

RESEARCH REPORT 2010-5A



Common Core State Standards Alignment

ReadiStep™, PSAT/NMSQT® and SAT®

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ALIGNMENT

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The College Board

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How RediStep™, the PSAT/NMSQT® and the SAT® Align to the Common Core State Standards

Introduction

The College Board has been a strong advocate for and played an active role in the development of the Common Core State Standards. As part of this collaboration, the College Board helped draft the standards and helped shape the initiative by providing executive guidance on the Common Core Advisory Committee. The goal of the Common Core State Standards — to establish a common set of rigorous expectations to prepare students for college and career readiness — strongly reflects the guiding missions and values of the College Board, as well as of our programs and services.

All of the knowledge
and skills measured
by RediStep,
PSAT/NMSQT and
SAT are represented
in the Common Core.

Prior to the development of these Common Core State Standards, the College Board established blue ribbon panels in English Language Arts, Mathematics and Statistics, and Science to define the skills and knowledge students must develop and master to succeed in college and the workforce in the 21st century. This effort resulted in the development of the College Board Standards for College Success™. These standards for English Language Arts, Mathematics and Statistics, and Science were based on empirical research conducted by the University of Oregon's Center for Educational Policy Research in collaboration with the Association of American Universities. The standards are benchmarked against the Advanced Placement Program® as well as national and international frameworks including NAEP, TIMSS and PISA (Wiley, Wyatt & Camara, 2010). These standards were an important resource

in the development of the Common Core State Standards because they were based and benchmarked on empirical evidence related to college success.

The College Board recognizes that defining clear, consistent and rigorous standards is just the start of ensuring educational improvement. The College Board actively works with states and districts as they build their Common Core implementation plans, and we continue to provide guidance and technical assistance in the areas of:

- comprehensive alignment services;
- benchmarking standards, assessments and performance level indicators against college outcomes;
- Common Core implementation plan development; and professional development.

In support of near-term goals, the College Board has developed this alignment study to document the existing correspondence between assessments in our College Readiness Pathway and the Common Core State Standards.

This report is focused on the College Board College Readiness Pathway, comprising RediStep, the PSAT/NMSQT and the SAT — college readiness assessments taken by millions of students annually. As new assessments emerge and existing assessments are

enhanced, the College Board will conduct additional studies to understand the alignment of other forms of assessments that may be administered in support of the Common Core State Standards, including end-of-course and end-of-domain assessments.

Content for Comparison

Common Core State Standards

The Common Core State Standards articulate the knowledge and skills students need to be ready to succeed in college and careers. They were designed to be (1) anchored in research and evidence; (2) aligned to college and workplace expectations; (3) rigorous, clear and consistent; and (4) reflective of best practices in international frameworks. The standards span kindergarten through 12th grade.

The College Board College Readiness Pathway

The College Board College Readiness Pathway is an assessment system that measures the reading, writing and mathematical knowledge and skills that students need to be on track to graduate high school college-ready. It consists of **ReadiStep**, administered in grade eight; the **PSAT/NMSQT**, administered in grades 10–11; and the **SAT**, administered in grades 11–12. Together, these programs assess the college readiness of students as they progress from middle school to college entrance.

ReadiStep, the **PSAT/NMSQT** and the **SAT** measure the reading, writing and mathematics knowledge and skills that students are learning every day in middle and high school classrooms and that are critical for success in college and beyond. Through curriculum surveys and alignment analyses, the College Board regularly studies classroom instructional practices, state standards and district curriculum frameworks, as well as the course content of first-year college courses, to ensure that the assessments measure the content knowledge and cognitive processes students need for college readiness.

The assessments in the College Readiness Pathway are rigorously developed to provide the highest quality measurement and feedback. All three assessments measure the same constructs, use similar question formats and have similar score scales, which are linked to provide a vertical articulation of college readiness. ReadiStep and the PSAT/NMSQT also report projected scores on the next assessment in the sequence leading to the SAT and to college success. The feedback and tools provided by the three assessments help students improve their skills and help schools and districts make curricular changes that improve student learning and reduce the need for remediation in college.

ReadiStep, the PSAT/NMSQT and the SAT strongly align to the Common Core State Standards.

Comparing Standards and Assessments

Researchers and organizations have developed different methodologies and approaches to align standards (Brown & Conley, 2007; Rothman, 2003; Webb, 1997, 1999; Porter, 2002; Achieve, 2007, 2010; College Board, 2008, 2010; Blank, 2007) and the spectrum of alignment approaches varies in terms of rigor and accuracy. The College Board employs rigorous alignment methodologies as it compares standards, curricula and assessment frameworks and consistently adheres to the following alignment principles, which are recognized as best practices by thought leaders in the field:

- Deep and careful consideration must be given to the full intent and scope of each standards statement, with attention to both the content and skill components of the standard.
- Alignments must be made to the most specific component or grain size of the standard.
- In the alignment of standards to assessments, alignments must consider what is specifically measured by the assessment, not skills and practices that stretch beyond the scope of the assessment. Additionally, consideration must be given to the environment in which the assessment is administered (classroom, large scale, computer based), which may influence the alignments.
- Consideration and attention must be given to both content and cognitive demand (rigor) when developing alignments between standards and assessments.

These alignment principles are apparent in the alignment methodologies developed by Norman Webb and Andrew Porter, as well as in the nationally recognized work from organizations such as Achieve, WestEd, the Educational Policy Improvement Center (EPIC), the Center for Assessment and the Surveys of Enacted Curriculum (SEC) Project led by the Council of Chief State School Officers in partnership with the University of Wisconsin.

