STATE MATCH SUPPLEMENT

Nebraska Academic Standards

Language Arts, Mathematics, and Science
Grades 8–12

and

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

September 2010

ACT®

List of Supplement Tables

Preface

This document is a supplement to the *State Match Nebraska Academic Standards Language Arts, Mathematics, and Science Grades 8–12 and EXPLORE, PLAN, the ACT, and WorkKeys (September 2010)*. This supplement identifies specific ACT College Readiness Standards that correspond to each Nebraska Standard in a side-by-side format. The left side of each page presents the Nebraska Standards (highlighted if measured by ACT's corresponding testing program). The right side of each page presents the specific ACT College Readiness Standard(s) and WorkKeys skill(s) that correspond to each Nebraska Standard.

Nebraska Standards listed here are from the Nebraska Academic Standards as follows:

Nebraska Academic Standards	Version
Language Arts	As approved by The State Board April 2, 2009
Mathematics	As approved by The State Board October 8, 2009
Science	Draft standards dated August 3, 2010

Supplement
Tables 1A–1E:
Language Arts

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 8.1. Reading Students will learn and apply reading skills and strategies to comprehend text.	
LA 8.1.1. Knowledge of Print [Concept mastered at a previous grade level]	
LA 8.1.2. Phonological Awareness [Concept mastered at a previous grade level]	
LA 8.1.3. Word Analysis [Concept mastered at a previous grade level]	
LA 8.1.4. Fluency: Students will read a variety of grade level texts fluently with accuracy, appropriate pace, phrasing, and expression. **LA 8.1.4.a.** Incorporate elements of prosodic reading to communicate text **LA 8.1.4.b.** Adjust oral or silent reading pace based on purpose, text difficulty, form, and style **LA 8.1.4.c.** Recognize and represent writer's tone and style while reading individually or in groups (e.g., choral reading, reader's theatre performances)	
LA 8.1.5. Vocabulary: Students will build literary, general academic, and content specific grade level vocabulary. **LA 8.1.5.a.** Determine meaning of words through structural analysis, using knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words, including words in science, mathematics, and social studies **LA 8.1.5.b.** Relate new grade level vocabulary to prior knowledge and use in new situations **LA 8.1.5.c.** Select a context clue strategy to determine meaning of unknown word appropriate to text (e.g., restatement, example, gloss, annotation, sidebar) **LA 8.1.5.d.** Analyze semantic relationships (e.g., figurative language, connotations, subtle distinctions) **LA 8.1.5.e.** Determine meaning using print and digital reference materials	**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
LA 8.1.6. Comprehension: Students will extract and construct meaning using prior knowledge, applying text information, and monitoring comprehension while reading grade level text. **LA 8.1.6.a.** Analyze the meaning, reliability, and validity of the text considering author's purpose, perspective, and information from additional sources **LA 8.1.6.b.** Identify and analyze elements of narrative text (e.g., character development, setting, plot development, conflict, point of view, inferred and recurring themes) **LA 8.1.6.c.** Analyze author's use of literary devices (e.g., foreshadowing, personification, idiom, oxymoron, hyperbole, flashback, suspense, symbolism, irony, transitional devices) **LA 8.1.6.d.** Summarize, analyze, and synthesize informational text using main idea and supporting details	**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

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 8.1. Reading	
LA 8.1.6.e. Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support) **LA 8.1.6.f.** Analyze and evaluate information from text features (e.g., index, annotations, maps, charts, tables, graphs, headings, subheadings, lists) **LA 8.1.6.g.** Analyze and make inferences based on the characteristics of narrative and informational genres **LA 8.1.6.h.** Analyze a variety of genres for the social, historical, cultural, and biographical influences **LA 8.1.6.i.** Use narrative and informational text to develop a national and global multi-cultural perspective **LA 8.1.6.j.** Generate and/or answer literal, inferential, critical, and interpretive questions, analyzing and synthesizing prior knowledge, information from the text and additional sources, to support answers **LA 8.1.6.k.** Select text for a particular purpose (e.g., understand, interpret, enjoy, solve problems, form an opinion, answer a specific question, discover models for own writing) **LA 8.1.6.l.** Build and activate prior knowledge in order to clarify text, deepen understanding, and make connections while reading **LA 8.1.6.m.** Self-monitor comprehension for accuracy and understanding when errors detract from meaning by applying appropriate strategies to self-correct **LA 8.1.6.n.** Make complex or abstract inferences or predictions by synthesizing information while previewing and reading text **LA 8.1.6.o.** Respond to text verbally, in writing, or artistically	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 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

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 8.1. Reading	
	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

NEBRASKA Grade 8 Language Arts Standards	EXPLORE English College Readiness Standards
LA 8.2. Writing Students will learn and apply writing skills and strategies to communicate.	
LA 8.2.1. Writing Process: Students will apply the writing process to plan, draft, revise, edit and publish writing using correct spelling, grammar, punctuation, and other standard conventions appropriate for grade level. **LA 8.2.1.a.** Use prewriting activities and inquiry tools to generate and organize information, guide writing, answer questions, and synthesize information **LA 8.2.1.b.** Generate a draft by: Defining and stating a thesis Structuring ideas and arguments in an effective and sustained way, following an organizational pattern appropriate to the purpose and intended audience Identifying and using parallelism to present items in a series and items juxtaposed for emphasis **LA 8.2.1.c.** Revise to improve writing (e.g., quality of ideas, organization, sentence fluency, word choice, voice) **LA 8.2.1.d.** Provide oral, written, and electronic feedback to other writers; utilize others' feedback to improve own writing **LA 8.2.1.e.** Edit writing for format and conventions (e.g., spelling, capitalization, grammar, punctuation) **LA 8.2.1.f.** Publish a legible document that applies formatting techniques to contribute to the readability and impact of the document (e.g., fonts, spacing, highlighting, images, style conventions, manuscript requirements)	**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 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

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE English College Readiness Standards
LA 8.2. Writing	
	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
	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
	Conventions of Usage:
	Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives
	Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts
	Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead*
	Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*)
	Ensure that a verb agrees with its subject when there is some text between the two
	Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences
	Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of*
	Conventions of Punctuation:
	Delete commas that create basic sense problems (e.g., between verb and direct object)

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE English College Readiness Standards
LA 8.2. Writing	
	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
LA 8.2.2. Writing Genres: Students will write for a variety of purposes and audiences in multiple genres. **LA 8.2.2.a.** Write in a variety of genres, considering purpose and audience **LA 8.2.2.b.** Write considering typical characteristics of the selected genre (e.g., business letter, report, email, class notes, research paper, play, web page/blog) **LA 8.2.2.c.** Select and apply an organizational structure appropriate to the task (e.g., problem/solution, persuasion) **LA 8.2.2.d.** Analyze models and examples (own and others') of various genres in order to create a similar piece	

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE College Readiness Standards
LA 8.3. Speaking & Listening Students will learn and apply speaking and listening skills and strategies to communicate.	
LA 8.3.1. Speaking Skills: Students will develop, apply, and refine speaking skills to communicate key ideas in a variety of situations. **LA 8.3.1.a.** Communicate ideas and information in a manner appropriate for the purpose and setting **LA 8.3.1.b.** Demonstrate and adjust speaking techniques for a variety of purposes and situations **LA 8.3.1.c.** Utilize available media to enhance communication	
LA 8.3.2. Listening Skills: Students will develop, apply, and refine active listening skills across a variety of situations. **LA 8.3.2.a.** Apply listening skills needed for multiple situations and modalities (e.g., video, audio, distance, one-to-one, group) **LA 8.3.2.b.** Listen and ask questions concerning the speaker's content, delivery and purpose **LA 8.3.2.c.** Listen to, analyze, and evaluate thoughts, ideas, and credibility of information being communicated	
LA 8.3.3. Reciprocal Communication: Students will develop, apply, and adapt reciprocal communication skills. **LA 8.3.3.a.** Demonstrate sensitivity to the use of words (e.g., stereotypes, connotations, subtleties of language) **LA 8.3.3.b.** Interact and collaborate with others in learning situations by contributing questions, information, opinions, and ideas using a variety of media and formats **LA 8.3.3.c.** Respect diverse perspectives while collaborating and participating as a member of the community	

TABLE 1A

NEBRASKA Grade 8 Language Arts Standards	EXPLORE College Readiness Standards
LA 8.4. Multiple Literacies Students will identify, locate, and evaluate information.	
LA 8.4.1. Multiple Literacies: Students will research, synthesize, evaluate and communicate information in a variety of media and formats (textual, visual, and digital). **LA 8.4.1.a.** Select and use multiple resources to answer questions and support conclusions using valid information (e.g., print, subscription databases, web resources) **LA 8.4.1.b.** Demonstrate ethical and legal use of information by citing sources using prescribed formats and tools (e.g., online citation assistance, publication guidelines) **LA 8.4.1.c.** Practice safe and ethical behaviors when communicating and interacting with others (e.g., safe information to share online, appropriate language use, utilize appropriate sites and materials, respect diverse perspectives) **LA 8.4.1.d.** Engage in activities with learners from a variety of cultures through electronic means (e.g., podcasts, video chats, distance learning) **LA 8.4.1.e.** While reading, listening, and viewing, evaluate the message for bias, commercialism and hidden agendas (e.g., product placement, television ad, radio ad, movie, body image, sexism) **LA 8.4.1.f.** Gather and share information and opinions as a result of communication with others (e.g., video/audio chat, interview, podcast, multi-media presentations) **LA 8.4.1.g.** Use social networks and information tools to gather and share information (e.g., social bookmarking, online collaborative tools)	

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 12.1. Reading Students will learn and apply reading skills and strategies to comprehend text.	
LA 12.1.1. Knowledge of Print [Concept mastered at a previous grade level]	
LA 12.1.2. Phonological Awareness [Concept mastered at a previous grade level]	
LA 12.1.3. Word Analysis [Concept mastered at a previous grade level]	
LA 12.1.4. Fluency: Students will read a variety of grade level texts fluently with accuracy, appropriate pace, phrasing, and expression. **LA 12.1.4.a.** Independently incorporate elements of prosodic reading to interpret text in a variety of situations **LA 12.1.4.b.** Adjust oral or silent reading pace based on purpose, text difficulty, form, and style **LA 12.1.4.c.** Recognize and represent writer's tone and style while reading individually or in groups (e.g., change genre of text to perform orally)	
LA 12.1.5. Vocabulary: Students will build literary, general academic, and content specific grade level vocabulary. **LA 12.1.5.a.** Determine meaning of words through structural analysis, using knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words, including words in science, mathematics, and social studies **LA 12.1.5.b.** Relate new grade level vocabulary to prior knowledge and use in new situations **LA 12.1.5.c.** Independently apply appropriate strategy to determine meaning of unknown words in text **LA 12.1.5.d.** Use semantic relationships to evaluate, defend, and make judgments **LA 12.1.5.e.** Determine meaning using print and digital reference materials	**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
LA 12.1.6. Comprehension: Students will extract and construct meaning using prior knowledge, applying text information, and monitoring comprehension while reading grade level text. **LA 12.1.6.a.** Evaluate the meaning, reliability, and validity of the text considering author's purpose, perspective, and information from additional sources **LA 12.1.6.b.** Analyze and evaluate narrative text (e.g., characterization, setting, plot development, internal and external conflict, inferred and recurring themes, point of view, tone, mood) **LA 12.1.6.c.** Analyze the function and critique the effects of the author's use of stylistic and literary devices (e.g., allusion, symbolism, irony, foreshadowing, flashback, metaphor, personification, epiphany, oxymoron, dialect, tone, mood, transitional devices)	**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

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 12.1. Reading	
LA 12.1.6.d. Summarize, analyze, synthesize, and evaluate informational text **LA 12.1.6.e.** Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support, concept definition, question/answer) **LA 12.1.6.f.** Analyze and evaluate information from text features (e.g., index, annotations, photographs, charts, tables, graphs, headings, subheadings, lists) **LA 12.1.6.g.** Analyze and evaluate and make inferences based on the characteristics of narrative and informational genres and provide evidence from the text to support understanding **LA 12.1.6.h.** Critique the effects of historical, cultural, political, and biographical influences in a variety of genres **LA 12.1.6.i.** Use narrative and informational text to develop a national and global multi-cultural perspective **LA 12.1.6.j.** Generate and/or answer literal, inferential, critical, and interpretive questions, analyzing, synthesizing, and evaluating prior knowledge, information from the text and additional sources, to support answers **LA 12.1.6.k.** Select a text for a particular purpose (e.g., understand a specific viewpoint, enjoy, solve problems, form an opinion, discover models for own writing, predict outcomes, accomplish a task) **LA 12.1.6.l.** Build and activate prior knowledge in order to clarify text, deepen understanding, and make connections while reading **LA 12.1.6.m.** Self-monitor comprehension for accuracy and understanding when errors detract from meaning by applying appropriate strategies to self-correct **LA 12.1.6.n.** Make complex or abstract inferences or predictions by synthesizing information while previewing and reading text **LA 12.1.6.o.** Respond to text verbally, in writing, or artistically	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 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

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE Reading College Readiness Standards
LA 12.1. Reading	
	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 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE English College Readiness Standards
LA 12.2. Writing Students will learn and apply writing skills and strategies to communicate.	
LA 12.2.1. Writing Process: Students will apply the writing process to plan, draft, revise, edit and publish writing using correct spelling, grammar, punctuation, and other standard conventions appropriate for grade level. **LA 12.2.1.a.** Select and use appropriate prewriting tools to generate and organize information, guide writing, answer questions, and synthesize information **LA 12.2.1.b.** Generate a draft by: Constructing clearly worded and effectively placed thesis statements that convey a clear perspective on the subject Structuring ideas and arguments in an effective and sustained way, following an organizational pattern appropriate to the purpose and intended audience Applying standard rules of sentence formation, including parallel structure and subordination **LA 12.2.1.c.** Revise to improve writing (e.g., quality of ideas, organization, sentence fluency, word choice, voice) **LA 12.2.1.d.** Provide oral, written and/or electronic feedback to other writers; utilize others' feedback to improve own writing **LA 12.2.1.e.** Edit writing for format and conventions (e.g., spelling, capitalization, grammar, punctuation) **LA 12.2.1.f.** Publish a legible document that applies formatting techniques to contribute to the readability and impact of the document (e.g., fonts, spacing, highlighting, images, style conventions, manuscript requirements)	**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 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

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE English College Readiness Standards
LA 12.2. Writing	
	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 **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 **Conventions of Usage:** Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives Solve such grammatical problems as whether to use an adverb or adjective form, how to ensure straightforward subject-verb and pronoun-antecedent agreement, and which preposition to use in simple contexts Recognize and use the appropriate word in frequently confused pairs such as *there* and *their*, *past* and *passed*, and *led* and *lead* Use idiomatically appropriate prepositions, especially in combination with verbs (e.g., *long for*, *appeal to*) Ensure that a verb agrees with its subject when there is some text between the two Ensure that a pronoun agrees with its antecedent when the two occur in separate clauses or sentences Identify the correct past and past participle forms of irregular and infrequently used verbs and form present-perfect verbs by using *have* rather than *of* **Conventions of Punctuation:** Delete commas that create basic sense problems (e.g., between verb and direct object)

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE English College Readiness Standards
LA 12.2. Writing	
	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
LA 12.2.2. Writing Genres: Students will write for a variety of purposes and audiences in multiple genres. **LA 12.2.2.a.** Write in a variety of genres, considering purpose, audience, medium, and available technology **LA 12.2.2.b.** Write considering typical characteristics of the selected genre (e.g., resume, brochure, web page/blog, news article, job application and accompanying cover letter, senior project, college application essay) **LA 12.2.2.c.** Select and apply an organizational structure appropriate to the task **LA 12.2.2.d.** Analyze models and examples (own and others') of various genres in order to create a similar piece	

