among stable, neutral, and unstable equilibria.	
9-12.P.2.2A. Students are able to relate gravitational or centripetal force to projectile or uniform circular motion. (Analysis)	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
• Analyze and graph projectile motion.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1A. Students are able to explain wave behavior in the fundamental processes of reflection, refraction, diffraction, interference, resonance, and image formation. (Synthesis)	
• Construct ray diagrams to show the relationship between image and focal point.	
• Compare properties of images (real vs virtual).	
• Identify situations when diffraction occurs.	
• Identify conditions necessary for refraction to occur.	
9-12.P.3.2A. Students are able to describe the relationship between charged particles, static electricity, and electric fields. (Application)	
• Use Coulomb's Law to calculate forces.	
• Explain methods of transferring charge.	
• Describe the direction and general shape of electric fields.	
9-12.P.3.3A. Students are able to describe the relationship between changing magnetic and electric fields. (Analysis)	
• Explain the properties of magnetic fields.	
• Describe how electric and magnetic fields can induce each other.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1A. Students are able to explain the physical and chemical processes of photosynthesis and cell respiration and their importance to plant and animal life. (Synthesis)	
9-12.L.1.2A. Students are able to describe how living systems use biofeedback mechanisms to maintain homeostasis. (Synthesis)	
9-12.L.1.3A. Students are able to explain how gene expression regulates cell growth and differentiation. (Synthesis)	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
9-12.L.1.4A. Students are able to identify factors that change the rates of enzyme catalyzed reactions. (Application)	
9-12.L.1.5A. Students are able to classify organisms using characteristics and evolutionary relationships of domains. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1A. Students are able to predict the results of complex inheritance patterns involving multiple alleles and genes. (Synthesis)	
• Relate crossing over to genetic variation.	
• Evaluate changes in gene frequencies in populations to see if Hardy-Weinberg equilibrium exists or evolution has occurred.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1A. Students are able to relate genetic, instinct, and behavior patterns to biodiversity and survival of species. (Synthesis)	
• Compare and contrast learned behavior vs instinct.	
• Relate the introduction of non-native species to the disruption of an ecosystem.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1A. Students are able to explain how elements and compounds cycle between living and non-living systems. (Application)	
• Diagram and describe the P, S, and Ca cycles.	
9-12.E.1.2A. Students are able to compare, quantitatively and qualitatively, methods used to determine geological time. (Analysis)	
• Construct a geologic time scale over the past 4.8 billion years.	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1A. Students are able to describe the evidence supporting the Big Bang theory. (Analysis)	
• Describe the four fundamental forces.	

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TABLE 3G

SOUTH DAKOTA Grades 9-12 Advanced Science	PLAN Science College Readiness Standards
• Describe the organization of the solar system, the Milky Way galaxy, and the universe of galaxies.	
• Examine the changing model of the universe using historical experimental evidence.	
9-12.E.2.2A. Students are able to describe the physical and nuclear dynamics involved in the formation, evolution, and death of a star. (Analysis)	
• Use the H-R diagram to determine the life stage of a star.	
• Discuss how gravitational forces and the products of nuclear fusion reactions affect the dynamics of a star.	
9-12.E.2.3A. Students are able to describe various ways data about the universe is collected. (Application)	
• Describe how information is collected from star light.	
• Describe the use of instruments to collect data.	
• Describe methods of measuring astronomical distance.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	

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TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1A. Students are able to manipulate multiple variables with repeated trials. (Synthesis)	**Scientific Investigation:** Understand the methods and tools used in a simple experiment Understand the methods and tools used in a moderately complex experiment Understand a simple experimental design Identify a control in an experiment Understand the methods and tools used in a complex experiment Understand a complex experimental design
• Use a control and change one variable at a time.	**Scientific Investigation:** Understand a simple experimental design Identify a control in an experiment
9-12.N.2.2A. Students are able to use statistical analysis of data to evaluate the validity of results. (Evaluation)	**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 **Scientific Investigation:** Understand precision and accuracy issues
• Use correlation coefficient with graphs.	
9-12.N.2.3A. Students are able to demonstrate correct precision in measurements and calculations. (Analysis)	**Scientific Investigation:** Understand precision and accuracy issues
• Use significant digits to illustrate precision in measurement.	