For this study, the College Board applied these alignment principles to compare the Common Core State Standards to the RediStep, PSAT/NMSQT and SAT Skills Insight™ categories (Skills Categories). The knowledge and skills represented by each Skills Category are defined for each score band in the Skills Insight tool, which is available for each assessment. The content knowledge and skills measured on each assessment are described in greater detail in Appendix A. Full consideration was also given to the item types in reading, writing and mathematics. For the SAT essay, this evaluation relied on the scoring guide to articulate the key writing skills required by the essay section of the SAT.

The College Board aligned RediStep, the PSAT/NMSQT and the SAT to the following Common Core grade levels:

- RediStep: English Language Arts, Grades 7–8; Mathematics, Grades 6–8 and Mathematical Practices
- PSAT/NMSQT: English Language Arts, Grades 9–12 and Anchor/College and Career Readiness Standards; Mathematics, Grades 9–12 and Mathematical Practices
- SAT: English Language Arts, Grades 11–12 and Anchor/College and Career Readiness Standards; Mathematics, Grades 9–12 and Mathematical Practices

Summary of the Alignment Between the Common Core State Standards and the College Board Assessments

Reading

There is strong alignment between the College and Career Readiness Anchor Standards for Reading and the reading sections of the PSAT/NMSQT and the SAT. Additionally, ReadStep, PSAT/NMSQT and the SAT successfully align to both the Reading Standards for Literature and the Reading Standards for Informational Text.

Writing

There is strong alignment between the College and Career Readiness Anchor Standards for Writing and the writing section of the SAT and partial alignment with the PSAT/NMSQT. Additionally, ReadStep and the PSAT/NMSQT partially address the Common Core Writing Standards. The skills measured by the writing skills section of ReadStep and the PSAT/NMSQT writing section are primarily those of revision and do not directly address the Common Core elements of writing arguments, informational/explanatory texts and narratives. The SAT demonstrates strong alignment to the Common Core Writing Standards and there is very strong agreement between the skills required on the SAT essay and the Common Core State Standards.

Language

The College and Career Readiness Anchor Standards for Language are entirely addressed by both the PSAT/NMSQT and the SAT. There is strong alignment between ReadStep, the PSAT/NMSQT and the SAT and the Common Core Language Standards in that the majority of the Common Core State Standards are addressed by the College Board assessments.

Mathematics

There is very strong alignment between ReadStep and the Common Core State Standards for Mathematical Content, grades 6–8 and all of the Standards for Mathematical Practice align to this assessment. The PSAT/NMSQT and the SAT also demonstrate strong alignment to the Common Core State Standards for Mathematical Content, grades 9–12 and all of the Standards for Mathematical Practice are entirely addressed by these assessments.

Detailed alignments and notes related to this analysis are included in the side-by-side tables found in Appendix B through Appendix G.

Common Core states
and districts can
implement the aligned
College Readiness
Pathway with
confidence.

Alignment Summary Table

Common Core State Standards ¹	Percentage of the Common Core Aligned to College Board Assessments ²		
	ReadiStep	PSAT/ NMSOT	SAT
Reading Anchor Standards/CCR	<i>N/A</i> *	90%	90%
Reading Standards for Literature	72%	72%	78%
Reading Standards for Informational Text	90%	75%	70%
Writing Anchor Standards/CCR	<i>N/A</i> *	20%	60%
Writing Standards	42%	42%	83%
Language Anchor Standards/CCR	<i>N/A</i> *	100%	100%
Language Standards/Language Progressive Skills	74%	75%	82%
Standards for Mathematical Content, Grades 6–8	98%	<i>N/A</i>	<i>N/A</i>
Standards for Mathematical Content, Grades 9–12	<i>N/A</i> *	78%	78%
Standards for Mathematical Practice, Grades K–12	100%	100%	100%

*The Anchor Standards In Reading, Writing, Speaking and Listening, and Language are exit-level college readiness standards meant to be considered in tandem with grades 9–12 ELA standards. Readiness is a middle school assessment and has not been linked to these standards. For similar reasons, Readiness was not linked to the grades 9–12 Mathematics Standards.

1. The Common Core Speaking and Listening Standards as well as the Standards for Literacy in History/Social Studies, Science, and Technical Subjects were not included within the scope of this alignment study. The Speaking and Listening Standards are best addressed through classroom performance tasks and teacher observation. The Standards for Literacy in History/Social Studies, Science, and Technical Subjects are designed to inform literacy instruction across the disciplines and are also best matched to assessments anchored in those disciplines.

2. As noted earlier, Readiness was aligned to grades 6–8 standards, whereas the PSAT/NMSOT and SAT were aligned to high school standards.

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Appendix A

ReadiStep™, PSAT/NMSQT®
and SAT® Skills Insight™
Categories and Descriptions

Appendix A: ReadiStep™, PSAT/NMSQT® and SAT® Skills Categories and Descriptions

Skills Insight™

This alignment is based on the ReadiStep™, PSAT/NMSQT® and SAT® Skills Insight™ Categories (Skills Categories). The Skills Categories outline the academic content and skills measured by the assessments, and as these Skills Categories were developed using released test items and forms, they represent the spectrum of content and skills found on the assessments. For the SAT essay, this evaluation relied on the scoring guide to articulate the key writing skills required by the essay section of the SAT. See below for a more detailed description of each skill category.

ReadiStep™ Skills Categories

Mathematics

Number & Operations

Students can understand numbers, number systems and operations. They can do arithmetic word problems, including those involving percent, ratio and proportion. They know properties of integers and elementary number theory. They can compute fluently with rational numbers expressed in fraction and in decimal form. They can solve problems involving sets and sequences of numbers.

Algebra & Functions

Students can understand, write and simplify linear algebraic expressions. They can solve linear equations and inequalities. They can use mathematical models to represent and understand quantitative relationships. They can work with absolute value expressions involving a variable.