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE College Readiness Standards
LA 12.3. Speaking & Listening Students will learn and apply speaking and listening skills and strategies to communicate.	
LA 12.3.1. Speaking Skills: Students will develop, apply, and refine speaking skills to communicate key ideas in a variety of situations. **LA 12.3.1.a.** Communicate ideas and information in a manner appropriate for the purpose and setting **LA 12.3.1.b.** Demonstrate and adjust speaking techniques for a variety of purposes and situations **LA 12.3.1.c.** Utilize available media to enhance communication	
LA 12.3.2. Listening Skills: Students will develop, apply, and refine active listening skills across a variety of situations. **LA 12.3.2.a.** Apply listening skills needed to summarize and evaluate information given in multiple situations and modalities (e.g., video, audio, distance, one-to-one, group) **LA 12.3.2.b.** Listen and respond to messages by expressing a point of view on the topic using questions, challenges, or affirmations **LA 12.3.2.c.** Listen to and evaluate the clarity, quality and effectiveness of important points, arguments, and evidence being communicated	
LA 12.3.3. Reciprocal Communication: Students will develop, apply, and adapt reciprocal communication skills. **LA 12.3.3.a.** Interact and collaborate with others in learning situations by contributing questions, information, opinions, and ideas using a variety of media and formats **LA 12.3.3.b.** Solicit and respect diverse perspectives while searching for information, collaborating, and participating as a member of the community (e.g., sensitivity to the use of words)	

TABLE 1B

NEBRASKA Grades 9–12 Language Arts Standards	EXPLORE College Readiness Standards
LA 12.4. Multiple Literacies Students will identify, locate, and evaluate information.	
LA 12.4.1. Multiple Literacies: Students will research, synthesize, evaluate and communicate information in a variety of media and formats (textual, visual, and digital). **LA 12.4.1.a.** Select and use multiple resources to answer questions and defend conclusions using valid information (e.g., print, subscription databases, web resources) **LA 12.4.1.b.** Demonstrate ethical and legal use of information by citing sources using prescribed formats and tools (e.g., online citation assistance, publication guidelines) **LA 12.4.1.c.** Practice safe and ethical behaviors when communicating and interacting with others (e.g., safe information to share on-line, appropriate language use, utilize appropriate sites and materials, respect diverse perspectives) **LA 12.4.1.d.** Engage in activities with learners from a variety of cultures through electronic means (e.g., podcasts, video chats, distance learning) **LA 12.4.1.e.** While reading, listening, and viewing, evaluate the message for bias, commercialism and hidden agendas (e.g., product placement, television ad, radio ad, movie, body image, sexism) **LA 12.4.1.f.** Gather and share information and opinions as a result of communication with others (e.g., video/audio chat, interview, podcast, multi-media presentations) **LA 12.4.1.g.** Use social networks and information tools to gather and share information (e.g., social bookmarking, online collaborative tools, web page/blog)	

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN Reading College Readiness Standards
LA 12.1. Reading Students will learn and apply reading skills and strategies to comprehend text.	
LA 12.1.1. Knowledge of Print [Concept mastered at a previous grade level]	
LA 12.1.2. Phonological Awareness [Concept mastered at a previous grade level]	
LA 12.1.3. Word Analysis [Concept mastered at a previous grade level]	
LA 12.1.4. Fluency: Students will read a variety of grade level texts fluently with accuracy, appropriate pace, phrasing, and expression. **LA 12.1.4.a.** Independently incorporate elements of prosodic reading to interpret text in a variety of situations **LA 12.1.4.b.** Adjust oral or silent reading pace based on purpose, text difficulty, form, and style **LA 12.1.4.c.** Recognize and represent writer's tone and style while reading individually or in groups (e.g., change genre of text to perform orally)	
LA 12.1.5. Vocabulary: Students will build literary, general academic, and content specific grade level vocabulary. **LA 12.1.5.a.** Determine meaning of words through structural analysis, using knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words, including words in science, mathematics, and social studies **LA 12.1.5.b.** Relate new grade level vocabulary to prior knowledge and use in new situations **LA 12.1.5.c.** Independently apply appropriate strategy to determine meaning of unknown words in text **LA 12.1.5.d.** Use semantic relationships to evaluate, defend, and make judgments **LA 12.1.5.e.** Determine meaning using print and digital reference materials	**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
LA 12.1.6. Comprehension: Students will extract and construct meaning using prior knowledge, applying text information, and monitoring comprehension while reading grade level text. **LA 12.1.6.a.** Evaluate the meaning, reliability, and validity of the text considering author's purpose, perspective, and information from additional sources **LA 12.1.6.b.** Analyze and evaluate narrative text (e.g., characterization, setting, plot development, internal and external conflict, inferred and recurring themes, point of view, tone, mood) **LA 12.1.6.c.** Analyze the function and critique the effects of the author's use of stylistic and literary devices (e.g., allusion, symbolism, irony, foreshadowing, flashback, metaphor, personification, epiphany, oxymoron, dialect, tone, mood, transitional devices)	**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

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN Reading College Readiness Standards
LA 12.1. Reading	
LA 12.1.6.d. Summarize, analyze, synthesize, and evaluate informational text **LA 12.1.6.e.** Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support, concept definition, question/answer) **LA 12.1.6.f.** Analyze and evaluate information from text features (e.g., index, annotations, photographs, charts, tables, graphs, headings, subheadings, lists) **LA 12.1.6.g.** Analyze and evaluate and make inferences based on the characteristics of narrative and informational genres and provide evidence from the text to support understanding **LA 12.1.6.h.** Critique the effects of historical, cultural, political, and biographical influences in a variety of genres **LA 12.1.6.i.** Use narrative and informational text to develop a national and global multi-cultural perspective **LA 12.1.6.j.** Generate and/or answer literal, inferential, critical, and interpretive questions, analyzing, synthesizing, and evaluating prior knowledge, information from the text and additional sources, to support answers **LA 12.1.6.k.** Select a text for a particular purpose (e.g., understand a specific viewpoint, enjoy, solve problems, form an opinion, discover models for own writing, predict outcomes, accomplish a task) **LA 12.1.6.l.** Build and activate prior knowledge in order to clarify text, deepen understanding, and make connections while reading **LA 12.1.6.m.** Self-monitor comprehension for accuracy and understanding when errors detract from meaning by applying appropriate strategies to self-correct **LA 12.1.6.n.** Make complex or abstract inferences or predictions by synthesizing information while previewing and reading text **LA 12.1.6.o.** Respond to text verbally, in writing, or artistically	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 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

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN Reading College Readiness Standards
LA 12.1. Reading	
	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
	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

NEBRASKA Grades 9–12 Language Arts Standards	PLAN English College Readiness Standards
LA 12.2. Writing Students will learn and apply writing skills and strategies to communicate.	
LA 12.2.1. Writing Process: Students will apply the writing process to plan, draft, revise, edit and publish writing using correct spelling, grammar, punctuation, and other standard conventions appropriate for grade level. **LA 12.2.1.a.** Select and use appropriate prewriting tools to generate and organize information, guide writing, answer questions, and synthesize information **LA 12.2.1.b.** Generate a draft by: Constructing clearly worded and effectively placed thesis statements that convey a clear perspective on the subject Structuring ideas and arguments in an effective and sustained way, following an organizational pattern appropriate to the purpose and intended audience Applying standard rules of sentence formation, including parallel structure and subordination **LA 12.2.1.c.** Revise to improve writing (e.g., quality of ideas, organization, sentence fluency, word choice, voice) **LA 12.2.1.d.** Provide oral, written and/or electronic feedback to other writers; utilize others' feedback to improve own writing **LA 12.2.1.e.** Edit writing for format and conventions (e.g., spelling, capitalization, grammar, punctuation) **LA 12.2.1.f.** Publish a legible document that applies formatting techniques to contribute to the readability and impact of the document (e.g., fonts, spacing, highlighting, images, style conventions, manuscript requirements)	**Topic Development in Terms of Purpose and Focus:** Identify the basic purpose or role of a specified phrase or sentence Delete a clause or sentence because it is obviously irrelevant to the essay Identify the central idea or main topic of a straightforward piece of writing Determine relevancy when presented with a variety of sentence-level details Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal Delete material primarily because it disturbs the flow and development of the paragraph Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation **Organization, Unity, and Coherence:** Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*) Decide the most logical place to add a sentence in an essay Add a sentence that introduces a simple paragraph Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., *therefore*, *however*, *in addition*) 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 Add a sentence to introduce or conclude a fairly complex paragraph **Word Choice in Terms of Style, Tone, Clarity, and Economy:** Revise sentences to correct awkward and confusing arrangements of sentence elements

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN English College Readiness Standards
LA 12.2. Writing	
	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
	Sentence Structure and Formation:
	Use conjunctions or punctuation to join simple clauses
	Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences
	Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences
	Decide the appropriate verb tense and voice by considering the meaning of the entire sentence
	Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers)
	Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems
	Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence
	Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs
	Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole
	Conventions of Usage:
	Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives
	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

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN English College Readiness Standards
LA 12.2. Writing	
	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
	Deal with multiple punctuation problems (e.g., compound sentences containing unnecessary commas and phrases that may or may not be parenthetical)
	Use an apostrophe to show possession, especially with irregular plural nouns

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN English College Readiness Standards
LA 12.2. Writing	
LA 12.2.2. Writing Genres: Students will write for a variety of purposes and audiences in multiple genres. **LA 12.2.2.a.** Write in a variety of genres, considering purpose, audience, medium, and available technology **LA 12.2.2.b.** Write considering typical characteristics of the selected genre (e.g., resume, brochure, web page/blog, news article, job application and accompanying cover letter, senior project, college application essay) **LA 12.2.2.c.** Select and apply an organizational structure appropriate to the task **LA 12.2.2.d.** Analyze models and examples (own and others') of various genres in order to create a similar piece	

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN College Readiness Standards
LA 12.3. Speaking & Listening Students will learn and apply speaking and listening skills and strategies to communicate.	
LA 12.3.1. Speaking Skills: Students will develop, apply, and refine speaking skills to communicate key ideas in a variety of situations. **LA 12.3.1.a.** Communicate ideas and information in a manner appropriate for the purpose and setting **LA 12.3.1.b.** Demonstrate and adjust speaking techniques for a variety of purposes and situations **LA 12.3.1.c.** Utilize available media to enhance communication	
LA 12.3.2. Listening Skills: Students will develop, apply, and refine active listening skills across a variety of situations. **LA 12.3.2.a.** Apply listening skills needed to summarize and evaluate information given in multiple situations and modalities (e.g., video, audio, distance, one-to-one, group) **LA 12.3.2.b.** Listen and respond to messages by expressing a point of view on the topic using questions, challenges, or affirmations **LA 12.3.2.c.** Listen to and evaluate the clarity, quality and effectiveness of important points, arguments, and evidence being communicated	
LA 12.3.3. Reciprocal Communication: Students will develop, apply, and adapt reciprocal communication skills. **LA 12.3.3.a.** Interact and collaborate with others in learning situations by contributing questions, information, opinions, and ideas using a variety of media and formats **LA 12.3.3.b.** Solicit and respect diverse perspectives while searching for information, collaborating, and participating as a member of the community (e.g., sensitivity to the use of words)	

TABLE 1C

NEBRASKA Grades 9–12 Language Arts Standards	PLAN College Readiness Standards
LA 12.4. Multiple Literacies Students will identify, locate, and evaluate information.	
LA 12.4.1. Multiple Literacies: Students will research, synthesize, evaluate and communicate information in a variety of media and formats (textual, visual, and digital). **LA 12.4.1.a.** Select and use multiple resources to answer questions and defend conclusions using valid information (e.g., print, subscription databases, web resources) **LA 12.4.1.b.** Demonstrate ethical and legal use of information by citing sources using prescribed formats and tools (e.g., online citation assistance, publication guidelines) **LA 12.4.1.c.** Practice safe and ethical behaviors when communicating and interacting with others (e.g., safe information to share on-line, appropriate language use, utilize appropriate sites and materials, respect diverse perspectives) **LA 12.4.1.d.** Engage in activities with learners from a variety of cultures through electronic means (e.g., podcasts, video chats, distance learning) **LA 12.4.1.e.** While reading, listening, and viewing, evaluate the message for bias, commercialism and hidden agendas (e.g., product placement, television ad, radio ad, movie, body image, sexism) **LA 12.4.1.f.** Gather and share information and opinions as a result of communication with others (e.g., video/audio chat, interview, podcast, multi-media presentations) **LA 12.4.1.g.** Use social networks and information tools to gather and share information (e.g., social bookmarking, online collaborative tools, web page/blog)	

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT Reading College Readiness Standards
LA 12.1. Reading Students will learn and apply reading skills and strategies to comprehend text.	
LA 12.1.1. Knowledge of Print [Concept mastered at a previous grade level]	
LA 12.1.2. Phonological Awareness [Concept mastered at a previous grade level]	
LA 12.1.3. Word Analysis [Concept mastered at a previous grade level]	
LA 12.1.4. Fluency: Students will read a variety of grade level texts fluently with accuracy, appropriate pace, phrasing, and expression. **LA 12.1.4.a.** Independently incorporate elements of prosodic reading to interpret text in a variety of situations **LA 12.1.4.b.** Adjust oral or silent reading pace based on purpose, text difficulty, form, and style **LA 12.1.4.c.** Recognize and represent writer's tone and style while reading individually or in groups (e.g., change genre of text to perform orally)	
LA 12.1.5. Vocabulary: Students will build literary, general academic, and content specific grade level vocabulary. **LA 12.1.5.a.** Determine meaning of words through structural analysis, using knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words, including words in science, mathematics, and social studies **LA 12.1.5.b.** Relate new grade level vocabulary to prior knowledge and use in new situations **LA 12.1.5.c.** Independently apply appropriate strategy to determine meaning of unknown words in text **LA 12.1.5.d.** Use semantic relationships to evaluate, defend, and make judgments **LA 12.1.5.e.** Determine meaning using print and digital reference materials	**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
LA 12.1.6. Comprehension: Students will extract and construct meaning using prior knowledge, applying text information, and monitoring comprehension while reading grade level text. **LA 12.1.6.a.** Evaluate the meaning, reliability, and validity of the text considering author's purpose, perspective, and information from additional sources **LA 12.1.6.b.** Analyze and evaluate narrative text (e.g., characterization, setting, plot development, internal and external conflict, inferred and recurring themes, point of view, tone, mood) **LA 12.1.6.c.** Analyze the function and critique the effects of the author's use of stylistic and literary devices (e.g., allusion, symbolism, irony, foreshadowing, flashback, metaphor, personification, epiphany, oxymoron, dialect, tone, mood, transitional devices)	**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

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT Reading College Readiness Standards
LA 12.1. Reading	
LA 12.1.6.d. Summarize, analyze, synthesize, and evaluate informational text **LA 12.1.6.e.** Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support, concept definition, question/answer) **LA 12.1.6.f.** Analyze and evaluate information from text features (e.g., index, annotations, photographs, charts, tables, graphs, headings, subheadings, lists) **LA 12.1.6.g.** Analyze and evaluate and make inferences based on the characteristics of narrative and informational genres and provide evidence from the text to support understanding **LA 12.1.6.h.** Critique the effects of historical, cultural, political, and biographical influences in a variety of genres **LA 12.1.6.i.** Use narrative and informational text to develop a national and global multi-cultural perspective **LA 12.1.6.j.** Generate and/or answer literal, inferential, critical, and interpretive questions, analyzing, synthesizing, and evaluating prior knowledge, information from the text and additional sources, to support answers **LA 12.1.6.k.** Select a text for a particular purpose (e.g., understand a specific viewpoint, enjoy, solve problems, form an opinion, discover models for own writing, predict outcomes, accomplish a task) **LA 12.1.6.l.** Build and activate prior knowledge in order to clarify text, deepen understanding, and make connections while reading **LA 12.1.6.m.** Self-monitor comprehension for accuracy and understanding when errors detract from meaning by applying appropriate strategies to self-correct **LA 12.1.6.n.** Make complex or abstract inferences or predictions by synthesizing information while previewing and reading text **LA 12.1.6.o.** Respond to text verbally, in writing, or artistically	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 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