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TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
• Factor label conversion, scientific notation.	**Interpretation of Data:** Understand basic scientific terminology Identify and/or use a simple (e.g., linear) mathematical relationship between data
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
9-12.P.1.1A. Students are able to distinguish between the changing models of the atom using the historical experimental evidence. (Analysis)	
9-12.P.1.2A. Students are able to predict electron configuration, ion formation, reactivity, compound formation, periodic trends, and types of compounds formed based on location on the Periodic Table. (Synthesis)	
9-12.P.1.3A. Students are able to identify five basic types of chemical reactions and predict the products. (Synthesis)	
• Single replacement, double replacement, synthesis, decomposition, and combustion reactions	
• Describe the properties and interactions of acids, bases, and salts.	
• Calculate pH, pOH, $[H_3O^+]$, $[OH^-]$.	
• Distinguish between Arrhenius, Bronsted-Lowry, and Lewis definitions of acids and bases.	
9-12.P.1.4A. Students are able to describe factors that affect solution interactions. (Synthesis)	
• Calculate concentration of solutions.	
• "Like dissolves like"	
• Vander Waal's forces	
9-12.P.1.5A. Students are able to examine energy transfer as matter changes. (Application)	
• Describe physical and chemical processes that result in endothermic and exothermic changes.	
• Describe energy transfer as matter changes from one phase to another.	
9-12.P.1.6A. Students are able to perform stoichiometric calculations. (Application)	

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

TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
• Convert between moles, mass, particles, volume.	
• Calculate empirical and molecular formulas from mass percents.	
• Determine limiting and excess reactants and percent yield in chemical reactions.	
9-12.P.1.7A. Students are able to apply the kinetic molecular theory to solve quantitative problems involving pressure, volume, temperature, and number of moles of gas. (Application)	
• Apply Boyle's Law, Charles' Law, Gay-Lussac's Law, Combined Gas Law, and Ideal Gas Law.	
9-12.P.1.8A. Students are able to use models to make predictions about molecular structure, chemical bonds, chemical reactivity, and polarity of molecules. (Synthesis)	
• Create Lewis structures for molecules and polyatomic ions.	
• Determine molecular shape using VSEPR theory.	
• Determine the polarity of a molecule.	
9-12.P.1.9A. Students are able to describe the characteristics of equilibria. (Analysis)	
• Apply LeChatelier's principle to equilibrium reactions.	
• Identify factors that drive reactions toward completion.	
• Calculate K_{eq} values for equilibrium reactions.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1A. Students are able to solve vector problems graphically and analytically. (Synthesis)	
• Define and manipulate vectors and scalars.	
• Determine if an object is in equilibrium and distinguish among stable, neutral, and unstable equilibria.	
9-12.P.2.2A. Students are able to relate gravitational or centripetal force to projectile or uniform circular motion. (Analysis)	

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TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
• Analyze and graph projectile motion.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1A. Students are able to explain wave behavior in the fundamental processes of reflection, refraction, diffraction, interference, resonance, and image formation. (Synthesis)	
• Construct ray diagrams to show the relationship between image and focal point.	
• Compare properties of images (real vs virtual).	
• Identify situations when diffraction occurs.	
• Identify conditions necessary for refraction to occur.	
9-12.P.3.2A. Students are able to describe the relationship between charged particles, static electricity, and electric fields. (Application)	
• Use Coulomb's Law to calculate forces.	
• Explain methods of transferring charge.	
• Describe the direction and general shape of electric fields.	
9-12.P.3.3A. Students are able to describe the relationship between changing magnetic and electric fields. (Analysis)	
• Explain the properties of magnetic fields.	
• Describe how electric and magnetic fields can induce each other.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1A. Students are able to explain the physical and chemical processes of photosynthesis and cell respiration and their importance to plant and animal life. (Synthesis)	
9-12.L.1.2A. Students are able to describe how living systems use biofeedback mechanisms to maintain homeostasis. (Synthesis)	
9-12.L.1.3A. Students are able to explain how gene expression regulates cell growth and differentiation. (Synthesis)	

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TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
9-12.L.1.4A. Students are able to identify factors that change the rates of enzyme catalyzed reactions. (Application)	
9-12.L.1.5A. Students are able to classify organisms using characteristics and evolutionary relationships of domains. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1A. Students are able to predict the results of complex inheritance patterns involving multiple alleles and genes. (Synthesis)	
• Relate crossing over to genetic variation.	
• Evaluate changes in gene frequencies in populations to see if Hardy-Weinberg equilibrium exists or evolution has occurred.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1A. Students are able to relate genetic, instinct, and behavior patterns to biodiversity and survival of species. (Synthesis)	
• Compare and contrast learned behavior vs instinct.	
• Relate the introduction of non-native species to the disruption of an ecosystem.	
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1A. Students are able to explain how elements and compounds cycle between living and non-living systems. (Application)	
• Diagram and describe the P, S, and Ca cycles.	
9-12.E.1.2A. Students are able to compare, quantitatively and qualitatively, methods used to determine geological time. (Analysis)	
• Construct a geologic time scale over the past 4.8 billion years.	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1A. Students are able to describe the evidence supporting the Big Bang theory. (Analysis)	
• Describe the four fundamental forces.	