Geometry & Measurement

Students can analyze characteristics and properties of points, lines and angles in the plane. They can solve problems involving length, area and volume. They know and can apply angle-sum property of triangles and the Pythagorean Theorem. They can identify points and work with translation and reflection of geometric figures in the coordinate plane. They are familiar with the concepts of parallelism, transversal and vertical angles, as well as similarity of geometric figures.

Data, Statistics & Probability

Students can understand and interpret data displayed in tables and graphs, including bar graphs, pictographs and circle graphs. They can evaluate inferences and predictions that are based on data. They can understand and use descriptive statistics, including the mean and median. They can apply basic concepts of probability to solve problems.

Problem Solving

Students can solve problems that arise in abstract as well as real contexts. They can apply and adapt a variety of appropriate strategies to solve problems, including both routine and nonroutine

problems. They can monitor their process as they work toward the solution to a problem, and they can evaluate their answer in terms of the original question asked.

Representation

Students can create and use representations to organize, record and communicate mathematical ideas. They can select, apply and translate among mathematical representations, including the verbal, numerical, symbolic and graphical, to solve problems.

Reasoning

Students can recognize reasoning and proof as fundamental aspects of mathematics. They can make and investigate mathematical conjectures, and they can develop and evaluate mathematical arguments and proofs. They can use what they know and build a logical progression of statements to explore the truth of their conjectures. They can break things down into cases, can recognize and use counterexamples, and can use logic to justify their conclusions.

Connections

Students can recognize and use connections among different areas in mathematics, particularly between geometry and algebra. They can understand how mathematical ideas interconnect and build on one another to produce a coherent whole. They can also recognize and apply mathematics in applied contexts.

Communication

Students can use the definitions, symbols and notation of mathematics to express mathematical ideas precisely. They can organize and consolidate their mathematical thinking through communication. They can communicate their mathematical thinking coherently and clearly. They can analyze and evaluate the mathematical thinking and strategies of others.

Critical Reading

Determining the Meaning of Words

Understanding of vocabulary and sentence structure — Student determines the meaning of a word in a sentence or a section of text by using context clues, knowledge of the meaning of words, knowledge of root words and affixes, and understanding of how the different parts of a sentence fit together.

Author's Craft

Understanding of an author's use of language and devices — Student understands an author's purpose in a text. Student recognizes that authors use word choice, literary devices and rhetorical devices to achieve certain effects.

Reasoning and Inferencing

Use of reasoning and critical thinking to extend or elaborate on a text — Student uses reasoning to connect ideas within a text or across short texts and to draw conclusions about a text or texts. Student makes inferences and recognizes implications in a text.

Organization and Ideas

Understanding of ideas and recognition of a text's organization — Student understands, connects and compares ideas within a text or across short texts. Student understands how a text is organized and recognizes the functions of different parts of a text.

Understanding Literary Elements

Use of knowledge of literary elements — Student uses understanding of setting, plot, characterization, theme and narrative perspective (point of view) when analyzing a literary text.

Writing

Manage Word Choice and Grammatical Relationships Between Words

Student knows parts of speech and how they agree in a well-formed sentence (for example, subject-verb-object agreement; pronoun case, reference and agreement; verb form and tense; consistency of voice and person). Student corrects errors in grammatical relationships between and among words in a sentence in order to communicate ideas clearly and concisely.

Manage Grammatical Structures Used to Modify or Compare

Student manages modifiers and objects (for example, adjectives and nouns, adverbs and verbs or adjectives, modifying clauses and their objects) to ensure that the modifier-object references are clear, logical and correctly formed. Student corrects errors in modifier-object references, comparative structures and superlative structures in a sentence to communicate ideas clearly and concisely.

Manage Phrases and Clauses in a Sentence

Student uses well-formed sentence structures (for example, subordinate, coordinate and relative clauses; parallelism; and proper connectives) to indicate relations between and among elements of a sentence. Student recognizes when clauses are formed correctly using appropriate subjects and verb forms (for example, infinitives, gerunds and participles). Student corrects errors in how phrases and clauses are structured in a sentence to communicate ideas clearly and concisely.

Recognize Correctly Formed Sentences

Student knows parts of speech and understands how they agree in well-formed sentences. Student understands the function of modifying words and phrases and recognizes when they are used correctly. Student understands the relationships between phrases and clauses in well-formed sentences and recognizes when clauses are formed correctly using appropriate subjects and verb forms.

Manage Order and Relationships of Sentences and Paragraphs

Student recognizes that a clear organization and a smooth progression of ideas improve coherence both within and among the paragraphs in an essay. Student signals the main point or theme, uses effective transitions to signal development and uses rhetorical conventions to structure ideas. Student corrects errors in organization and development to improve the focus and flow of a paragraph or paragraphs in an essay.

PSAT/NMSQT® and SAT® Skills Categories

Mathematics

Number & Operations

Students can understand numbers, number systems and operations. They can do arithmetic word problems, including those involving percent, ratio and proportion. They know fundamental properties of integers and elementary number theory. They can compute fluently with real numbers,

including rational numbers expressed in fraction and in decimal form. They can solve problems involving sets and problems involving sequences and series.

Algebra & Functions

Students can understand, write and simplify algebraic expressions, including those involving exponents. They can solve linear, quadratic, rational and radical equations, as well as systems of equations and inequalities. They are familiar with the concept of function and with functional notation and can use mathematical models to represent and understand quantitative relationships. They can work with absolute value as well as with direct and inverse variation. They can use algebra to solve word problems.

Geometry & Measurement

Students can analyze characteristics and properties of points, lines and angles in the plane as well as of two- and three-dimensional geometric shapes. They can solve problems involving length, area and volume. They know and can apply the Pythagorean Theorem as well as special properties of isosceles, equilateral and right triangles. They can work with geometric figures in the coordinate plane and are familiar with the concepts of slope and similarity. They can develop mathematical arguments about geometric relationships.