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT Reading College Readiness Standards
LA 12.1. Reading	
	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
	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 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT English and Writing College Readiness Standards
LA 12.2. Writing Students will learn and apply writing skills and strategies to communicate.	
LA 12.2.1. Writing Process: Students will apply the writing process to plan, draft, revise, edit and publish writing using correct spelling, grammar, punctuation, and other standard conventions appropriate for grade level. **LA 12.2.1.a.** Select and use appropriate prewriting tools to generate and organize information, guide writing, answer questions, and synthesize information **LA 12.2.1.b.** Generate a draft by: Constructing clearly worded and effectively placed thesis statements that convey a clear perspective on the subject Structuring ideas and arguments in an effective and sustained way, following an organizational pattern appropriate to the purpose and intended audience Applying standard rules of sentence formation, including parallel structure and subordination **LA 12.2.1.c.** Revise to improve writing (e.g., quality of ideas, organization, sentence fluency, word choice, voice) **LA 12.2.1.d.** Provide oral, written and/or electronic feedback to other writers; utilize others' feedback to improve own writing **LA 12.2.1.e.** Edit writing for format and conventions (e.g., spelling, capitalization, grammar, punctuation) **LA 12.2.1.f.** Publish a legible document that applies formatting techniques to contribute to the readability and impact of the document (e.g., fonts, spacing, highlighting, images, style conventions, manuscript requirements)	**English** College Readiness Standards **Topic Development in Terms of Purpose and Focus:** Identify the basic purpose or role of a specified phrase or sentence Delete a clause or sentence because it is obviously irrelevant to the essay Identify the central idea or main topic of a straightforward piece of writing Determine relevancy when presented with a variety of sentence-level details Identify the focus of a simple essay, applying that knowledge to add a sentence that sharpens that focus or to determine if an essay has met a specified goal Delete material primarily because it disturbs the flow and development of the paragraph Add a sentence to accomplish a fairly straightforward purpose such as illustrating a given statement Apply an awareness of the focus and purpose of a fairly involved essay to determine the rhetorical effect and suitability of an existing phrase or sentence, or to determine the need to delete plausible but irrelevant material Add a sentence to accomplish a subtle rhetorical purpose such as to emphasize, to add supporting detail, or to express meaning through connotation **Organization, Unity, and Coherence:** Use conjunctive adverbs or phrases to show time relationships in simple narrative essays (e.g., *then*, *this time*) Select the most logical place to add a sentence in a paragraph Use conjunctive adverbs or phrases to express straightforward logical relationships (e.g., *first*, *afterward*, *in response*) Decide the most logical place to add a sentence in an essay Add a sentence that introduces a simple paragraph Determine the need for conjunctive adverbs or phrases to create subtle logical connections between sentences (e.g., *therefore*, *however*, *in addition*) 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 Add a sentence to introduce or conclude a fairly complex paragraph

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT English and Writing College Readiness Standards
LA 12.2. Writing	
	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 **Sentence Structure and Formation:** Use conjunctions or punctuation to join simple clauses Revise shifts in verb tense between simple clauses in a sentence or between simple adjoining sentences Determine the need for punctuation and conjunctions to avoid awkward-sounding sentence fragments and fused sentences Decide the appropriate verb tense and voice by considering the meaning of the entire sentence Recognize and correct marked disturbances of sentence flow and structure (e.g., participial phrase fragments, missing or incorrect relative pronouns, dangling or misplaced modifiers) Revise to avoid faulty placement of phrases and faulty coordination and subordination of clauses in sentences with subtle structural problems Maintain consistent verb tense and pronoun person on the basis of the preceding clause or sentence Use sentence-combining techniques, effectively avoiding problematic comma splices, run-on sentences, and sentence fragments, especially in sentences containing compound subjects or verbs Maintain a consistent and logical use of verb tense and pronoun person on the basis of information in the paragraph or essay as a whole **Conventions of Usage:** Solve such basic grammatical problems as how to form the past and past participle of irregular but commonly used verbs and how to form comparative and superlative adjectives

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT English and Writing College Readiness Standards
LA 12.2. Writing	
	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
	Deal with multiple punctuation problems (e.g., compound sentences containing unnecessary commas and phrases that may or may not be parenthetical)
	Use an apostrophe to show possession, especially with irregular plural nouns

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT English and Writing College Readiness Standards
LA 12.2. Writing	
	Writing College Readiness Standards **Expressing Judgments:** 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 **Focusing on the Topic:** Maintain a clear focus on discussion of the specific topic and issue in the prompt throughout the essay Present a critical thesis that clearly establishes the focus on the writer's position on the issue **Developing a Position:** Develop several ideas fully, using specific and relevant reasons, details, and examples Show effective movement between general and specific ideas and examples **Organizing Ideas:** Provide unity and coherence throughout the essay, often with a logical progression of ideas **Using Language:** 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
LA 12.2.2. Writing Genres: Students will write for a variety of purposes and audiences in multiple genres. **LA 12.2.2.a.** Write in a variety of genres, considering purpose, audience, medium, and available technology **LA 12.2.2.b.** Write considering typical characteristics of the selected genre (e.g., resume, brochure, web page/blog, news article, job application and accompanying cover letter, senior project, college application essay) **LA 12.2.2.c.** Select and apply an organizational structure appropriate to the task **LA 12.2.2.d.** Analyze models and examples (own and others') of various genres in order to create a similar piece	**Writing** College Readiness Standards **Expressing Judgments:** 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 **Focusing on the Topic:** Maintain a clear focus on discussion of the specific topic and issue in the prompt throughout the essay Present a critical thesis that clearly establishes the focus on the writer's position on the issue **Developing a Position:** Develop several ideas fully, using specific and relevant reasons, details, and examples Show effective movement between general and specific ideas and examples **Organizing Ideas:** Provide unity and coherence throughout the essay, often with a logical progression of ideas

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT English and Writing College Readiness Standards
LA 12.2. Writing	
	Using Language: 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

NEBRASKA Grades 9–12 Language Arts Standards	ACT College Readiness Standards
LA 12.3. Speaking & Listening Students will learn and apply speaking and listening skills and strategies to communicate.	
LA 12.3.1. Speaking Skills: Students will develop, apply, and refine speaking skills to communicate key ideas in a variety of situations. **LA 12.3.1.a.** Communicate ideas and information in a manner appropriate for the purpose and setting **LA 12.3.1.b.** Demonstrate and adjust speaking techniques for a variety of purposes and situations **LA 12.3.1.c.** Utilize available media to enhance communication	
LA 12.3.2. Listening Skills: Students will develop, apply, and refine active listening skills across a variety of situations. **LA 12.3.2.a.** Apply listening skills needed to summarize and evaluate information given in multiple situations and modalities (e.g., video, audio, distance, one-to-one, group) **LA 12.3.2.b.** Listen and respond to messages by expressing a point of view on the topic using questions, challenges, or affirmations **LA 12.3.2.c.** Listen to and evaluate the clarity, quality and effectiveness of important points, arguments, and evidence being communicated	
LA 12.3.3. Reciprocal Communication: Students will develop, apply, and adapt reciprocal communication skills. **LA 12.3.3.a.** Interact and collaborate with others in learning situations by contributing questions, information, opinions, and ideas using a variety of media and formats **LA 12.3.3.b.** Solicit and respect diverse perspectives while searching for information, collaborating, and participating as a member of the community (e.g., sensitivity to the use of words)	

TABLE 1D

NEBRASKA Grades 9–12 Language Arts Standards	ACT College Readiness Standards
LA 12.4. Multiple Literacies Students will identify, locate, and evaluate information.	
LA 12.4.1. Multiple Literacies: Students will research, synthesize, evaluate and communicate information in a variety of media and formats (textual, visual, and digital). **LA 12.4.1.a.** Select and use multiple resources to answer questions and defend conclusions using valid information (e.g., print, subscription databases, web resources) **LA 12.4.1.b.** Demonstrate ethical and legal use of information by citing sources using prescribed formats and tools (e.g., online citation assistance, publication guidelines) **LA 12.4.1.c.** Practice safe and ethical behaviors when communicating and interacting with others (e.g., safe information to share on-line, appropriate language use, utilize appropriate sites and materials, respect diverse perspectives) **LA 12.4.1.d.** Engage in activities with learners from a variety of cultures through electronic means (e.g., podcasts, video chats, distance learning) **LA 12.4.1.e.** While reading, listening, and viewing, evaluate the message for bias, commercialism and hidden agendas (e.g., product placement, television ad, radio ad, movie, body image, sexism) **LA 12.4.1.f.** Gather and share information and opinions as a result of communication with others (e.g., video/audio chat, interview, podcast, multi-media presentations) **LA 12.4.1.g.** Use social networks and information tools to gather and share information (e.g., social bookmarking, online collaborative tools, web page/blog)	

TABLE 1E

NEBRASKA Grades 9–12 Language Arts Academic Standards	WorkKeys *Reading for Information* Skills
LA 12.1. Reading Students will learn and apply reading skills and strategies to comprehend text.	
LA 12.1.1. Knowledge of Print [Concept mastered at a previous grade level]	
LA 12.1.2. Phonological Awareness [Concept mastered at a previous grade level]	
LA 12.1.3. Word Analysis [Concept mastered at a previous grade level]	
LA 12.1.4. Fluency: Students will read a variety of grade level texts fluently with accuracy, appropriate pace, phrasing, and expression. **LA 12.1.4.a.** Independently incorporate elements of prosodic reading to interpret text in a variety of situations **LA 12.1.4.b.** Adjust oral or silent reading pace based on purpose, text difficulty, form, and style **LA 12.1.4.c.** Recognize and represent writer's tone and style while reading individually or in groups (e.g., change genre of text to perform orally)	
LA 12.1.5. Vocabulary: Students will build literary, general academic, and content specific grade level vocabulary. **LA 12.1.5.a.** Determine meaning of words through structural analysis, using knowledge of Greek, Latin, and Anglo-Saxon roots, prefixes, and suffixes to understand complex words, including words in science, mathematics, and social studies **LA 12.1.5.b.** Relate new grade level vocabulary to prior knowledge and use in new situations **LA 12.1.5.c.** Independently apply appropriate strategy to determine meaning of unknown words in text **LA 12.1.5.d.** Use semantic relationships to evaluate, defend, and make judgments **LA 12.1.5.e.** Determine meaning using print and digital reference materials	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 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
LA 12.1.6. Comprehension: Students will extract and construct meaning using prior knowledge, applying text information, and monitoring comprehension while reading grade level text. **LA 12.1.6.a.** Evaluate the meaning, reliability, and validity of the text considering author's purpose, perspective, and information from additional sources **LA 12.1.6.b.** Analyze and evaluate narrative text (e.g., characterization, setting, plot development, internal and external conflict, inferred and recurring themes, point of view, tone, mood) **LA 12.1.6.c.** Analyze the function and critique the effects of the author's use of stylistic and literary devices (e.g., allusion, symbolism, irony, foreshadowing, flashback, metaphor, personification, epiphany, oxymoron, dialect, tone, mood, transitional devices)	Apply technical terms and jargon and relate them to stated 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 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 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)

TABLE 1E

NEBRASKA Grades 9–12 Language Arts Academic Standards	WorkKeys *Reading for Information* Skills
LA 12.1. Reading	
LA 12.1.6.d. Summarize, analyze, synthesize, and evaluate informational text **LA 12.1.6.e.** Apply knowledge of organizational patterns found in informational text (e.g., sequence, description, cause and effect, compare/contrast, fact/opinion, proposition/support, concept definition, question/answer) **LA 12.1.6.f.** Analyze and evaluate information from text features (e.g., index, annotations, photographs, charts, tables, graphs, headings, subheadings, lists) **LA 12.1.6.g.** Analyze and evaluate and make inferences based on the characteristics of narrative and informational genres and provide evidence from the text to support understanding **LA 12.1.6.h.** Critique the effects of historical, cultural, political, and biographical influences in a variety of genres **LA 12.1.6.i.** Use narrative and informational text to develop a national and global multi-cultural perspective **LA 12.1.6.j.** Generate and/or answer literal, inferential, critical, and interpretive questions, analyzing, synthesizing, and evaluating prior knowledge, information from the text and additional sources, to support answers **LA 12.1.6.k.** Select a text for a particular purpose (e.g., understand a specific viewpoint, enjoy, solve problems, form an opinion, discover models for own writing, predict outcomes, accomplish a task) **LA 12.1.6.l.** Build and activate prior knowledge in order to clarify text, deepen understanding, and make connections while reading **LA 12.1.6.m.** Self-monitor comprehension for accuracy and understanding when errors detract from meaning by applying appropriate strategies to self-correct **LA 12.1.6.n.** Make complex or abstract inferences or predictions by synthesizing information while previewing and reading text **LA 12.1.6.o.** Respond to text verbally, in writing, or artistically	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

TABLE 1E

NEBRASKA Grades 9–12 Language Arts Standards	WorkKeys *Reading for Information* Skills
LA 12.2. Writing Students will learn and apply writing skills and strategies to communicate.	
LA 12.2.1. Writing Process: Students will apply the writing process to plan, draft, revise, edit and publish writing using correct spelling, grammar, punctuation, and other standard conventions appropriate for grade level. **LA 12.2.1.a.** Select and use appropriate prewriting tools to generate and organize information, guide writing, answer questions, and synthesize information **LA 12.2.1.b.** Generate a draft by: Constructing clearly worded and effectively placed thesis statements that convey a clear perspective on the subject Structuring ideas and arguments in an effective and sustained way, following an organizational pattern appropriate to the purpose and intended audience Applying standard rules of sentence formation, including parallel structure and subordination **LA 12.2.1.c.** Revise to improve writing (e.g., quality of ideas, organization, sentence fluency, word choice, voice) **LA 12.2.1.d.** Provide oral, written and/or electronic feedback to other writers; utilize others' feedback to improve own writing **LA 12.2.1.e.** Edit writing for format and conventions (e.g., spelling, capitalization, grammar, punctuation) **LA 12.2.1.f.** Publish a legible document that applies formatting techniques to contribute to the readability and impact of the document (e.g., fonts, spacing, highlighting, images, style conventions, manuscript requirements)	
LA 12.2.2. Writing Genres: Students will write for a variety of purposes and audiences in multiple genres. **LA 12.2.2.a.** Write in a variety of genres, considering purpose, audience, medium, and available technology **LA 12.2.2.b.** Write considering typical characteristics of the selected genre (e.g., resume, brochure, web page/blog, news article, job application and accompanying cover letter, senior project, college application essay) **LA 12.2.2.c.** Select and apply an organizational structure appropriate to the task **LA 12.2.2.d.** Analyze models and examples (own and others') of various genres in order to create a similar piece	

TABLE 1E

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LA 12.3. Speaking & Listening Students will learn and apply speaking and listening skills and strategies to communicate.	
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LA 12.3.2. Listening Skills: Students will develop, apply, and refine active listening skills across a variety of situations. **LA 12.3.2.a.** Apply listening skills needed to summarize and evaluate information given in multiple situations and modalities (e.g., video, audio, distance, one-to-one, group) **LA 12.3.2.b.** Listen and respond to messages by expressing a point of view on the topic using questions, challenges, or affirmations **LA 12.3.2.c.** Listen to and evaluate the clarity, quality and effectiveness of important points, arguments, and evidence being communicated	
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SUPPLEMENT
TABLES 2A–2E:
MATHEMATICS