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TABLE 3H

SOUTH DAKOTA Grades 9-12 Advanced Science	ACT Science College Readiness Standards
• Describe the organization of the solar system, the Milky Way galaxy, and the universe of galaxies.	
• Examine the changing model of the universe using historical experimental evidence.	
9-12.E.2.2A. Students are able to describe the physical and nuclear dynamics involved in the formation, evolution, and death of a star. (Analysis)	
• Use the H-R diagram to determine the life stage of a star.	
• Discuss how gravitational forces and the products of nuclear fusion reactions affect the dynamics of a star.	
9-12.E.2.3A. Students are able to describe various ways data about the universe is collected. (Application)	
• Describe how information is collected from star light.	
• Describe the use of instruments to collect data.	
• Describe methods of measuring astronomical distance.	
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	

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TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
Nature of Science	
Indicator 1: Understand the nature and origin of scientific knowledge.	
Indicator 2: Apply the skills necessary to conduct scientific investigations.	
9-12.N.2.1A. Students are able to manipulate multiple variables with repeated trials. (Synthesis)	
• Use a control and change one variable at a time.	
9-12.N.2.2A. Students are able to use statistical analysis of data to evaluate the validity of results. (Evaluation)	Apply information from one or more complicated graphics to specific situations
• Use correlation coefficient with graphs.	Summarize information from one or more detailed graphics
9-12.N.2.3A. Students are able to demonstrate correct precision in measurements and calculations. (Analysis)	
• Use significant digits to illustrate precision in measurement.	
• Factor label conversion, scientific notation.	
Physical Science	
Indicator 1: Describe structures and properties of, and changes in, matter.	
9-12.P.1.1A. Students are able to distinguish between the changing models of the atom using the historical experimental evidence. (Analysis)	
9-12.P.1.2A. Students are able to predict electron configuration, ion formation, reactivity, compound formation, periodic trends, and types of compounds formed based on location on the Periodic Table. (Synthesis)	
9-12.P.1.3A. Students are able to identify five basic types of chemical reactions and predict the products. (Synthesis)	
• Single replacement, double replacement, synthesis, decomposition, and combustion reactions	
• Describe the properties and interactions of acids, bases, and salts.	
• Calculate pH, pOH, $[H_3O^+]$, $[OH^-]$.	
• Distinguish between Arrhenius, Bronsted-Lowry, and Lewis definitions of acids and bases.	
9-12.P.1.4A. Students are able to describe factors that affect solution interactions. (Synthesis)	

TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
• Calculate concentration of solutions.	
• "Like dissolves like"	
• Vander Waal's forces	
9-12.P.1.5A. Students are able to examine energy transfer as matter changes. (Application)	
• Describe physical and chemical processes that result in endothermic and exothermic changes.	
• Describe energy transfer as matter changes from one phase to another.	
9-12.P.1.6A. Students are able to perform stoichiometric calculations. (Application)	
• Convert between moles, mass, particles, volume.	
• Calculate empirical and molecular formulas from mass percents.	
• Determine limiting and excess reactants and percent yield in chemical reactions.	
9-12.P.1.7A. Students are able to apply the kinetic molecular theory to solve quantitative problems involving pressure, volume, temperature, and number of moles of gas. (Application)	
• Apply Boyle's Law, Charles' Law, Gay-Lussac's Law, Combined Gas Law, and Ideal Gas Law.	
9-12.P.1.8A. Students are able to use models to make predictions about molecular structure, chemical bonds, chemical reactivity, and polarity of molecules. (Synthesis)	
• Create Lewis structures for molecules and polyatomic ions.	
• Determine molecular shape using VSEPR theory.	
• Determine the polarity of a molecule.	
9-12.P.1.9A. Students are able to describe the characteristics of equilibria. (Analysis)	
• Apply LeChatelier's principle to equilibrium reactions.	
• Identify factors that drive reactions toward completion.	

TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
• Calculate K_{eq} values for equilibrium reactions.	
Indicator 2: Analyze forces, their forms, and their effects on motions.	
9-12.P.2.1A. Students are able to solve vector problems graphically and analytically. (Synthesis)	
• Define and manipulate vectors and scalars.	
• Determine if an object is in equilibrium and distinguish among stable, neutral, and unstable equilibria.	
9-12.P.2.2A. Students are able to relate gravitational or centripetal force to projectile or uniform circular motion. (Analysis)	
• Analyze and graph projectile motion.	
Indicator 3: Analyze interactions of energy and matter.	
9-12.P.3.1A. Students are able to explain wave behavior in the fundamental processes of reflection, refraction, diffraction, interference, resonance, and image formation. (Synthesis)	
• Construct ray diagrams to show the relationship between image and focal point.	
• Compare properties of images (real vs virtual).	
• Identify situations when diffraction occurs.	
• Identify conditions necessary for refraction to occur.	
9-12.P.3.2A. Students are able to describe the relationship between charged particles, static electricity, and electric fields. (Application)	
• Use Coulomb's Law to calculate forces.	
• Explain methods of transferring charge.	
• Describe the direction and general shape of electric fields.	
9-12.P.3.3A. Students are able to describe the relationship between changing magnetic and electric fields. (Analysis)	
• Explain the properties of magnetic fields.	

TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
• Describe how electric and magnetic fields can induce each other.	
Life Science	
Indicator 1: Understand the fundamental structures, functions, classifications, and mechanisms found in living things.	
9-12.L.1.1A. Students are able to explain the physical and chemical processes of photosynthesis and cell respiration and their importance to plant and animal life. (Synthesis)	
9-12.L.1.2A. Students are able to describe how living systems use biofeedback mechanisms to maintain homeostasis. (Synthesis)	
9-12.L.1.3A. Students are able to explain how gene expression regulates cell growth and differentiation. (Synthesis)	
9-12.L.1.4A. Students are able to identify factors that change the rates of enzyme catalyzed reactions. (Application)	
9-12.L.1.5A. Students are able to classify organisms using characteristics and evolutionary relationships of domains. (Analysis)	
Indicator 2: Analyze various patterns and products of natural and induced biological change.	
9-12.L.2.1A. Students are able to predict the results of complex inheritance patterns involving multiple alleles and genes. (Synthesis)	
• Relate crossing over to genetic variation.	
• Evaluate changes in gene frequencies in populations to see if Hardy-Weinberg equilibrium exists or evolution has occurred.	
Indicator 3: Analyze how organisms are linked to one another and the environment.	
9-12.L.3.1A. Students are able to relate genetic, instinct, and behavior patterns to biodiversity and survival of species. (Synthesis)	
• Compare and contrast learned behavior vs instinct.	
• Relate the introduction of non-native species to the disruption of an ecosystem.	

TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
Earth/Space Science	
Indicator 1: Analyze the various structures and processes of the Earth system.	
9-12.E.1.1A. Students are able to explain how elements and compounds cycle between living and non-living systems. (Application)	
• Diagram and describe the P, S, and Ca cycles.	
9-12.E.1.2A. Students are able to compare, quantitatively and qualitatively, methods used to determine geological time. (Analysis)	
• Construct a geologic time scale over the past 4.8 billion years.	
Indicator 2: Analyze essential principles and ideas about the composition and structure of the universe.	
9-12.E.2.1A. Students are able to describe the evidence supporting the Big Bang theory. (Analysis)	
• Describe the four fundamental forces.	
• Describe the organization of the solar system, the Milky Way galaxy, and the universe of galaxies.	
• Examine the changing model of the universe using historical experimental evidence.	
9-12.E.2.2A. Students are able to describe the physical and nuclear dynamics involved in the formation, evolution, and death of a star. (Analysis)	
• Use the H-R diagram to determine the life stage of a star.	
• Discuss how gravitational forces and the products of nuclear fusion reactions affect the dynamics of a star.	
9-12.E.2.3A. Students are able to describe various ways data about the universe is collected. (Application)	
• Describe how information is collected from star light.	
• Describe the use of instruments to collect data.	
• Describe methods of measuring astronomical distance.	

TABLE 3I

SOUTH DAKOTA Grades 9-12 Advanced Science	WorkKeys Locating Information Level Skills
Science, Technology, Environment, and Society	
Indicator 1: Analyze various implications/effects of scientific advancement within the environment and society.	
Indicator 2: Analyze the relationships/interactions among science, technology, environment, and society.	