Data, Statistics & Probability

Students can understand and interpret data displayed in tables and graphs, including bar graphs, circle graphs, line graphs, histograms and scatterplots. They can evaluate inferences and predictions that are based on data. They can understand and use descriptive statistics, including the mean, median and mode. They can apply basic concepts of probability to solve problems.

Problem Solving

Students can solve problems that arise in abstract as well as real contexts. They can apply and adapt a variety of strategies to solve problems, including both routine and nonroutine problems. They can monitor their process as they work toward the solution to a problem, and they can evaluate their answer in terms of the original question asked.

Representation

Students can create and use representations to organize, record and communicate mathematical ideas. They can select, apply and translate among mathematical representations, including the verbal, numerical, symbolic and graphical, to solve problems.

Reasoning

Students can recognize reasoning and proof as fundamental aspects of mathematics. They can make and investigate mathematical conjectures, and they can develop and evaluate mathematical arguments and proofs. They can use what they know and build a logical progression of statements to explore the truth of their conjectures. They can break things down into cases, recognizing when the cases exhaust all possibilities. They can recognize and use counterexamples, and they can use logic to justify their conclusions.

Connections

Students can recognize and use connections among different areas in mathematics, particularly between geometry and algebra. They can understand how mathematical ideas interconnect and build on one another to produce a coherent whole. They can also recognize and apply mathematics in applied contexts.

Communication

Students can use the definitions, symbols and notation of mathematics to express mathematical ideas precisely. They can organize and consolidate their mathematical thinking through communication. They can communicate their mathematical thinking coherently and clearly. They can analyze and evaluate the mathematical thinking and strategies of others.

Critical Reading

Determining the Meaning of Words

Student analyzes vocabulary and sentence structure. Student uses knowledge of the meaning of words, including difficult and specialized vocabulary. When determining the meaning of an unfamiliar word or a word with multiple meanings, student uses context clues, such as other vocabulary in the sentence or section of text, familiar phrases, words that signal relationships, or embedded definitions, and recognizes and analyzes roots, prefixes and suffixes. Student understands how the different parts of a sentence fit together.

Author's Craft

Student analyzes an author's use of language and devices. Student understands an author's intended purpose in a text. Student identifies an author's tone and recognizes the use of word choice, literary devices and rhetorical devices. Student understands how an author's choices achieve certain effects and support his or her purpose for writing.

Reasoning and Inferencing

Student uses reasoning and critical thinking to extend or elaborate on a text. Student uses reasoning to connect, compare, contrast and integrate ideas and information within and across texts; to connect an idea within a text to a different or analogous situation outside the text; and to draw conclusions that go beyond a text or texts. Student recognizes implications and infers information that is not explicitly stated in a text.

Organization and Ideas

Student analyzes the ideas in and organization of a text. Student identifies the central or main idea and the supporting details of a text or a section of text. Student connects, analyzes and understands the relationship of ideas within a text or across texts and makes text-based conclusions. Student understands how a text is organized and recognizes the functions of different parts of a text.

Understanding Literary Elements

Student uses knowledge of literary elements. Student recognizes and understands elements of setting, plot, characterization, theme and narrative perspective (point of view).

Writing

Manage Word Choice and Grammatical Relationships Between Words

Student knows parts of speech and how they agree in a well-formed sentence (for example, subject-verb-object agreement; subject-verb-complement agreement [SAT only]; pronoun case, reference and agreement; verb form and tense; consistency of voice and person). Student corrects errors in grammatical relationships between and among words in a sentence in order to communicate ideas clearly and concisely.

Manage Grammatical Structures Used to Modify or Compare

Student manages modifiers and objects (for example, adjectives and nouns, adverbs and verbs or adjectives, modifying clauses and their objects) to ensure that the modifier-object references are clear, logical and correctly formed. Student corrects errors in modifier-object references, comparative structures and superlative structures in a sentence to communicate ideas clearly and concisely.

Manage Phrases and Clauses in a Sentence

Student uses well-formed sentence structures (for example, subordinate, coordinate and relative clauses; parallelism; and proper connectives) to indicate relations between and among elements of a sentence. Student recognizes when clauses are formed correctly using appropriate subjects and verb forms (for example, infinitives, gerunds and participles). Student corrects errors in how phrases and clauses are structured in a sentence to communicate ideas clearly and concisely.

Recognize Correctly Formed Sentences

Student knows parts of speech and understands how they agree in well-formed sentences. Student understands the function of modifying words and phrases and recognizes when they are used correctly. Student understands the relationships between phrases and clauses in well-formed sentences and recognizes when clauses are formed correctly using appropriate subjects and verb forms.

Manage Order and Relationships of Sentences and Paragraphs

Student recognizes that a clear organization and a smooth progression of ideas improve coherence both within and among the paragraphs in an essay. Student signals the main point or theme, uses effective transitions to signal development, and uses rhetorical conventions to structure ideas. Student corrects errors in organization and development to improve the focus and flow of a paragraph or paragraphs in an essay.

SAT[®] Essay**Point of View/Position**

Essay develops a point of view on the issue and demonstrates strong critical thinking.

Use of Evidence and Examples

Essay uses appropriate examples, reasons and other evidence to support its position.

Organization and Focus

Essay is well organized and focused, demonstrating coherence and progression of ideas.

Facility in the Use of Language and Vocabulary

Essay exhibits facility in the use of language, using appropriate vocabulary.

Variety in Sentence Structure

Essay demonstrates variety in sentence structure.

Grammar, Usage and Mechanics

Essay is free of most errors in grammar, usage and mechanics.