TABLE 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.1. Number Sense Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.1.1. Number System: Students will represent and show relationships among real numbers. **MA 8.1.1.a.** Compare and order real numbers **MA 8.1.1.b.** Demonstrate relative position of real numbers on the number line (e.g., square root of 2 is left of 1.5) **MA 8.1.1.c.** Represent small numbers using scientific notation **MA 8.1.1.d.** Classify numbers as natural, whole, integer, rational, irrational, or real	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Order fractions Work with scientific notation **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
MA 8.1.2. Operations: Students will demonstrate the meaning of arithmetic operations with integers. **MA 8.1.2.a.** Use drawings, words, and symbols to explain the meaning of addition, subtraction, multiplication, and division of integers. **MA 8.1.2.b.** Use words and symbols to explain the zero property of multiplication (e.g., if ab = 0 then a or b or both must be zero) **MA 8.1.2.c.** Use words and symbols to explain why division by zero is undefined	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart Read tables and graphs Perform computations on data from tables and graphs **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)
MA 8.1.3. Computation: Students will compute fluently and accurately using appropriate strategies and tools. **MA 8.1.3.a.** Compute accurately with rational numbers **MA 8.1.3.b.** Evaluate expressions involving absolute value of integers **MA 8.1.3.c.** Calculate squares of integers, the square roots of perfect squares, and the square roots of whole numbers using technology **MA 8.1.3.d.** Select, apply, and explain the method of computation when problem solving using rational numbers (e.g., models, mental computation, paper-pencil, technology, divisibility rules) **MA 8.1.3.e.** Solve problems involving ratios and proportions (e.g., $\frac{x}{5} = \frac{10}{17}$)	**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 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 **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

TABLE 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.1. Number Sense	
MA 8.1.4. Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools. **MA 8.1.4.a.** Use estimation methods to check the reasonableness of solutions for problems involving rational numbers	**Basic Operations & Applications:** Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent Solve some routine two-step arithmetic problems Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average **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 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.2. Geometry/Measurement Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.2.1. Characteristics: Students will describe, compare, and contrast characteristics, properties, and relationships of geometric shapes and objects. **MA 8.2.1.a.** Identify and describe similarity of three-dimensional objects **MA 8.2.1.b.** Compare and contrast relationships between similar and congruent objects **MA 8.2.1.c.** Identify geometric properties of parallel lines cut by a transversal and related angles (e.g., perpendicular and parallel lines with transversals) and angles (e.g., corresponding, alternate interior, alternate exterior) **MA 8.2.1.d.** Identify pairs of angles (e.g., adjacent, complementary, supplementary, vertical) **MA 8.2.1.e.** Examine the relationships of the interior angles of a triangle (e.g., the sum of the angles is 180 degrees)	**Properties of Plane Figures:** Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use several angle properties to find an unknown angle measure
MA 8.2.2. Coordinate Geometry: Students will specify locations and describe relationships using coordinate geometry. **MA 8.2.2.a.** Use coordinate geometry to represent and examine the properties of rectangles and squares using horizontal and vertical segments	**Graphical Representations:** Identify the location of a point with a positive coordinate on the number line Locate points on the number line and in the first quadrant Locate points in the coordinate plane Comprehend the concept of length on the number line Exhibit knowledge of slope
MA 8.2.3. Transformations: Students will perform transformations and use them to analyze the orientation and size of geometric shapes. **MA 8.2.3.a.** Identify the similarity of dilated shapes **MA 8.2.3.b.** Perform and describe positions and sizes of shapes under dilations (e.g., scale factor, ratios)	
MA 8.2.4. Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems. **MA 8.2.4.a.** Draw geometric objects with specified properties (e.g., parallel sides, number of sides, angle measures, number of faces)	**Properties of Plane Figures:** Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines

TABLE 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.2. Geometry/Measurement	
MA 8.2.5. Measurement: Students will select and apply appropriate procedures, tools, and formulas to determine measurements. **MA 8.2.5.a.** Use strategies to find the perimeter and area of complex shapes **MA 8.2.5.b.** Determine surface area and volume of three-dimensional objects (e.g., rectangular prisms, cylinders) **MA 8.2.5.c.** Apply the Pythagorean theorem to find missing lengths in right triangles and to solve problems **MA 8.2.5.d.** Use scale factors to find missing lengths in similar shapes **MA 8.2.5.e.** Convert between metric and standard units of measurement, given conversion factors (e.g., meters to yards)	**Basic Operations & Applications:** Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour) **Properties of Plane Figures:** Recognize Pythagorean triples **Measurement:** Estimate or calculate the length of a line segment based on other lengths given on a geometric figure Compute the perimeter of polygons when all side lengths are given Compute the area of rectangles when whole number dimensions are given Compute the area and perimeter of triangles and rectangles in simple problems Use geometric formulas when all necessary information is given Compute the area of triangles and rectangles when one or more additional simple steps are required Compute the perimeter of simple composite geometric figures with unknown side lengths

TABLE 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.3. Algebra Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.3.1. Relationships: Students will represent and analyze relationships using algebraic symbols. **MA 8.3.1.a.** Represent and analyze a variety of patterns with tables, graphs, words, and algebraic equations **MA 8.3.1.b.** Describe relationships using algebraic expressions, equations, and inequalities (e.g., two-step, one variable) **MA 8.3.1.c.** Identify constant slope from tables and graphs	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart 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) Manipulate data from tables and graphs **Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) **Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations
MA 8.3.2. Modeling in Context: Students will create, use, and interpret models of quantitative relationships. **MA 8.3.2.a.** Model contextualized problems using various representations (e.g., two-step/one-variable equations) **MA 8.3.2.b.** Represent a variety of quantitative relationships using algebraic expressions and two-step/one-variable equations	**Expressions, Equations, & Inequalities:** Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$) Perform straightforward word-to-symbol translations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)
MA 8.3.3. Procedures: Students will apply properties to solve equations and inequalities. **MA 8.3.3.a.** Explain the multiplicative inverse (e.g., $4 * ¼ = 1$) **MA 8.3.3.b.** Evaluate numerical expressions containing whole number exponents (e.g., if $x = 4$, then $(x + 3)^2 + 5x = ?$) **MA 8.3.3.c.** Solve multi-step equations involving rational numbers **MA 8.3.3.d.** Solve two-step inequalities involving rational numbers **MA 8.3.3.e.** Identify and explain the properties used in solving two-step inequalities and multi-step equations	**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:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Evaluate algebraic expressions by substituting integers for unknown quantities Solve routine first-degree equations Solve real-world problems using first-degree equations Solve first-degree inequalities that do not require reversing the inequality sign

TABLE 2A

NEBRASKA Grade 8 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 8.4. Data Analysis/Probability Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 8.4.1. Display and Analysis: Students will formulate questions that can be addressed with data, and then organize, display, and analyze the relevant data to answer their questions. **MA 8.4.1.a.** Represent data using circle graphs and box plots with and without the use of technology **MA 8.4.1.b.** Compare characteristics between sets of data or within a given set of data **MA 8.4.1.c.** Find, interpret, and compare measures of central tendency (mean, median, mode) and the quartiles for sets of data **MA 8.4.1.d.** Select the most appropriate unit of central tendency for sets of data **MA 8.4.1.e.** Identify misrepresentation and misinterpretation of data represented in circle graphs and box plots	**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 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) Manipulate data from tables and graphs
MA 8.4.2. Predictions and Inferences: Students will evaluate predictions and make inferences based on data. **MA 8.4.2.a.** Evaluate predictions to formulate new questions and plan new studies **MA 8.4.2.b.** Compare and contrast two sets of data to make inferences	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart 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)
MA 8.4.3. Probability: Students will apply and interpret basic concepts of probability. **MA 8.4.3.a.** Identify complementary events and calculate their probabilities **MA 8.4.3.b.** Compute probabilities for independent compound events	**Probability, Statistics, & Data Analysis:** Use the relationship between the probability of an event and the probability of its complement Determine the probability of a simple event Compute straightforward probabilities for common situations

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.1. Number Sense Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.1.1. Number System: Students will represent and show relationships among complex numbers. **MA 12.1.1.a.** Demonstrate multiple equivalent forms of irrational numbers (e.g., $\sqrt{8} = 8^{\frac{1}{2}} = 2\sqrt{2}$) **MA 12.1.1.b.** Compare, contrast and apply the properties of numbers and the real number system, including rational, irrational, imaginary, and complex numbers	**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:** 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 Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers
MA 12.1.2. Operations: Students will demonstrate the meaning and effects of arithmetic operations with real numbers. **MA 12.1.2.a.** Use drawings, words, and symbols to explain the effects of such operations as multiplication and division, and computing positive powers and roots on the magnitude of quantities (e.g., if you take the square root of a number, will the result always be smaller than the original number? (e.g., $\sqrt{\frac{1}{4}} = \frac{1}{2}$)) **MA 12.1.2.b.** Use drawings, words, and symbols to explain that the distance between two numbers on the number line is the absolute value of their difference	**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 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 **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) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **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

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.1. Number Sense	
MA 12.1.3. Computation: Students will compute fluently and accurately using appropriate strategies and tools. **MA 12.1.3.a.** Compute accurately with real numbers **MA 12.1.3.b.** Simplify exponential expressions (e.g., powers of –1, 0, ½, $3^2 * 3^2 = 3^4$) **MA 12.1.3.c.** Multiply and divide numbers using scientific notation **MA 12.1.3.d.** Select, apply, and explain the method of computation when problem solving using real numbers (e.g., models, mental computation, paper-pencil, or technology)	**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:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents
MA 12.1.4. Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools. **MA 12.1.4.a.** Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation or an exact number (e.g., 10π (pi) is approximately 31.4, square and cube roots) **MA 12.1.4.b.** Distinguish relevant from irrelevant information, identify missing information and either find what is needed or make appropriate estimates	**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

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.2.1. Characteristics: Students will analyze characteristics, properties, and relationships among geometric shapes and objects. **MA 12.2.1.a.** Identify and explain the necessity of and give examples of definitions and theorems **MA 12.2.1.b.** Analyze properties and relationships among classes of two and three-dimensional geometric objects using inductive reasoning and counterexamples **MA 12.2.1.c.** State and prove geometric theorems using deductive reasoning (e.g., parallel lines with transversals, congruent triangles, similar triangles) **MA 12.2.1.d.** Apply geometric properties to solve problems (e.g., parallel lines, line transversals, similar triangles, congruent triangles, proportions) **MA 12.2.1.e.** Identify and apply right triangle relationships (e.g., sine, cosine, tangent, special right triangles, converse of Pythagorean Theorem) **MA 12.2.1.f.** Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true **MA 12.2.1.g.** Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems	**Properties of Plane Figures:** Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use several angle properties to find an unknown angle measure Recognize Pythagorean triples
MA 12.2.2. Coordinate Geometry: Student will use coordinate geometry to analyze and describe relationships in the coordinate plane. **MA 12.2.2.a.** Use coordinate geometry to analyze geometric situations (e.g., parallel lines, perpendicular lines, circle equations) **MA 12.2.2.b.** Apply the midpoint formula **MA 12.2.2.c.** Apply the distance formula **MA 12.2.2.d.** Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square)	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Determine the slope of a line from points or equations Find the midpoint of a line segment
MA 12.2.3. Transformations: Students will apply and analyze transformations. **MA 12.2.3.a.** Explain and justify the effects of simple transformations on the ordered pairs of two-dimensional shapes **MA 12.2.3.b.** Perform and describe multiple transformations	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement	
MA 12.2.4. Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems. **MA 12.2.4.a.** Sketch and draw appropriate representations of geometric objects using ruler, protractor, or technology **MA 12.2.4.b.** Use geometric models to visualize, describe, and solve problems (e.g., find the height of a tree; find the amount of paint needed for a room; scale model)	
MA 12.2.5. Measurement: Students will apply the units, systems, and formulas to solve problems. **MA 12.2.5.a.** Use strategies to find surface area and volume of complex objects **MA 12.2.5.b.** Apply appropriate units and scales to solve problems involving measurement **MA 12.2.5.c.** Convert between various units of area and volume, such as square feet to square yards **MA 12.2.5.d.** Convert equivalent rates (e.g., feet/second to miles/hour) **MA 12.2.5.e.** Find arc length and area of sectors of a circle **MA 12.2.5.f.** Determine surface area and volume of three-dimensional objects (e.g., spheres, cones, pyramids) **MA 12.2.5.g.** Know that the effect of a scale factor k on length, area and volume is to multiply each by k, k^2 and k^3, respectively	**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:** Use geometric formulas when all necessary information is given

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.3. Algebra Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.3.1. Relationships: Students will generalize, represent, and analyze relationships using algebraic symbols. **MA 12.3.1.a.** Represent, interpret, and analyze functions with graphs, tables, and algebraic notation and convert among these representations (e.g., linear, non-linear*) **MA 12.3.1.b.** Identify domain and range of functions represented in either symbolic or graphical form (e.g., linear, non-linear*) **MA 12.3.1.c.** Identify the slope and intercepts of a linear relationship from an equation or graph **MA 12.3.1.d.** Identify characteristics of linear and non-linear functions* **MA 12.3.1.e.** Graph linear and non-linear functions* **MA 12.3.1.f.** Compare and analyze the rate of change by using ordered pairs, tables, graphs, and equations **MA 12.3.1.g.** Graph and interpret linear inequalities **MA 12.3.1.h.** Represent, interpret, and analyze functions and their inverses **MA 12.3.1.i.** Determine if a relation is a function	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart 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) Manipulate data from tables and graphs **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Identify the graph of a linear inequality on the number line Determine the slope of a line from points or equations Match linear graphs with their equations
MA 12.3.2. Modeling in Context: Students will model and analyze quantitative relationships. **MA 12.3.2.a.** Model contextualized problems† using various representations (e.g., graphs, tables, one-variable equalities, one-variable inequalities, linear equations in slope-intercept form, inequalities in slope-intercept form, system of linear equations with two variables) **MA 12.3.2.b.** Represent a variety of quantitative relationships using linear equations and one variable inequalities **MA 12.3.2.c.** Analyze situations to determine the type of algebraic relationship (e.g., linear, non-linear) **MA 12.3.2.d.** Model contextualized problems† using various representations for non-linear functions (e.g., quadratic, exponential, square root, and absolute value)	**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) **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:** Exhibit knowledge of slope Determine the slope of a line from points or equations

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.3. Algebra	
MA 12.3.3. Procedures: Students will represent and solve equations and inequalities. **MA 12.3.3.a.** Explain/apply the reflexive, symmetric, and transitive properties of equality **MA 12.3.3.b.** Simplify algebraic expressions involving exponents (e.g., $(3x^4)^2$) **MA 12.3.3.c.** Add and subtract polynomials **MA 12.3.3.d.** Multiply and divide polynomials (e.g., divide $x^3 - 8$ by $x - 2$, divide $x^4 - 5x^3 - 2x$ by x^2) **MA 12.3.3.e.** Factor polynomials **MA 12.3.3.f.** Identify and generate equivalent forms of linear equations **MA 12.3.3.g.** Solve linear equations and inequalities including absolute value **MA 12.3.3.h.** Identify and explain the properties used in solving equations and inequalities **MA 12.3.3.i.** Solve quadratic equations (e.g., factoring, graphing, quadratic formula) **MA 12.3.3.j.** Add, subtract, and simplify rational expressions **MA 12.3.3.k.** Multiply, divide, and simplify rational expressions **MA 12.3.3.l.** Evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables **MA 12.3.3.m.** Derive and use the formulas for the general term and summation of finite arithmetic and geometric series **MA 12.3.3.n.** Combine functions by composition, as well as by addition, subtraction, multiplication, and division **MA 12.3.3.o.** Solve an equation involving several variables for one variable in terms of the others **MA 12.3.3.p.** Analyze and solve systems of two linear equations in two variables algebraically and graphically	**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:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Multiply two binomials Solve real-world problems using first-degree equations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve first-degree inequalities that do not require reversing the inequality sign

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.4.1. Display and Analysis: Students will formulate a question and design a survey or an experiment in which data is collected and displayed in a variety of formats, then select and use appropriate statistical methods to analyze the data. **MA 12.4.1.a.** Interpret data represented by the normal distribution and formulate conclusions **MA 12.4.1.b.** Compute, identify, and interpret measures of central tendency (mean, median, mode) when provided a graph or data set **MA 12.4.1.c.** Explain how sample size and transformations of data affect measures of central tendency **MA 12.4.1.d.** Describe the shape and determine spread (variance, standard deviation) and outliers of a data set **MA 12.4.1.e.** Explain how statistics are used or misused in the world **MA 12.4.1.f.** Create scatter plots, analyze patterns, and describe relationships in paired data **MA 12.4.1.g.** Explain the impact of sampling methods, bias, and the phrasing of questions asked during data collection and the conclusions that can rightfully be made **MA 12.4.1.h.** Explain the differences between randomized experiment and observational studies	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Calculate the average of a list of numbers 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 **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane
MA 12.4.2. Predictions and Inferences: Students will develop and evaluate inferences to make predictions. **MA 12.4.2.a.** Compare data sets and evaluate conclusions using graphs and summary statistics **MA 12.4.2.b.** Support inferences with valid arguments **MA 12.4.2.c.** Develop linear equations for linear models to predict unobserved outcomes using regression line and correlation coefficient **MA 12.4.2.d.** Recognize when arguments based on data confuse correlation with causation	**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) **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:** Exhibit knowledge of slope Determine the slope of a line from points or equations

TABLE 2B

NEBRASKA Grades 9–12 Mathematics Academic Standards	EXPLORE Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability	
MA 12.4.3. Probability: Students will apply and analyze concepts of probability. **MA 12.4.3.a.** Construct a sample space and a probability distribution **MA 12.4.3.b.** Identify dependent and independent events and calculate their probabilities **MA 12.4.3.c.** Use the appropriate counting techniques to determine the probability of an event (e.g., combinations, permutations) **MA 12.4.3.d.** Analyze events to determine if they are mutually exclusive **MA 12.4.3.e.** Determine the relative frequency of a specified outcome of an event to estimate the probability of the outcome	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.1. Number Sense Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.1.1. Number System: Students will represent and show relationships among complex numbers. **MA 12.1.1.a.** Demonstrate multiple equivalent forms of irrational numbers (e.g., $\sqrt{8} = 8^{\frac{1}{2}} = 2\sqrt{2}$) **MA 12.1.1.b.** Compare, contrast and apply the properties of numbers and the real number system, including rational, irrational, imaginary, and complex numbers	**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:** 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 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
MA 12.1.2. Operations: Students will demonstrate the meaning and effects of arithmetic operations with real numbers. **MA 12.1.2.a.** Use drawings, words, and symbols to explain the effects of such operations as multiplication and division, and computing positive powers and roots on the magnitude of quantities (e.g., if you take the square root of a number, will the result always be smaller than the original number? (e.g., $\sqrt{\frac{1}{4}} = \frac{1}{2}$)) **MA 12.1.2.b.** Use drawings, words, and symbols to explain that the distance between two numbers on the number line is the absolute value of their difference	**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 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 **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) **Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor **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

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.1. Number Sense	
MA 12.1.3. Computation: Students will compute fluently and accurately using appropriate strategies and tools. **MA 12.1.3.a.** Compute accurately with real numbers **MA 12.1.3.b.** Simplify exponential expressions (e.g., powers of –1, 0, ½, $3^2 * 3^2 = 3^4$) **MA 12.1.3.c.** Multiply and divide numbers using scientific notation **MA 12.1.3.d.** Select, apply, and explain the method of computation when problem solving using real numbers (e.g., models, mental computation, paper-pencil, or technology)	**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:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Apply rules of exponents
MA 12.1.4. Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools. **MA 12.1.4.a.** Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation or an exact number (e.g., 10π (pi) is approximately 31.4, square and cube roots) **MA 12.1.4.b.** Distinguish relevant from irrelevant information, identify missing information and either find what is needed or make appropriate estimates	**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

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.2.1. Characteristics: Students will analyze characteristics, properties, and relationships among geometric shapes and objects. **MA 12.2.1.a.** Identify and explain the necessity of and give examples of definitions and theorems **MA 12.2.1.b.** Analyze properties and relationships among classes of two and three-dimensional geometric objects using inductive reasoning and counterexamples **MA 12.2.1.c.** State and prove geometric theorems using deductive reasoning (e.g., parallel lines with transversals, congruent triangles, similar triangles) **MA 12.2.1.d.** Apply geometric properties to solve problems (e.g., parallel lines, line transversals, similar triangles, congruent triangles, proportions) **MA 12.2.1.e.** Identify and apply right triangle relationships (e.g., sine, cosine, tangent, special right triangles, converse of Pythagorean Theorem) **MA 12.2.1.f.** Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true **MA 12.2.1.g.** Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems	**Properties of Plane Figures:** Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use several angle properties to find an unknown angle measure Recognize Pythagorean triples Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles Use the Pythagorean theorem
MA 12.2.2. Coordinate Geometry: Student will use coordinate geometry to analyze and describe relationships in the coordinate plane. **MA 12.2.2.a.** Use coordinate geometry to analyze geometric situations (e.g., parallel lines, perpendicular lines, circle equations) **MA 12.2.2.b.** Apply the midpoint formula **MA 12.2.2.c.** Apply the distance formula **MA 12.2.2.d.** Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square)	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Determine the slope of a line from points or equations 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
MA 12.2.3. Transformations: Students will apply and analyze transformations. **MA 12.2.3.a.** Explain and justify the effects of simple transformations on the ordered pairs of two-dimensional shapes **MA 12.2.3.b.** Perform and describe multiple transformations	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement	
MA 12.2.4. Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems. **MA 12.2.4.a.** Sketch and draw appropriate representations of geometric objects using ruler, protractor, or technology **MA 12.2.4.b.** Use geometric models to visualize, describe, and solve problems (e.g., find the height of a tree; find the amount of paint needed for a room; scale model)	
MA 12.2.5. Measurement: Students will apply the units, systems, and formulas to solve problems. **MA 12.2.5.a.** Use strategies to find surface area and volume of complex objects **MA 12.2.5.b.** Apply appropriate units and scales to solve problems involving measurement **MA 12.2.5.c.** Convert between various units of area and volume, such as square feet to square yards **MA 12.2.5.d.** Convert equivalent rates (e.g., feet/second to miles/hour) **MA 12.2.5.e.** Find arc length and area of sectors of a circle **MA 12.2.5.f.** Determine surface area and volume of three-dimensional objects (e.g., spheres, cones, pyramids) **MA 12.2.5.g.** Know that the effect of a scale factor k on length, area and volume is to multiply each by k, k^2 and k^3, respectively	**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:** Use geometric formulas when all necessary information is given Use relationships involving area, perimeter, and volume of geometric figures to compute another measure

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.3. Algebra Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.3.1. Relationships: Students will generalize, represent, and analyze relationships using algebraic symbols. **MA 12.3.1.a.** Represent, interpret, and analyze functions with graphs, tables, and algebraic notation and convert among these representations (e.g., linear, non-linear*) **MA 12.3.1.b.** Identify domain and range of functions represented in either symbolic or graphical form (e.g., linear, non-linear*) **MA 12.3.1.c.** Identify the slope and intercepts of a linear relationship from an equation or graph **MA 12.3.1.d.** Identify characteristics of linear and non-linear functions* **MA 12.3.1.e.** Graph linear and non-linear functions* **MA 12.3.1.f.** Compare and analyze the rate of change by using ordered pairs, tables, graphs, and equations **MA 12.3.1.g.** Graph and interpret linear inequalities **MA 12.3.1.h.** Represent, interpret, and analyze functions and their inverses **MA 12.3.1.i.** Determine if a relation is a function	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart 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) Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Identify the graph of a linear inequality on the number line Determine the slope of a line from points or equations Match linear graphs with their equations Interpret and use information from graphs in the coordinate plane Match number line graphs with solution sets of linear inequalities
MA 12.3.2. Modeling in Context: Students will model and analyze quantitative relationships. **MA 12.3.2.a.** Model contextualized problems† using various representations (e.g., graphs, tables, one-variable equalities, one-variable inequalities, linear equations in slope-intercept form, inequalities in slope-intercept form, system of linear equations with two variables) **MA 12.3.2.b.** Represent a variety of quantitative relationships using linear equations and one variable inequalities **MA 12.3.2.c.** Analyze situations to determine the type of algebraic relationship (e.g., linear, non-linear) **MA 12.3.2.d.** Model contextualized problems† using various representations for non-linear functions (e.g., quadratic, exponential, square root, and absolute value)	**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) **Expressions, Equations, & Inequalities:** Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Write expressions, equations, and inequalities for common algebra settings **Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations 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)

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.3. Algebra	
MA 12.3.3. Procedures: Students will represent and solve equations and inequalities. **MA 12.3.3.a.** Explain/apply the reflexive, symmetric, and transitive properties of equality **MA 12.3.3.b.** Simplify algebraic expressions involving exponents (e.g., $(3x^4)^2$) **MA 12.3.3.c.** Add and subtract polynomials **MA 12.3.3.d.** Multiply and divide polynomials (e.g., divide $x^3 - 8$ by $x - 2$, divide $x^4 - 5x^3 - 2x$ by x^2) **MA 12.3.3.e.** Factor polynomials **MA 12.3.3.f.** Identify and generate equivalent forms of linear equations **MA 12.3.3.g.** Solve linear equations and inequalities including absolute value **MA 12.3.3.h.** Identify and explain the properties used in solving equations and inequalities **MA 12.3.3.i.** Solve quadratic equations (e.g., factoring, graphing, quadratic formula) **MA 12.3.3.j.** Add, subtract, and simplify rational expressions **MA 12.3.3.k.** Multiply, divide, and simplify rational expressions **MA 12.3.3.l.** Evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables **MA 12.3.3.m.** Derive and use the formulas for the general term and summation of finite arithmetic and geometric series **MA 12.3.3.n.** Combine functions by composition, as well as by addition, subtraction, multiplication, and division **MA 12.3.3.o.** Solve an equation involving several variables for one variable in terms of the others **MA 12.3.3.p.** Analyze and solve systems of two linear equations in two variables algebraically and graphically	**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:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Multiply two binomials Solve real-world problems using first-degree equations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve first-degree inequalities that do not require reversing the inequality sign Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Solve linear inequalities that require reversing the inequality sign Find solutions to systems of linear equations

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.4.1. Display and Analysis: Students will formulate a question and design a survey or an experiment in which data is collected and displayed in a variety of formats, then select and use appropriate statistical methods to analyze the data. **MA 12.4.1.a.** Interpret data represented by the normal distribution and formulate conclusions **MA 12.4.1.b.** Compute, identify, and interpret measures of central tendency (mean, median, mode) when provided a graph or data set **MA 12.4.1.c.** Explain how sample size and transformations of data affect measures of central tendency **MA 12.4.1.d.** Describe the shape and determine spread (variance, standard deviation) and outliers of a data set **MA 12.4.1.e.** Explain how statistics are used or misused in the world **MA 12.4.1.f.** Create scatter plots, analyze patterns, and describe relationships in paired data **MA 12.4.1.g.** Explain the impact of sampling methods, bias, and the phrasing of questions asked during data collection and the conclusions that can rightfully be made **MA 12.4.1.h.** Explain the differences between randomized experiment and observational studies	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Calculate the average of a list of numbers 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 **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane
MA 12.4.2. Predictions and Inferences: Students will develop and evaluate inferences to make predictions. **MA 12.4.2.a.** Compare data sets and evaluate conclusions using graphs and summary statistics **MA 12.4.2.b.** Support inferences with valid arguments **MA 12.4.2.c.** Develop linear equations for linear models to predict unobserved outcomes using regression line and correlation coefficient **MA 12.4.2.d.** Recognize when arguments based on data confuse correlation with causation	**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) Interpret and use information from figures, tables, and graphs **Expressions, Equations, & Inequalities:** Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Write expressions, equations, and inequalities for common algebra settings **Graphical Representations:** Exhibit knowledge of slope Determine the slope of a line from points or equations Interpret and use information from graphs in the coordinate plane

TABLE 2C

NEBRASKA Grades 9–12 Mathematics Academic Standards	PLAN Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability	
MA 12.4.3. Probability: Students will apply and analyze concepts of probability. **MA 12.4.3.a.** Construct a sample space and a probability distribution **MA 12.4.3.b.** Identify dependent and independent events and calculate their probabilities **MA 12.4.3.c.** Use the appropriate counting techniques to determine the probability of an event (e.g., combinations, permutations) **MA 12.4.3.d.** Analyze events to determine if they are mutually exclusive **MA 12.4.3.e.** Determine the relative frequency of a specified outcome of an event to estimate the probability of the outcome	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations Apply counting techniques Compute a probability when the event and/or sample space are not given or obvious

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.1. Number Sense Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.1.1. Number System: Students will represent and show relationships among complex numbers. **MA 12.1.1.a.** Demonstrate multiple equivalent forms of irrational numbers (e.g., $\sqrt{8} = 8^{\frac{1}{2}} = 2\sqrt{2}$) **MA 12.1.1.b.** Compare, contrast and apply the properties of numbers and the real number system, including rational, irrational, imaginary, and complex numbers	**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:** 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 Work with squares and square roots of numbers Work problems involving positive integer exponents Work with cubes and cube roots of numbers Exhibit some knowledge of the complex numbers Apply rules of exponents Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers Apply properties of complex numbers
MA 12.1.2. Operations: Students will demonstrate the meaning and effects of arithmetic operations with real numbers. **MA 12.1.2.a.** Use drawings, words, and symbols to explain the effects of such operations as multiplication and division, and computing positive powers and roots on the magnitude of quantities (e.g., if you take the square root of a number, will the result always be smaller than the original number? (e.g., $\sqrt{\frac{1}{4}} = \frac{1}{2}$)) **MA 12.1.2.b.** Use drawings, words, and symbols to explain that the distance between two numbers on the number line is the absolute value of their difference	**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 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 **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) **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

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.1. Number Sense	
	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
MA 12.1.3. Computation: Students will compute fluently and accurately using appropriate strategies and tools. **MA 12.1.3.a.** Compute accurately with real numbers **MA 12.1.3.b.** Simplify exponential expressions (e.g., powers of –1, 0, ½, $3^2 * 3^2 = 3^4$) **MA 12.1.3.c.** Multiply and divide numbers using scientific notation **MA 12.1.3.d.** Select, apply, and explain the method of computation when problem solving using real numbers (e.g., models, mental computation, paper-pencil, or technology)	**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:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Work with scientific notation Work with squares and square roots of numbers Work problems involving positive integer exponents Apply rules of exponents
MA 12.1.4. Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools. **MA 12.1.4.a.** Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation or an exact number (e.g., 10π (pi) is approximately 31.4, square and cube roots) **MA 12.1.4.b.** Distinguish relevant from irrelevant information, identify missing information and either find what is needed or make appropriate estimates	**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