Appendix B

ReadiStep™ ELA
Side-by-Side Alignment Table

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments	
Grade	Strand	Band	Standard	Skill	Standard ID			
7	Reading Standards for Literature	Key Ideas and Details	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		RL.7.1	Reasoning and Inferencing	ReadiStep does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.	
							Organization and Ideas	
			Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.		RL.7.2	Organization and Ideas		
						Understanding Literary Elements		
		Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).		RL.7.3	Understanding Literary Elements			
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.		RL.7.4	Determining the Meaning of Words	ReadiStep does not include poetry.	
			Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.		RL.7.5		ReadiStep does not include poetry or drama.	
				Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.		RL.7.6	Understanding Literary Elements	
		Integration of Knowledge and Ideas	Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).		RL.7.7		The media component of this CCSS is beyond the scope of ReadiStep.	
			(Not applicable to literature)		RL.7.8			
		Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.		RL.7.9		ReadiStep requires that students compare texts, but not in this specific context.		
	Range of Reading and Level of Text Complexity	By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.		RL.7.10	Determining the Meaning of Words	Passages for ReadiStep are chosen by a process that considers complexity and grade-level appropriateness.		
					Organization and Ideas			
8	Reading Standards for Literature	Key Ideas and Details	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.		RL.8.1	Reasoning and Inferencing	ReadiStep does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.	
							Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
			Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.		RL.8.2	Organization and Ideas	ReadiStep addresses the skill of summarizing; however, students are not required to provide a direct summary.
						Understanding Literary Elements	
			Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.		RL.8.3	Organization and Ideas	
						Understanding Literary Elements	
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.		RL.8.4	Determining the Meaning of Words	
						Author's Craft	
			Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.		RL.8.5	Organization and Ideas	
			Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.		RL.8.6	Author's Craft	
						Understanding Literary Elements	
		Integration of Knowledge and Ideas	Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.		RL.8.7		The elements of filmed or live productions are beyond the scope of ReadiStep.
			(Not applicable to literature)		RL.8.8		
			Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.		RL.8.9		This specific type of literary analysis is not addressed on ReadiStep.
		Range of Reading and Level of Text Complexity	By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6–8 text complexity band independently and proficiently.		RL.8.10	Determining the Meaning of Words	Passages for ReadiStep are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
7	Reading Standards for Informational Text	Key Ideas and Details	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		RI.7.1	Reasoning and Inferencing	ReadiStep does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
			Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.		RI.7.2	Organization and Ideas	ReadiStep addresses the skill of summarizing; however, students are not required to provide a direct summary.
			Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).		RI.7.3	Reasoning and Inferencing	
						Organization and Ideas	
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.		RI.7.4	Determining the Meaning of Words	
						Author's Craft	
			Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.		RI.7.5	Organization and Ideas	
			Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.		RI.7.6	Author's Craft	
						Organization and Ideas	
		Integration of Knowledge and Ideas	Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).		RI.7.7		The audio, video and multimedia elements are beyond the scope of ReadiStep.
			Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.		RI.7.8	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.		RI.7.9	Organization and Ideas	
		Range of Reading and Level of Text Complexity	By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.		RI.7.10	Determining the Meaning of Words	Passages for ReadiStep are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
8	Reading Standards for Informational Text	Key Ideas and Details	Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.		RI.8.1	Reasoning and Inferencing	ReadiStep does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
						Organization and Ideas	
			Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.		RI.8.2	Reasoning and Inferencing	ReadiStep addresses the skill of summarizing; however, students are not required to provide a direct summary.
			Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).		RI.8.3	Reasoning and Inferencing	
						Organization and Ideas	
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.		RI.8.4	Determining the Meaning of Words	
						Author's Craft	
			Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.		RI.8.5	Organization and Ideas	
			Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.		RI.8.6	Author's Craft	
						Organization and Ideas	
		Integration of Knowledge and Ideas	Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.		RI.8.7		The multimedia element is beyond the scope of ReadiStep.
			Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.		RI.8.8	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.		RI.8.9	Organization and Ideas	
		Range of Reading and Level of Text Complexity	By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.		RI.8.10	Determining the Meaning of Words	Passages for ReadiStep are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
7	Writing	Text Types and Purposes	Write arguments to support claims with clear reasons and relevant evidence.	Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.	W.7.1a		

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.	W.7.1b		
				Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.	W.7.1c	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style.	W.7.1d		
				Provide a concluding statement or section that follows from and supports the argument presented.	W.7.1e	Manage Order and Relationships of Sentences and Paragraphs	
			Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.	W.7.2a		
				Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	W.7.2b		
				Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.	W.7.2c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise language and domain-specific vocabulary to inform about or explain the topic.	W.7.2d	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style.	W.7.2e		
				Provide a concluding statement or section that follows from and supports the information or explanation presented.	W.7.2f	Manage Order and Relationships of Sentences and Paragraphs	
			Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.	W.7.3a		
				Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.	W.7.3b		
				Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.	W.7.3c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.	W.7.3d	Manage Order and Relationships of Sentences and Paragraphs	

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Provide a conclusion that follows from and reflects on the narrated experiences or events.	W.7.3e	Manage Order and Relationships of Sentences and Paragraphs	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)		W.7.4	Manage Order and Relationships of Sentences and Paragraphs	
			With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7 on page 52.)		W.7.5	Manage Order and Relationships of Sentences and Paragraphs	ReadiStep does not address planning or trying a new approach.
			Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.		W.7.6		The use of technology is beyond the scope of ReadiStep.
		Research to Build and Present Knowledge	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.		W.7.7		
			Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.		W.7.8		
			Draw evidence from literary or informational texts to support analysis, reflection, and research.	Apply <i>grade 7 Reading standards</i> to literature (e.g., “Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history”).	W.7.9a		
				Apply <i>grade 7 Reading standards</i> to literary nonfiction (e.g. “Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims”).	W.7.9b		
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.		W.7.10		There is no direct writing measure on ReadiStep.