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.2.1. Characteristics: Students will analyze characteristics, properties, and relationships among geometric shapes and objects. **MA 12.2.1.a.** Identify and explain the necessity of and give examples of definitions and theorems **MA 12.2.1.b.** Analyze properties and relationships among classes of two and three-dimensional geometric objects using inductive reasoning and counterexamples **MA 12.2.1.c.** State and prove geometric theorems using deductive reasoning (e.g., parallel lines with transversals, congruent triangles, similar triangles) **MA 12.2.1.d.** Apply geometric properties to solve problems (e.g., parallel lines, line transversals, similar triangles, congruent triangles, proportions) **MA 12.2.1.e.** Identify and apply right triangle relationships (e.g., sine, cosine, tangent, special right triangles, converse of Pythagorean Theorem) **MA 12.2.1.f.** Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true **MA 12.2.1.g.** Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems	**Properties of Plane Figures:** Exhibit some knowledge of the angles associated with parallel lines Find the measure of an angle using properties of parallel lines Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) Use several angle properties to find an unknown angle measure Recognize Pythagorean triples Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles Use the Pythagorean theorem Draw conclusions based on a set of conditions **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
MA 12.2.2. Coordinate Geometry: Student will use coordinate geometry to analyze and describe relationships in the coordinate plane. **MA 12.2.2.a.** Use coordinate geometry to analyze geometric situations (e.g., parallel lines, perpendicular lines, circle equations) **MA 12.2.2.b.** Apply the midpoint formula **MA 12.2.2.c.** Apply the distance formula **MA 12.2.2.d.** Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square)	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Determine the slope of a line from points or equations 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 Solve problems integrating multiple algebraic and/or geometric concepts
MA 12.2.3. Transformations: Students will apply and analyze transformations. **MA 12.2.3.a.** Explain and justify the effects of simple transformations on the ordered pairs of two-dimensional shapes **MA 12.2.3.b.** Perform and describe multiple transformations	**Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.2. Geometry/Measurement	
MA 12.2.4. Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems. **MA 12.2.4.a.** Sketch and draw appropriate representations of geometric objects using ruler, protractor, or technology **MA 12.2.4.b.** Use geometric models to visualize, describe, and solve problems (e.g., find the height of a tree; find the amount of paint needed for a room; scale model)	**Properties of Plane Figures:** Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas
MA 12.2.5. Measurement: Students will apply the units, systems, and formulas to solve problems. **MA 12.2.5.a.** Use strategies to find surface area and volume of complex objects **MA 12.2.5.b.** Apply appropriate units and scales to solve problems involving measurement **MA 12.2.5.c.** Convert between various units of area and volume, such as square feet to square yards **MA 12.2.5.d.** Convert equivalent rates (e.g., feet/second to miles/hour) **MA 12.2.5.e.** Find arc length and area of sectors of a circle **MA 12.2.5.f.** Determine surface area and volume of three-dimensional objects (e.g., spheres, cones, pyramids) **MA 12.2.5.g.** Know that the effect of a scale factor k on length, area and volume is to multiply each by k, k^2 and k^3, respectively	**Basic Operations & Applications:** Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings) **Properties of Plane Figures:** Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas Use relationships among angles, arcs, and distances in a circle **Measurement:** Use geometric formulas when all necessary information is given Use relationships involving area, perimeter, and volume of geometric figures to compute another measure Use scale factors to determine the magnitude of a size change Compute the area of composite geometric figures when planning or visualization is required

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.3. Algebra Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.3.1. Relationships: Students will generalize, represent, and analyze relationships using algebraic symbols. **MA 12.3.1.a.** Represent, interpret, and analyze functions with graphs, tables, and algebraic notation and convert among these representations (e.g., linear, non-linear*) **MA 12.3.1.b.** Identify domain and range of functions represented in either symbolic or graphical form (e.g., linear, non-linear*) **MA 12.3.1.c.** Identify the slope and intercepts of a linear relationship from an equation or graph **MA 12.3.1.d.** Identify characteristics of linear and non-linear functions* **MA 12.3.1.e.** Graph linear and non-linear functions* **MA 12.3.1.f.** Compare and analyze the rate of change by using ordered pairs, tables, graphs, and equations **MA 12.3.1.g.** Graph and interpret linear inequalities **MA 12.3.1.h.** Represent, interpret, and analyze functions and their inverses **MA 12.3.1.i.** Determine if a relation is a function	**Probability, Statistics, & Data Analysis:** Perform a single computation using information from a table or chart 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) Manipulate data from tables and graphs Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Exhibit knowledge of slope Identify the graph of a linear inequality on the number line Determine the slope of a line from points or equations Match linear graphs with their equations Interpret and use information from graphs in the coordinate plane Match number line graphs with solution sets of linear inequalities Match number line graphs with solution sets of simple quadratic inequalities Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
MA 12.3.2. Modeling in Context: Students will model and analyze quantitative relationships. **MA 12.3.2.a.** Model contextualized problems† using various representations (e.g., graphs, tables, one-variable equalities, one-variable inequalities, linear equations in slope-intercept form, inequalities in slope-intercept form, system of linear equations with two variables) **MA 12.3.2.b.** Represent a variety of quantitative relationships using linear equations and one variable inequalities **MA 12.3.2.c.** Analyze situations to determine the type of algebraic relationship (e.g., linear, non-linear) **MA 12.3.2.d.** Model contextualized problems† using various representations for non-linear functions (e.g., quadratic, exponential, square root, and absolute value)	**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) **Expressions, Equations, & Inequalities:** Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Write expressions, equations, and inequalities for common algebra settings Write expressions that require planning and/or manipulating to accurately model a situation Write equations and inequalities that require planning, manipulating, and/or solving

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.3. Algebra	
	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 Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)
MA 12.3.3. Procedures: Students will represent and solve equations and inequalities. **MA 12.3.3.a.** Explain/apply the reflexive, symmetric, and transitive properties of equality **MA 12.3.3.b.** Simplify algebraic expressions involving exponents (e.g., $(3x^4)^2$) **MA 12.3.3.c.** Add and subtract polynomials **MA 12.3.3.d.** Multiply and divide polynomials (e.g., divide $x^3 - 8$ by $x - 2$, divide $x^4 - 5x^3 - 2x$ by x^2) **MA 12.3.3.e.** Factor polynomials **MA 12.3.3.f.** Identify and generate equivalent forms of linear equations **MA 12.3.3.g.** Solve linear equations and inequalities including absolute value **MA 12.3.3.h.** Identify and explain the properties used in solving equations and inequalities **MA 12.3.3.i.** Solve quadratic equations (e.g., factoring, graphing, quadratic formula) **MA 12.3.3.j.** Add, subtract, and simplify rational expressions **MA 12.3.3.k.** Multiply, divide, and simplify rational expressions **MA 12.3.3.l.** Evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables **MA 12.3.3.m.** Derive and use the formulas for the general term and summation of finite arithmetic and geometric series **MA 12.3.3.n.** Combine functions by composition, as well as by addition, subtraction, multiplication, and division **MA 12.3.3.o.** Solve an equation involving several variables for one variable in terms of the others **MA 12.3.3.p.** Analyze and solve systems of two linear equations in two variables algebraically and graphically	**Numbers: Concepts & Properties:** Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor Exhibit knowledge of logarithms and geometric sequences **Expressions, Equations, & Inequalities:** Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals Substitute whole numbers for unknown quantities to evaluate expressions Solve one-step equations having integer or decimal answers Combine like terms (e.g., $2x + 5x$) Evaluate algebraic expressions by substituting integers for unknown quantities Add and subtract simple algebraic expressions Solve routine first-degree equations Multiply two binomials Solve real-world problems using first-degree equations Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Add, subtract, and multiply polynomials Factor simple quadratics (e.g., the difference of squares and perfect square trinomials) Solve first-degree inequalities that do not require reversing the inequality sign Manipulate expressions and equations Write expressions, equations, and inequalities for common algebra settings Solve linear inequalities that require reversing the inequality sign Find solutions to systems of linear equations Write expressions that require planning and/or manipulating to accurately model a situation Solve simple absolute value inequalities **Functions:** Write an expression for the composite of two simple functions

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.4.1. Display and Analysis: Students will formulate a question and design a survey or an experiment in which data is collected and displayed in a variety of formats, then select and use appropriate statistical methods to analyze the data. **MA 12.4.1.a.** Interpret data represented by the normal distribution and formulate conclusions **MA 12.4.1.b.** Compute, identify, and interpret measures of central tendency (mean, median, mode) when provided a graph or data set **MA 12.4.1.c.** Explain how sample size and transformations of data affect measures of central tendency **MA 12.4.1.d.** Describe the shape and determine spread (variance, standard deviation) and outliers of a data set **MA 12.4.1.e.** Explain how statistics are used or misused in the world **MA 12.4.1.f.** Create scatter plots, analyze patterns, and describe relationships in paired data **MA 12.4.1.g.** Explain the impact of sampling methods, bias, and the phrasing of questions asked during data collection and the conclusions that can rightfully be made **MA 12.4.1.h.** Explain the differences between randomized experiment and observational studies	**Probability, Statistics, & Data Analysis:** Calculate the average of a list of positive whole numbers Calculate the average of a list of numbers 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 Analyze and draw conclusions based on information from figures, tables, and graphs **Graphical Representations:** Locate points on the number line and in the first quadrant Locate points in the coordinate plane Interpret and use information from graphs in the coordinate plane
MA 12.4.2. Predictions and Inferences: Students will develop and evaluate inferences to make predictions. **MA 12.4.2.a.** Compare data sets and evaluate conclusions using graphs and summary statistics **MA 12.4.2.b.** Support inferences with valid arguments **MA 12.4.2.c.** Develop linear equations for linear models to predict unobserved outcomes using regression line and correlation coefficient **MA 12.4.2.d.** Recognize when arguments based on data confuse correlation with causation	**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) Interpret and use information from figures, tables, and graphs Analyze and draw conclusions based on information from figures, tables, and graphs **Expressions, Equations, & Inequalities:** Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) Write expressions, equations, and inequalities for common algebra settings **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

TABLE 2D

NEBRASKA Grades 9–12 Mathematics Academic Standards	ACT Mathematics College Readiness Standards
MA 12.4. Data Analysis/Probability	
	Solve problems integrating multiple algebraic and/or geometric concepts Analyze and draw conclusions based on information from graphs in the coordinate plane
MA 12.4.3. Probability: Students will apply and analyze concepts of probability. **MA 12.4.3.a.** Construct a sample space and a probability distribution **MA 12.4.3.b.** Identify dependent and independent events and calculate their probabilities **MA 12.4.3.c.** Use the appropriate counting techniques to determine the probability of an event (e.g., combinations, permutations) **MA 12.4.3.d.** Analyze events to determine if they are mutually exclusive **MA 12.4.3.e.** Determine the relative frequency of a specified outcome of an event to estimate the probability of the outcome	**Probability, Statistics, & Data Analysis:** Determine the probability of a simple event Exhibit knowledge of simple counting techniques Compute straightforward probabilities for common situations Apply counting techniques Compute a probability when the event and/or sample space are not given or obvious

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.1. Number Sense Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.1.1. Number System: Students will represent and show relationships among complex numbers. **MA 12.1.1.a.** Demonstrate multiple equivalent forms of irrational numbers (e.g., $\sqrt{8} = 8^{\frac{1}{2}} = 2\sqrt{2}$) **MA 12.1.1.b.** Compare, contrast and apply the properties of numbers and the real number system, including rational, irrational, imaginary, and complex numbers	
MA 12.1.2. Operations: Students will demonstrate the meaning and effects of arithmetic operations with real numbers. **MA 12.1.2.a.** Use drawings, words, and symbols to explain the effects of such operations as multiplication and division, and computing positive powers and roots on the magnitude of quantities (e.g., if you take the square root of a number, will the result always be smaller than the original number? (e.g., $\sqrt{\frac{1}{4}} = \frac{1}{2}$)) **MA 12.1.2.b.** Use drawings, words, and symbols to explain that the distance between two numbers on the number line is the absolute value of their difference	
MA 12.1.3. Computation: Students will compute fluently and accurately using appropriate strategies and tools. **MA 12.1.3.a.** Compute accurately with real numbers **MA 12.1.3.b.** Simplify exponential expressions (e.g., powers of –1, 0, ½, $3^2 * 3^2 = 3^4$) **MA 12.1.3.c.** Multiply and divide numbers using scientific notation **MA 12.1.3.d.** Select, apply, and explain the method of computation when problem solving using real numbers (e.g., models, mental computation, paper-pencil, or technology)	Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers Add or subtract negative numbers Change numbers from one form to another using whole numbers, fractions, decimals, or percentages Solve problems that require one or two operations Put the information in the right order before performing calculations Multiply negative numbers Add commonly known fractions, decimals, or percentages (e.g., ½, .75, 25%) Add three fractions that share a common denominator Multiply a mixed number by a whole number or decimal Decide what information, calculations, or unit conversions to use to solve the problem Calculate using mixed units (e.g., 3.5 hours and 4 hours 30 minutes) Calculate multiple rates Divide negative numbers Use fractions, negative numbers, ratios, percentages, or mixed numbers

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.1. Number Sense	
MA 12.1.4. Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools. **MA 12.1.4.a.** Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation or an exact number (e.g., 10π (pi) is approximately 31.4, square and cube roots) **MA 12.1.4.b.** Distinguish relevant from irrelevant information, identify missing information and either find what is needed or make appropriate estimates	Decide what information, calculations, or unit conversions to use to solve the problem Rearrange a formula before solving a problem Put the information in the right order before performing calculations

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.2. Geometry/Measurement Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.2.1. Characteristics: Students will analyze characteristics, properties, and relationships among geometric shapes and objects. **MA 12.2.1.a.** Identify and explain the necessity of and give examples of definitions and theorems **MA 12.2.1.b.** Analyze properties and relationships among classes of two and three-dimensional geometric objects using inductive reasoning and counterexamples **MA 12.2.1.c.** State and prove geometric theorems using deductive reasoning (e.g., parallel lines with transversals, congruent triangles, similar triangles) **MA 12.2.1.d.** Apply geometric properties to solve problems (e.g., parallel lines, line transversals, similar triangles, congruent triangles, proportions) **MA 12.2.1.e.** Identify and apply right triangle relationships (e.g., sine, cosine, tangent, special right triangles, converse of Pythagorean Theorem) **MA 12.2.1.f.** Recognize that there are geometries, other than Euclidean geometry, in which the parallel postulate is not true **MA 12.2.1.g.** Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems	
MA 12.2.2. Coordinate Geometry: Student will use coordinate geometry to analyze and describe relationships in the coordinate plane. **MA 12.2.2.a.** Use coordinate geometry to analyze geometric situations (e.g., parallel lines, perpendicular lines, circle equations) **MA 12.2.2.b.** Apply the midpoint formula **MA 12.2.2.c.** Apply the distance formula **MA 12.2.2.d.** Prove special types of triangles and quadrilaterals (e.g., right triangles, isosceles trapezoid, parallelogram, rectangle, square)	
MA 12.2.3. Transformations: Students will apply and analyze transformations. **MA 12.2.3.a.** Explain and justify the effects of simple transformations on the ordered pairs of two-dimensional shapes **MA 12.2.3.b.** Perform and describe multiple transformations	

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.2. Geometry/Measurement	
MA 12.2.4. Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems. **MA 12.2.4.a.** Sketch and draw appropriate representations of geometric objects using ruler, protractor, or technology **MA 12.2.4.b.** Use geometric models to visualize, describe, and solve problems (e.g., find the height of a tree; find the amount of paint needed for a room; scale model)	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Decide what information, calculations, or unit conversions to use to solve the 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 Calculate multiple areas and volumes of spheres, cylinders, or cones Set up and manipulate complex ratios or proportions
MA 12.2.5. Measurement: Students will apply the units, systems, and formulas to solve problems. **MA 12.2.5.a.** Use strategies to find surface area and volume of complex objects **MA 12.2.5.b.** Apply appropriate units and scales to solve problems involving measurement **MA 12.2.5.c.** Convert between various units of area and volume, such as square feet to square yards **MA 12.2.5.d.** Convert equivalent rates (e.g., feet/second to miles/hour) **MA 12.2.5.e.** Find arc length and area of sectors of a circle **MA 12.2.5.f.** Determine surface area and volume of three-dimensional objects (e.g., spheres, cones, pyramids) **MA 12.2.5.g.** Know that the effect of a scale factor k on length, area and volume is to multiply each by k, k^2 and k^3, respectively	Convert simple money and time units (e.g., hours to minutes) Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Look up a formula and perform single-step conversions within or between systems of measurement Calculate perimeters and areas of basic shapes (rectangles and circles) Rearrange a formula before solving a problem Use two formulas to change from one unit to another within the same system of measurement Use two formulas to change from one unit in one system of measurement to a unit in another system of measurement Find areas of basic shapes when it may be necessary to rearrange the formula, convert units of measurement in the calculations, or use the result in further calculations Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages Find the volume of rectangular solids Calculate multiple rates Calculate multiple areas and volumes of spheres, cylinders, or cones

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.3. Algebra Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.3.1. Relationships: Students will generalize, represent, and analyze relationships using algebraic symbols. **MA 12.3.1.a.** Represent, interpret, and analyze functions with graphs, tables, and algebraic notation and convert among these representations (e.g., linear, non-linear*) **MA 12.3.1.b.** Identify domain and range of functions represented in either symbolic or graphical form (e.g., linear, non-linear*) **MA 12.3.1.c.** Identify the slope and intercepts of a linear relationship from an equation or graph **MA 12.3.1.d.** Identify characteristics of linear and non-linear functions* **MA 12.3.1.e.** Graph linear and non-linear functions* **MA 12.3.1.f.** Compare and analyze the rate of change by using ordered pairs, tables, graphs, and equations **MA 12.3.1.g.** Graph and interpret linear inequalities **MA 12.3.1.h.** Represent, interpret, and analyze functions and their inverses **MA 12.3.1.i.** Determine if a relation is a function	
MA 12.3.2. Modeling in Context: Students will model and analyze quantitative relationships. **MA 12.3.2.a.** Model contextualized problems† using various representations (e.g., graphs, tables, one-variable equalities, one-variable inequalities, linear equations in slope-intercept form, inequalities in slope-intercept form, system of linear equations with two variables) **MA 12.3.2.b.** Represent a variety of quantitative relationships using linear equations and one variable inequalities **MA 12.3.2.c.** Analyze situations to determine the type of algebraic relationship (e.g., linear, non-linear) **MA 12.3.2.d.** Model contextualized problems† using various representations for non-linear functions (e.g., quadratic, exponential, square root, and absolute value)	

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.3. Algebra	
MA 12.3.3. Procedures: Students will represent and solve equations and inequalities. **MA 12.3.3.a.** Explain/apply the reflexive, symmetric, and transitive properties of equality **MA 12.3.3.b.** Simplify algebraic expressions involving exponents (e.g., $(3x^4)^2$) **MA 12.3.3.c.** Add and subtract polynomials **MA 12.3.3.d.** Multiply and divide polynomials (e.g., divide $x^3 - 8$ by $x - 2$, divide $x^4 - 5x^3 - 2x$ by x^2) **MA 12.3.3.e.** Factor polynomials **MA 12.3.3.f.** Identify and generate equivalent forms of linear equations **MA 12.3.3.g.** Solve linear equations and inequalities including absolute value **MA 12.3.3.h.** Identify and explain the properties used in solving equations and inequalities **MA 12.3.3.i.** Solve quadratic equations (e.g., factoring, graphing, quadratic formula) **MA 12.3.3.j.** Add, subtract, and simplify rational expressions **MA 12.3.3.k.** Multiply, divide, and simplify rational expressions **MA 12.3.3.l.** Evaluate polynomial and rational expressions and expressions containing radicals and absolute values at specified values of their variables **MA 12.3.3.m.** Derive and use the formulas for the general term and summation of finite arithmetic and geometric series **MA 12.3.3.n.** Combine functions by composition, as well as by addition, subtraction, multiplication, and division **MA 12.3.3.o.** Solve an equation involving several variables for one variable in terms of the others **MA 12.3.3.p.** Analyze and solve systems of two linear equations in two variables algebraically and graphically	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Rearrange a formula before solving a problem Put the information in the right order before performing calculations Look up a formula and perform single-step conversions within or between systems of measurement Use 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 Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages Set up and manipulate complex ratios or proportions Solve problems that include nonlinear functions and/or that involve more than one unknown

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.4. Data Analysis/Probability Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.	
MA 12.4.1. Display and Analysis: Students will formulate a question and design a survey or an experiment in which data is collected and displayed in a variety of formats, then select and use appropriate statistical methods to analyze the data. **MA 12.4.1.a.** Interpret data represented by the normal distribution and formulate conclusions **MA 12.4.1.b.** Compute, identify, and interpret measures of central tendency (mean, median, mode) when provided a graph or data set **MA 12.4.1.c.** Explain how sample size and transformations of data affect measures of central tendency **MA 12.4.1.d.** Describe the shape and determine spread (variance, standard deviation) and outliers of a data set **MA 12.4.1.e.** Explain how statistics are used or misused in the world **MA 12.4.1.f.** Create scatter plots, analyze patterns, and describe relationships in paired data **MA 12.4.1.g.** Explain the impact of sampling methods, bias, and the phrasing of questions asked during data collection and the conclusions that can rightfully be made **MA 12.4.1.h.** Explain the differences between randomized experiment and observational studies	Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals Apply basic statistical concepts
MA 12.4.2. Predictions and Inferences: Students will develop and evaluate inferences to make predictions. **MA 12.4.2.a.** Compare data sets and evaluate conclusions using graphs and summary statistics **MA 12.4.2.b.** Support inferences with valid arguments **MA 12.4.2.c.** Develop linear equations for linear models to predict unobserved outcomes using regression line and correlation coefficient **MA 12.4.2.d.** Recognize when arguments based on data confuse correlation with causation	

TABLE 2E

NEBRASKA Grades 9–12 Mathematics Academic Standards	WorkKeys *Applied Mathematics* Skills
MA 12.4. Data Analysis/Probability	
MA 12.4.3. Probability: Students will apply and analyze concepts of probability. **MA 12.4.3.a.** Construct a sample space and a probability distribution **MA 12.4.3.b.** Identify dependent and independent events and calculate their probabilities **MA 12.4.3.c.** Use the appropriate counting techniques to determine the probability of an event (e.g., combinations, permutations) **MA 12.4.3.d.** Analyze events to determine if they are mutually exclusive **MA 12.4.3.e.** Determine the relative frequency of a specified outcome of an event to estimate the probability of the outcome	

SUPPLEMENT
TABLES 3A–3E:

SCIENCE

TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.1. Inquiry, the Nature of Science, and Technology Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.	
SC 8.1.1. Abilities to do Scientific Inquiry: Students will design and conduct investigations that will lead to descriptions of relationships between evidence and explanations. ***Scientific Questioning*** **SC 8.1.1.a.** Formulate testable questions that lead to predictions and scientific investigations ***Scientific Investigations*** **SC 8.1.1.b.** Design and conduct logical and sequential investigations including repeated trials ***Scientific Controls and Variables*** **SC 8.1.1.c.** Determine controls and use dependent (responding) and independent (manipulated) variables ***Scientific Tools*** **SC 8.1.1.d.** Select and use equipment appropriate to the investigation, demonstrate correct techniques, and apply appropriate mathematical concepts ***Scientific Observations*** **SC 8.1.1.e.** Make qualitative and quantitative observations ***Scientific Data Collection*** **SC 8.1.1.f.** Record and represent data appropriately and review for quality, accuracy, and relevancy ***Scientific Interpretations, Reflections, and Applications*** **SC 8.1.1.g.** Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information ***Scientific Communication*** **SC 8.1.1.h.** Share information, procedures, results, and conclusions with appropriate audiences **SC 8.1.1.i.** Analyze and provide appropriate critique of scientific investigations ***Mathematics*** **SC 8.1.1.j.** Use appropriate mathematics in all aspects of scientific inquiry	**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 Interpolate between data points in a table or graph 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 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

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.1. Inquiry, the Nature of Science, and Technology	
SC 8.1.2. Nature of Science: Students will apply the nature of science to their own investigations. ***Scientific Knowledge*** **SC 8.1.2.a.** Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations ***Science and Society*** **SC 8.1.2.b.** Describe how scientific discoveries influence and change society ***Science as a Human Endeavor*** **SC 8.1.2.c.** Recognize scientists from various cultures have made many contributions to explain the natural world	
SC 8.1.3. Technology: Students will solve a design problem which involves one or two science concepts. ***Abilities to do Technical Design*** **SC 8.1.3.a.** Identify problems for technological design **SC 8.1.3.b.** Design a solution or product **SC 8.1.3.c.** Implement the proposed design **SC 8.1.3.d.** Evaluate completed technological designs or products **SC 8.1.3.e.** Communicate the process of technological design ***Understanding of Technical Design*** **SC 8.1.3.f.** Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems) **SC 8.1.3.g.** Describe how science and technology are reciprocal **SC 8.1.3.h.** Recognize that solutions have intended and unintended consequences **SC 8.1.3.i.** Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.2. Physical Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Physical Sciences to make connections with the natural and engineered world.	
SC 8.2.1. Matter: Students will identify and describe the particulate nature of matter including physical and chemical interactions. ***Properties and Structure of Matter*** **SC 8.2.1.a.** Compare and contrast elements, compounds, and mixtures **SC 8.2.1.b.** Describe physical and chemical properties of matter ***States of Matter*** **SC 8.2.1.c.** Recognize most substances can exist as a solid, liquid, or gas depending on temperature **SC 8.2.1.d.** Compare and contrast solids, liquids, and gasses based on properties of these states of matter ***Physical and Chemical Changes*** **SC 8.2.1.e.** Distinguish between physical and chemical changes (phase changes, dissolving, burning, rusting) **SC 8.2.1.f.** Recognize conservation of matter in physical and chemical changes ***Atomic Structure*** [No Curricular Indicator at this grade level] ***Classification of Matter*** **SC 8.2.1.g.** Classify substances into similar groups based on physical properties	
SC 8.2.2. Force and Motion: Students will investigate and describe forces and motion. ***Motion*** **SC 8.2.2.a.** Describe motion of an object by its position and velocity ***Inertia/Newton's 1st law*** **SC 8.2.2.b.** Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st law) ***Forces/Newton's 2nd law*** **SC 8.2.2.c.** Describe the motion of objects related to the effects of balanced and unbalanced forces ***Newton's 3rd law*** [No Curricular Indicator at this grade level] ***Universal Forces*** **SC 8.2.2.d.** Recognize that everything on or around the Earth is pulled toward the Earth's center by gravitational force	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.2. Physical Science	
SC 8.2.3. Energy: Students will identify and describe how energy systems and matter interact. ***Sound/Mechanical Waves*** **SC 8.2.3.a.** Recognize that vibrations set up wave-like disturbances that spread away from the source (sound, seismic, water waves) **SC 8.2.3.b.** Identify that waves move at different speeds in different materials ***Light*** **SC 8.2.3.c.** Recognize that light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection) **SC 8.2.3.d.** Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light sources ***Heat*** **SC 8.2.3.e.** Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature ***Electricity/Magnetism*** [No Curricular Indicator at this grade level] ***Nuclear*** [No Curricular Indicator at this grade level] ***Conservation*** **SC 8.2.3.f.** Describe transfer of energy from electrical and magnetic sources to different energy forms (heat, light, sound, and chemical) **SC 8.2.3.g.** Recognize all energy is neither created nor destroyed ***Mechanical Energy*** [No Curricular Indicator at this grade level] ***Chemical Energy*** [No Curricular Indicator at this grade level]	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.3. Life Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Life Sciences to make connections with the natural and engineered world.	
SC 8.3.1. Structure and Function of Living Systems: Students will investigate and describe the structure and function of living organisms. ***Characteristics of Life*** **SC 8.3.1.a.** Recognize the levels of organization in living organisms (cells, tissues, organs, organ systems, and organisms) ***Cellular Composition of Organisms*** **SC 8.3.1.b.** Recognize that all organisms are composed of one or many cells; that these cells must grow, divide, and use energy; and that all cells function similarly **SC 8.3.1.c.** Recognize specialized cells perform specialized functions in multicellular organisms **SC 8.3.1.d.** Identify the functions of the major systems of the human body and describe ways that these systems interact with each other ***Characteristics of Living Organisms*** [No Curricular Indicator at this grade level] ***Behavior*** **SC 8.3.1.e.** Describe how plants and animals respond to environmental stimuli	
SC 8.3.2. Heredity: Students will investigate and describe the relationship between reproduction and heredity. ***Inherited Traits*** **SC 8.3.2.a.** Recognize that hereditary information is contained in genes within the chromosomes of each cell ***Reproduction*** **SC 8.3.2.b.** Compare and contrast sexual and asexual reproduction	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.3. Life Science	
SC 8.3.3. Flow of Matter and Energy in Ecosystems: Students will describe populations and ecosystems. ***Flow of Energy*** **SC 8.3.3.a.** Diagram and explain the flow of energy through a simple food web **SC 8.3.3.b.** Compare the roles of producers, consumers, and decomposers in an ecosystem ***Ecosystems*** **SC 8.3.3.c.** Recognize that producers transform sunlight into chemical energy through photosynthesis **SC 8.3.3.d.** Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support **SC 8.3.3.e.** Recognize a population is all the individuals of a species at a given place and time **SC 8.3.3.f.** Compare and contrast symbiotic relationships among organisms ***Impact on Ecosystems*** **SC 8.3.3.g.** Identify positive and negative effects of natural and human activity on an ecosystem	
SC 8.3.4. Biodiversity: Students will identify characteristics of organisms that help them survive. ***Biological Adaptations*** **SC 8.3.4.a.** Describe how an inherited characteristic enables an organism to improve its survival rate ***Biological Evolution*** **SC 8.3.4.b.** Recognize the extinction of a species is caused by the inability to adapt to an environmental change **SC 8.3.4.c.** Recognize that anatomical features of an organism can be used to infer similarities among other organisms	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.4. Earth and Space Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Earth and Space Science to make connections with the natural and engineered world.	
SC 8.4.1. Earth in Space: Students will investigate and describe the Earth and the solar system. ***Objects in the Sky and Universe*** **SC 8.4.1.a.** Describe the components of the solar system (Sun, planets, moons, asteroids, comets) ***Motion of Objects in the Solar System*** **SC 8.4.1.b.** Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons ***Gravitational Effects*** **SC 8.4.1.c.** Describe the effects of gravity on Earth (tides) and the effect of gravity on objects in the solar system	
SC 8.4.2. Earth Structures and Processes: Students will investigate and describe the Earth's structure, systems, and processes. ***Properties of Earth Materials*** **SC 8.4.2.a.** Describe the layers of Earth (core, mantle, crust, atmosphere) **SC 8.4.2.b.** Describe the physical composition of soil **SC 8.4.2.c.** Describe the mixture of gasses in the Earth's atmosphere and how the atmosphere's properties change at different elevations **SC 8.4.2.d.** Describe evidence of the Earth's magnetic field ***Earth's Processes*** **SC 8.4.2.e.** Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, and earthquakes) that impact the Earth's surface **SC 8.4.2.f.** Describe the rock cycle **SC 8.4.2.g.** Describe the water cycle (evaporation, condensation, precipitation) ***Use of Earth Materials*** **SC 8.4.2.h.** Classify Earth materials as renewable or nonrenewable	

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TABLE 3A

NEBRASKA Grade 8 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 8.4. Earth and Space Science	
SC 8.4.3. Energy in Earth's Systems: Students will investigate and describe energy in Earth's systems. ***Energy Sources*** **SC 8.4.3.a.** Describe how energy from the Sun influences the atmosphere and provides energy for plant growth ***Weather and Climate*** **SC 8.4.3.b.** Identify factors that influence daily and seasonal changes on Earth (tilt of the Earth, humidity, air pressure, air masses) **SC 8.4.3.c.** Describe atmospheric movements that influence weather and climate (air masses, jet stream)	
SC 8.4.4. Earth's History: Students will use evidence to draw conclusions about changes in the Earth. ***Past/Present Earth*** **SC 8.4.4.a.** Recognize the earth processes we see today are similar to those that occurred in the past (uniformity of processes) **SC 8.4.4.b.** Describe how environmental conditions have changed through use of the fossil record	