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
8	Writing	Text Types and Purposes	Write arguments to support claims with clear reasons and relevant evidence.	Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.	W.8.1a		
				Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.	W.8.1b		
				Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.	W.8.1c	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style.	W.8.1d		
				Provide a concluding statement or section that follows from and supports the argument presented.	W.8.1e	Manage Order and Relationships of Sentences and Paragraphs	
	Writing	Text Types and Purposes	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.	Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.	W.8.2a		
				Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.	W.8.2b		
				Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.	W.8.2c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise language and domain-specific vocabulary to inform about or explain the topic.	W.8.2d	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style.	W.8.2e		
				Provide a concluding statement or section that follows from and supports the information or explanation presented.	W.8.2f	Manage Order and Relationships of Sentences and Paragraphs	
	Writing	Narrative	Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.	Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.	W.8.3a		
				Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters.	W.8.3b		

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ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events.	W.8.3c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.	W.8.3d	Manage Order and Relationships of Sentences and Paragraphs	
				Provide a conclusion that follows from and reflects on the narrated experiences or events.	W.8.3e	Manage Order and Relationships of Sentences and Paragraphs	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)		W.8.4	Manage Order and Relationships of Sentences and Paragraphs	
			With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8 on page 52.)		W.8.5	Manage Order and Relationships of Sentences and Paragraphs	ReadiStep does not address planning or trying a new approach.
			Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.		W.8.6		The use of technology is beyond the scope of ReadiStep.
		Research to Build and Present Knowledge	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.		W.8.7		
			Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.		W.8.8		
			Draw evidence from literary or informational texts to support analysis, reflection, and research.	Apply <i>grade 8 Reading standards</i> to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new").	W.8.9a		

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Apply <i>grade 8 Reading standards</i> to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced”).	W.8.9b		
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.		W.8.10		There is no direct writing measure on ReadiStep.
7	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Explain the function of phrases and clauses in general and their function in specific sentences.	L.7.1a		ReadiStep requires that students understand the function of phrases and clauses in a sentence; however, students are not required to explain these functions.
				Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.	L.7.1b	Manage Order and Relationships of Sentences and Paragraphs	
				Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*	L.7.1c	Manage Grammatical Structures Used to Modify or Compare	
						Recognize Correctly Formed Sentences	
				Ensure subject-verb and pronoun-antecedent agreement.	L.3.1f	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.	L.4.1f	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Correctly use frequently confused words (e.g., to/too/two; there/their).	L.4.1g	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb tense.	L.5.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in pronoun number and person.	L.6.1c	Manage Word Choice and Grammatical Relationships Between Words	

**English Language Arts Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
						Recognize Correctly Formed Sentences	
				Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).	L.6.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	L.6.1e	Manage Word Choice and Grammatical Relationships Between Words	ReadiStep requires that students recognize variations from standard written English in the writing of others.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Use a comma to separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie but not He wore an old[,] green shirt).</i>	L.7.2a		
				Spell correctly.	L.7.2b		
				Use punctuation to separate items in a series.†	L.5.2a		
				Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.	L.6.2a		
		Knowledge of Language	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*	L.7.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Choose words and phrases for effect.	L.3.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Choose punctuation for effect.	L.4.3b		
				Vary sentence patterns for meaning, reader/listener interest, and style.‡	L.6.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Maintain consistency in style and tone.	L.6.3b	Manage Order and Relationships of Sentences and Paragraphs	

**English Language Arts Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 7 reading and content</i> , choosing flexibly from a range of strategies.	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	L.7.4a	Determining the Meaning of Words	
				Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>belligerent, bellicose, rebel</i>).	L.7.4b	Determining the Meaning of Words	
				Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.	L.7.4c		The use of references is beyond the scope of ReadiStep.
				Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	L.7.4d	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.	L.7.5a	Determining the Meaning of Words	
				Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words.	L.7.5b	Determining the Meaning of Words	
				Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>refined, respectful, polite, diplomatic, condescending</i>).	L.7.5c	Determining the Meaning of Words	
			Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.7.6	Determining the Meaning of Words	ReadiStep measures the use of accurate vocabulary, not acquisition.
8	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.	L.8.1a		ReadiStep requires that students understand the function of verbals; however, they are not required to explain the functions.
				Form and use verbs in the active and passive voice.	L.8.1b	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.	L.8.1c	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	

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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Recognize and correct inappropriate shifts in verb voice and mood.*	L.8.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Ensure subject-verb and pronoun-antecedent agreement.	L.3.1f	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.	L.4.1f	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Correctly use frequently confused words (e.g., to/too/two; there/their).	L.4.1g	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb tense.	L.5.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in pronoun number and person.	L.6.1c	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).	L.6.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	L.6.1e	Manage Word Choice and Grammatical Relationships Between Words	ReadiStep requires that students recognize variations from standard written English in the writing of others.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	

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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	L.7.1c	Manage Grammatical Structures Used to Modify or Compare	
						Recognize Correctly Formed Sentences	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Use punctuation (comma, ellipsis, dash) to indicate a pause or break.	L.8.2a		
				Use an ellipsis to indicate an omission.	L.8.2b		
				Spell correctly.	L.8.2c		
				Use punctuation to separate items in a series.†	L.5.2a		
				Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.	L.6.2a		
		Knowledge of Language	Use knowledge of language and its conventions when writing, speaking, reading, or listening.	Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).	L.8.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Choose words and phrases for effect.	L.3.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Choose punctuation for effect.	L.4.3b		
				Vary sentence patterns for meaning, reader/listener interest, and style.‡	L.6.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Maintain consistency in style and tone.	L.6.3b	Manage Order and Relationships of Sentences and Paragraphs	
				Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	L.7.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on <i>grade 8 reading and content</i> , choosing flexibly from a range of strategies.	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	L.8.4a	Determining the Meaning of Words	
				Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>precede</i> , <i>recede</i> , <i>secede</i>).	L.8.4b	Determining the Meaning of Words	