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TABLE 3B

NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.1. Inquiry, the Nature of Science, and Technology Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.	
SC 12.1.1. Abilities to do Scientific Inquiry: Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models. ***Scientific Questioning*** **SC 12.1.1.a.** Formulate a testable hypothesis supported by prior knowledge to guide an investigation ***Scientific Investigations*** **SC 12.1.1.b.** Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations ***Scientific Controls and Variables*** **SC 12.1.1.c.** Identify and manage variables and constraints ***Scientific Tools*** **SC 12.1.1.d.** Select and use lab equipment and technology appropriately and accurately ***Scientific Observations*** **SC 12.1.1.e.** Use tools and technology to make detailed qualitative and quantitative observations ***Scientific Data Collection*** **SC 12.1.1.f.** Represent and review collected data in a systematic, accurate, and objective manner ***Scientific Interpretations, Reflections, and Applications*** **SC 12.1.1.g.** Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations **SC 12.1.1.h.** Use results to verify or refute a hypothesis **SC 12.1.1.i.** Propose and/or evaluate possible revisions and alternate explanations ***Scientific Communication*** **SC 12.1.1.j.** Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers) **SC 12.1.1.k.** Evaluate scientific investigations and offer revisions and new ideas as appropriate ***Mathematics*** **SC 12.1.1.l.** Use appropriate mathematics in all aspects of scientific inquiry	**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 Interpolate between data points in a table or graph 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 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 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

NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.1. Inquiry, the Nature of Science, and Technology	
SC 12.1.2. Nature of Science: Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations. ***Scientific Knowledge*** **SC 12.1.2.a.** Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge ***Science and Society*** **SC 12.1.2.b.** Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society ***Science as a Human Endeavor*** **SC 12.1.2.c.** Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world **SC 12.1.2.d.** Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted	
SC 12.1.3. Technology: Students will solve a complex design problem. ***Abilities to do Technical Design*** **SC 12.1.3.a.** Propose designs and choose between alternative solutions of a problem **SC 12.1.3.b.** Implement the selected solution **SC 12.1.3.c.** Evaluate the solution and its consequences **SC 12.1.3.d.** Communicate the problem, process, and solution ***Understanding of Technical Design*** **SC 12.1.3.e.** Explain how science advances with the introduction of new technology **SC 12.1.3.f.** Compare and contrast the reasons for the pursuit of science and the pursuit of technology **SC 12.1.3.g.** Assess the limits of a technological design **SC 12.1.3.h.** Understand creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering	

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TABLE 3B

NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.2. Physical Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Physical Sciences to make connections with the natural and engineered world.	
SC 12.2.1. Matter: Students will investigate and describe matter in terms of its structure, composition and conservation. ***Properties and Structure of Matter*** **SC 12.2.1.a.** Recognize bonding occurs when outer electrons are transferred (ionic) or shared (covalent) ***States of Matter*** **SC 12.2.1.b.** Describe the energy transfer associated with phase changes between solids, liquids, and gasses **SC 12.2.1.c.** Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules ***Physical and Chemical Changes*** **SC 12.2.1.d.** Recognize a large number of chemical reactions involve the transfer of either electrons (oxidation/reduction) or hydrogen ions (acid/base) between reacting ions, molecules, or atoms **SC 12.2.1.e.** Identify factors affecting rates of chemical reactions (temperature, particle size, surface area) ***Atomic Structure*** **SC 12.2.1.f.** Recognize the charges and relative locations of subatomic particles (neutrons, protons, electrons) **SC 12.2.1.g.** Describe properties of atoms, ions, and isotopes ***Classification of Matter*** **SC 12.2.1.h.** Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties	

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TABLE 3B

NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.2. Physical Science	
SC 12.2.2. Force and Motion: Students will investigate and describe the nature of field forces and their interactions with matter. ***Motion*** **SC 12.2.2.a.** Describe motion with respect to displacement and acceleration ***Inertia/Newton's 1st law*** **SC 12.2.2.b.** Describe how the law of inertia (Newton's 1st law) is evident in a real-world event ***Forces/Newton's 2nd law*** **SC 12.2.2.c.** Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd law) ***Newton's 3rd law*** **SC 12.2.2.d.** Recognize that all forces occur in equal and opposite pairs (Newton's 3rd law) **SC 12.2.2.e.** Describe how Newton's 3rd law of motion is evident in a real-world event ***Universal Forces*** **SC 12.2.2.f.** Recognize gravity is a force each mass exerts on another mass, which is proportional to the masses and the distance between them **SC 12.2.2.g.** Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between	

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NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.2. Physical Science	
SC 12.2.3. Energy: Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter. ***Sound/Mechanical Waves*** **SC 12.2.3.a.** Describe mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium **SC 12.2.3.b.** Recognize that the energy in waves can be changed into other forms of energy ***Light*** **SC 12.2.3.c.** Recognize light can behave as a wave (diffraction and interference) ***Heat*** **SC 12.2.3.d.** Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature) **SC 12.2.3.e.** Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation ***Electricity/Magnetism*** **SC 12.2.3.f.** Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field **SC 12.2.3.g.** Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength ***Nuclear*** **SC 12.2.3.h.** Recognize that nuclear reactions (fission, fusion, and radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions ***Conservation*** **SC 12.2.3.i.** Interpret the law of conservation of energy to make predictions for the outcome of an event ***Mechanical Energy*** **SC 12.2.3.j.** Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g. electromagnetic waves) ***Chemical Energy*** **SC 12.2.3.k.** Identify endothermic and exothermic reactions	

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TABLE 3B

NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
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SC 12.3.1. Structure and Function of Living Systems: Students will investigate and describe the chemical basis of the growth, development, and maintenance of cells. ***Characteristics of Life*** **SC 12.3.1.a.** Identify the complex molecules (carbohydrates, lipids, proteins, and nucleic acids) that make up living organisms ***Cellular Composition of Organisms*** **SC 12.3.1.b.** Identify the form and function of sub-cellular structures that regulate cellular activities **SC 12.3.1.c.** Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release ***Characteristics of Living Organisms*** [No Curricular Indicator at this grade level] ***Behavior*** **SC 12.3.1.d.** Describe how an organism senses changes in its internal or external environment and responds to ensure survival	
SC 12.3.2. Heredity: Students will describe the molecular basis of reproduction and heredity. ***Inherited Traits*** **SC 12.3.2.a.** Identify that information passed from parents to offspring is coded in DNA molecules **SC 12.3.2.b.** Describe the basic structure of DNA and its function in genetic inheritance **SC 12.3.2.c.** Recognize how mutations could help, harm, or have no effect on individual organisms ***Reproduction*** **SC 12.3.2.d.** Describe that sexual reproduction results in a largely, predictable, variety of possible gene combinations in the offspring of any two parents	

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SC 12.3.4. Biodiversity: Students will describe the theory of biological evolution. ***Biological Adaptations*** **SC 12.3.4.a.** Identify different types of adaptations necessary for survival (morphological, physiological, behavioral) ***Biological Evolution*** **SC 12.3.4.b.** Recognize that the concept of biological evolution is a theory which explains the consequence of the interactions of: (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring **SC 12.3.4.c.** Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms **SC 12.3.4.d.** Apply the theory of biological evolution to explain diversity of life over time	

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NEBRASKA Grades 9–12 Science Academic Standards	EXPLORE Science College Readiness Standards
SC 12.4. Earth and Space Science Students will integrate and communicate the information, concepts, principles, processes, theories, and models of the Earth and Space Science to make connections with the natural and engineered world.	
SC 12.4.1. Earth in Space: Students will investigate and describe the known universe. ***Objects in the Sky and Universe*** **SC 12.4.1.a.** Describe the formation of the universe using the Big Bang Theory **SC 12.4.1.b.** Recognize that stars, like the Sun, transform matter into energy by nuclear reactions which leads to the formation of other elements **SC 12.4.1.c.** Describe stellar evolution ***Motion of Objects in the Solar System*** [No Curricular Indicator at this grade level] ***Gravitational Effects*** [No Curricular Indicator at this grade level]	
SC 12.4.2. Earth Structures and Processes: Students will investigate the relationships among Earth's structure, systems, and processes. ***Properties of Earth Materials*** **SC 12.4.2.a.** Recognize how Earth materials move through geochemical cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter ***Earth's Processes*** **SC 12.4.2.b.** Describe how heat convection in the mantle propels the plates comprising the Earth's surface across the face of the globe (plate tectonics) ***Use of Earth Materials*** **SC 12.4.2.c.** Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels)	
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SC 12.4. Earth and Space Science	
SC 12.4.4. Earth's History: Students will explain the history and evolution of the Earth. ***Past/Present Earth*** **SC 12.4.4.a.** Recognize in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (law of superposition) **SC 12.4.4.b.** Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods **SC 12.4.4.c.** Compare and contrast the physical and biological differences of the early Earth with the planet we live on today	

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NEBRASKA Grades 9–12 Science Academic Standards	PLAN Science College Readiness Standards
SC 12.1. Inquiry, the Nature of Science, and Technology Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.	
SC 12.1.1. Abilities to do Scientific Inquiry: Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models. ***Scientific Questioning*** **SC 12.1.1.a.** Formulate a testable hypothesis supported by prior knowledge to guide an investigation ***Scientific Investigations*** **SC 12.1.1.b.** Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations ***Scientific Controls and Variables*** **SC 12.1.1.c.** Identify and manage variables and constraints ***Scientific Tools*** **SC 12.1.1.d.** Select and use lab equipment and technology appropriately and accurately ***Scientific Observations*** **SC 12.1.1.e.** Use tools and technology to make detailed qualitative and quantitative observations ***Scientific Data Collection*** **SC 12.1.1.f.** Represent and review collected data in a systematic, accurate, and objective manner ***Scientific Interpretations, Reflections, and Applications*** **SC 12.1.1.g.** Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations **SC 12.1.1.h.** Use results to verify or refute a hypothesis **SC 12.1.1.i.** Propose and/or evaluate possible revisions and alternate explanations ***Scientific Communication*** **SC 12.1.1.j.** Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers) **SC 12.1.1.k.** Evaluate scientific investigations and offer revisions and new ideas as appropriate ***Mathematics*** **SC 12.1.1.l.** Use appropriate mathematics in all aspects of scientific inquiry	**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 Interpolate between data points in a table or graph Identify and/or use a simple (e.g., linear) mathematical relationship between data Identify and/or use a complex (e.g., nonlinear) 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 Identify an alternate method for testing a hypothesis **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 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

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	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 Use new information to make a prediction based on a model
SC 12.1.2. Nature of Science: Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations. ***Scientific Knowledge*** **SC 12.1.2.a.** Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge ***Science and Society*** **SC 12.1.2.b.** Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society ***Science as a Human Endeavor*** **SC 12.1.2.c.** Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world **SC 12.1.2.d.** Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted	
SC 12.1.3. Technology: Students will solve a complex design problem. ***Abilities to do Technical Design*** **SC 12.1.3.a.** Propose designs and choose between alternative solutions of a problem **SC 12.1.3.b.** Implement the selected solution **SC 12.1.3.c.** Evaluate the solution and its consequences **SC 12.1.3.d.** Communicate the problem, process, and solution ***Understanding of Technical Design*** **SC 12.1.3.e.** Explain how science advances with the introduction of new technology **SC 12.1.3.f.** Compare and contrast the reasons for the pursuit of science and the pursuit of technology **SC 12.1.3.g.** Assess the limits of a technological design **SC 12.1.3.h.** Understand creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering	

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TABLE 3D

NEBRASKA Grades 9–12 Science Academic Standards	ACT Science College Readiness Standards
SC 12.1. Inquiry, the Nature of Science, and Technology Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.	
SC 12.1.1. Abilities to do Scientific Inquiry: Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models. ***Scientific Questioning*** **SC 12.1.1.a.** Formulate a testable hypothesis supported by prior knowledge to guide an investigation ***Scientific Investigations*** **SC 12.1.1.b.** Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations ***Scientific Controls and Variables*** **SC 12.1.1.c.** Identify and manage variables and constraints ***Scientific Tools*** **SC 12.1.1.d.** Select and use lab equipment and technology appropriately and accurately ***Scientific Observations*** **SC 12.1.1.e.** Use tools and technology to make detailed qualitative and quantitative observations ***Scientific Data Collection*** **SC 12.1.1.f.** Represent and review collected data in a systematic, accurate, and objective manner ***Scientific Interpretations, Reflections, and Applications*** **SC 12.1.1.g.** Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations **SC 12.1.1.h.** Use results to verify or refute a hypothesis **SC 12.1.1.i.** Propose and/or evaluate possible revisions and alternate explanations ***Scientific Communication*** **SC 12.1.1.j.** Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers) **SC 12.1.1.k.** Evaluate scientific investigations and offer revisions and new ideas as appropriate ***Mathematics*** **SC 12.1.1.l.** Use appropriate mathematics in all aspects of scientific inquiry	**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 Interpolate between data points in a table or graph Identify and/or use a simple (e.g., linear) mathematical relationship between data Identify and/or use a complex (e.g., nonlinear) 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 Identify an alternate method for testing a hypothesis Identify an additional trial or experiment that could be performed to enhance or evaluate experimental results **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 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

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TABLE 3D

NEBRASKA Grades 9–12 Science Academic Standards	ACT Science College Readiness Standards
SC 12.1. Inquiry, the Nature of Science, and Technology	
	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 Use new information to make a prediction based on a model
SC 12.1.2. Nature of Science: Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations. ***Scientific Knowledge*** **SC 12.1.2.a.** Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge ***Science and Society*** **SC 12.1.2.b.** Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society ***Science as a Human Endeavor*** **SC 12.1.2.c.** Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world **SC 12.1.2.d.** Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted	
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SC 12.1. Inquiry, the Nature of Science, and Technology Students will combine scientific processes and knowledge with scientific reasoning and critical thinking to ask questions about phenomena and propose explanations based on gathered evidence.	
SC 12.1.1. Abilities to do Scientific Inquiry: Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models. ***Scientific Questioning*** **SC 12.1.1.a.** Formulate a testable hypothesis supported by prior knowledge to guide an investigation ***Scientific Investigations*** **SC 12.1.1.b.** Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations ***Scientific Controls and Variables*** **SC 12.1.1.c.** Identify and manage variables and constraints ***Scientific Tools*** **SC 12.1.1.d.** Select and use lab equipment and technology appropriately and accurately ***Scientific Observations*** **SC 12.1.1.e.** Use tools and technology to make detailed qualitative and quantitative observations ***Scientific Data Collection*** **SC 12.1.1.f.** Represent and review collected data in a systematic, accurate, and objective manner ***Scientific Interpretations, Reflections, and Applications*** **SC 12.1.1.g.** Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations **SC 12.1.1.h.** Use results to verify or refute a hypothesis **SC 12.1.1.i.** Propose and/or evaluate possible revisions and alternate explanations ***Scientific Communication*** **SC 12.1.1.j.** Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers) **SC 12.1.1.k.** Evaluate scientific investigations and offer revisions and new ideas as appropriate ***Mathematics*** **SC 12.1.1.l.** Use appropriate mathematics in all aspects of scientific inquiry	Fill in one or two pieces of information that are missing from a graphic Understand how graphics are related to each other Sort through distracting information Summarize information from one or more detailed graphics Identify trends shown in one or more detailed or complicated graphics Compare information and trends from one or more complicated graphics Draw conclusions based on one complicated graphic or several related graphics Apply information from one or more complicated graphics to specific situations Use the information to make decisions

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