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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.	L.8.4c		
				Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	L.8.4d	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Interpret figures of speech (e.g. verbal irony, puns) in context.	L.8.5a	Determining the Meaning of Words	
				Use the relationship between particular words to better understand each of the words.	L.8.5b	Determining the Meaning of Words	
				Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>bullheaded</i> , <i>willful</i> , <i>firm</i> , <i>persistent</i> , <i>resolute</i>).	L.8.5c	Determining the Meaning of Words	
			Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.8.6	Determining the Meaning of Words	

Appendix C

PSAT/NMSOT[®] ELA
Side-by-Side Alignment Table

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
9-10	Reading Standards for Literature	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		RL.9-10.1	Reasoning and Inferencing	The PSAT/NMSQT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		RL.9-10.2	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.		RL.9-10.3	Understanding Literary Elements	
						Reasoning and Inferencing	
		Craft and Structure	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).		RL.9-10.4	Determining the Meaning of Words	
							Author's Craft
			Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.		RL.9-10.5	Author's Craft	
			Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.		RL.9-10.6		This specific type of literary analysis is not addressed on the PSAT/NMSQT.
		Integration of Knowledge and Ideas	Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's <i>Landscape with the Fall of Icarus</i>).		RL.9-10.7		The reference to two different artistic mediums is beyond the scope of the PSAT/NMSQT.
			(Not applicable to literature)		RL.9-10.8		

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).		RL.9-10.9		
		Range of Reading and Level of Text Complexity	By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9–10 text complexity band independently and proficiently.		RL.9-10.10	Determining the Meaning of Words	Passages for the PSAT/NMSQT are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
11-12	Reading Standards for Literature	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		RL.11-12.1	Reasoning and Inferencing	The PSAT/NMSQT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.		RL.11-12.2	Reasoning and Inferencing	The PSAT/NMSQT addresses the skill of summarizing; however, students are not required to provide a direct summary.
						Organization and Ideas	
						Understanding Literary Elements	
			Analyze the impact of the author’s choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).		RL.11-12.3	Author’s Craft	
						Understanding Literary Elements	
		Craft and Structure	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)		RL.11-12.4	Determining the Meaning of Words	The passage specifications for the PSAT/NMSQT do not include poetry or texts by specific authors.

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
						Author's Craft	
			Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.		RL.11-12.5	Author's Craft	
			Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).		RL.11-12.6	Understanding Literary Elements	
		Integration of Knowledge and Ideas	Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)		RL.11-12.7		The PSAT/NMSQT does not require that students analyze multiple interpretations of a single literary work.
			(Not applicable to literature)		RL.11-12.8		
			Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.		RL.11-12.9		The PSAT/NMSQT does not include texts of this specific type in its passage specifications.
		Range of Reading and Level of Text Complexity	By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.		RL.11-12.10	Determining the Meaning of Words	Passages for the PSAT/NMSQT are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
9-10	Reading Standards for Informational Text	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		RI.9-10.1	Reasoning and Inferencing	The PSAT/NMSQT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		RI.9-10.2	Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.		RI.9-10.3	Organization and Ideas	The PSAT/NMSQT does not require that students provide evidence.
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).		RI.9-10.4	Determining the Meaning of Words	
						Author's Craft	
			Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).		RI.9-10.5	Organization and Ideas	
			Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.		RI.9-10.6	Author's Craft	
		Integration of Knowledge and Ideas	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.		RI.9-10.7		The element of different mediums is beyond the scope of the PSAT/NMSQT.
			Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.		RI.9-10.8	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.		RI.9-10.9		The PSAT/NMSQT does not include texts of this specific type in its passage specifications.
		Range of Reading and Level of Text Complexity	By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9–10 text complexity band independently and proficiently.		RI.9-10.10	Determining the Meaning of Words	Passages for the PSAT/NMSQT are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
11-12	Reading Standards for Informational Text	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		RI.11-12.1	Reasoning and Inferencing	The PSAT/NMSQT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.		RI.11-12.2	Organization and Ideas	The PSAT/NMSQT does not require that students provide a direct summary.
			Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.		RI.11-12.3	Reasoning and Inferencing	
						Organization and Ideas	
			Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines <i>faction</i> in <i>Federalist</i> No. 10).		RI.11-12.4	Determining the Meaning of Words	
		Craft and Structure				Author's Craft	
			Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.		RI.11-12.5	Organization and Ideas	
			Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.		RI.11-12.6	Author's Craft	The PSAT/NMSQT does not require that students evaluate the quality/aesthetics of texts.
			Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.		RI.11-12.7		The PSAT/NMSQT measures this skill in the Mathematics section.
			Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., <i>The Federalist</i> , presidential addresses).		RI.11-12.8		The PSAT/NMSQT does not include texts of this specific type in its passage specifications.

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.		RI.11-12.9		The PSAT/NMSQT does not include texts of this specific type in its passage specifications.
		Range of Reading and Level of Text Complexity	By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.		RI.11-12.10	Determining the Meaning of Words	Passages for the PSAT/NMSQT are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
CCR	Reading	Key Ideas and Details	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		R.CCR.1	Determining the Meaning of Words	The PSAT/NMSQT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.		R.CCR.2	Organization and Ideas	
						Understanding Literary Elements	
			Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		R.CCR.3	Reasoning and Inferencing	
						Organization and Ideas	
		Craft and Structure	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		R.CCR.4	Determining the Meaning of Words	
			Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.		R.CCR.5	Organization and Ideas	
			Assess how point of view or purpose shapes the content and style of a text.		R.CCR.6	Author's Craft	
						Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
		Integration of Knowledge and Ideas	Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*		R.CCR.7		The elements of diverse formats and media are beyond the scope of the PSAT/NMSQT.
			Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.		R.CCR.8	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.		R.CCR.9	Organization and Ideas	The PSAT/NMSQT does not require that students analyze more than two texts.
		Range of Reading and Level of Text Complexity	Read and comprehend complex literary and informational texts independently and proficiently.		R.CCR.10	Determining the Meaning of Words	Passages for the PSAT/NMSQT are chosen by a process that considers complexity and grade-level appropriateness.
						Organization and Ideas	
9-10	Writing	Text Types and Purposes	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.	W.9-10.1a		
				Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.	W.9-10.1b		
				Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	W.9-10.1c	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.9-10.1d		
				Provide a concluding statement or section that follows from and supports the argument presented.	W.9-10.1e	Manage Order and Relationships of Sentences and Paragraphs	
			Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	W.9-10.2a		
				Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	W.9-10.2b		

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
				Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	W.9-10.2c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise language and domain-specific vocabulary to manage the complexity of the topic.	W.9-10.2d	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.9-10.2e		
				Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	W.9-10.2f	Manage Order and Relationships of Sentences and Paragraphs	
			Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	W.9-10.3a		
				Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	W.9-10.3b		
				Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.	W.9-10.3c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	W.9-10.3d	Manage Order and Relationships of Sentences and Paragraphs	
				Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	W.9-10.3e	Manage Order and Relationships of Sentences and Paragraphs	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)		W.9-10.4	Manage Order and Relationships of Sentences and Paragraphs	
			Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10 on page 54.)		W.9-10.5	Manage Word Choice and Grammatical Relationships Between Words	The PSAT/NMSQT does not measure a student's ability to plan or try a new approach.

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
			Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.		W.9-10.6		The use of technology is beyond the scope of the PSAT/NMSQT.
		Research to Build and Present Knowledge	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		W.9-10.7		The element of research is beyond the scope of the PSAT/NMSQT.
			Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.		W.9-10.8		
			Draw evidence from literary or informational texts to support analysis, reflection, and research.	Apply grades 9–10 Reading standards to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]").	W.9-10.9a		
				Apply grades 9–10 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning").	W.9-10.9b		
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.		W.9-10.10		

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
11-12	Writing	Text Types and Purposes	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.	W.11-12.1a		
				Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.	W.11-12.1b		
				Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	W.11-12.1c	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.11-12.1d		
				Provide a concluding statement or section that follows from and supports the argument presented.	W.11-12.1e	Manage Order and Relationships of Sentences and Paragraphs	
			Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	W.11-12.2a		
				Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	W.11-12.2b		
				Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	W.11-12.2c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.	W.11-12.2d	Manage Order and Relationships of Sentences and Paragraphs	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.11-12.2e		
				Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	W.11-12.2f	Manage Order and Relationships of Sentences and Paragraphs	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	W.11-12.3a		
				Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	W.11-12.3b		
				Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).	W.11-12.3c	Manage Order and Relationships of Sentences and Paragraphs	
				Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	W.11-12.3d	Manage Order and Relationships of Sentences and Paragraphs	
				Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	W.11-12.3e	Manage Order and Relationships of Sentences and Paragraphs	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)		W.11-12.4	Manage Order and Relationships of Sentences and Paragraphs	
			Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12 on page 54.)		W.11-12.5	Manage Word Choice and Grammatical Relationships Between Words	The PSAT/NMSQT does not measure a student's ability to plan or try a new approach.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
			Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.		W.11-12.6		The use of technology is beyond the scope of the PSAT/NMSQT.

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Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
		Research to Build and Present Knowledge	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			W.11-12.7	The element of research is beyond the scope of the PSAT/NMSQT.
			Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.			W.11-12.8	
			Draw evidence from literary or informational texts to support analysis, reflection, and research.	Apply grades 11–12 Reading standards to literature (e.g., “Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics”).		W.11-12.9a	
				Apply grades 11–12 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., The Federalist, presidential addresses]”).		W.11-12.9b	
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.			W.11-12.10	
CCR	Writing	Text Types and Purposes*	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.			W.CCR.1	
			Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.			W.CCR.2	
			Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.			W.CCR.3	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.		W.CCR.4	Manage Order and Relationships of Sentences and Paragraphs	
			Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.		W.CCR.5	Manage Order and Relationships of Sentences and Paragraphs	The PSAT/NMSQT does not measure a student's ability to plan or try a new approach.
			Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.		W.CCR.6		The use of technology is beyond the scope of the PSAT/NMSQT.
		Research to Build and Present Knowledge	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.		W.CCR.7		The element of research is beyond the scope of the PSAT/NMSQT.
			Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.		W.CCR.8		
			Draw evidence from literary or informational texts to support analysis, reflection, and research.		W.CCR.9		
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.		W.CCR.10		
9-10	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Use parallel structure.*	L.9-10.1a	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	L.9-10.1b	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
				Ensure subject-verb and pronoun-antecedent agreement.	L.3.1f	Manage Word Choice and Grammatical Relationships Between Words	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
						Recognize Correctly Formed Sentences	
				Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.	L.4.1f	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Correctly use frequently confused words (e.g., to/too/two; there/their).	L.4.1g	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb tense.	L.5.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in pronoun number and person.	L.6.1c	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).	L.6.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	L.6.1e	Manage Word Choice and Grammatical Relationships Between Words	The PSAT/NMSQT requires that students recognize variations from standard written English in the writing of others.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
				Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	L.7.1c	Manage Grammatical Structures Used to Modify or Compare	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb voice and mood.	L.8.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.	L.9-10.2a	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Use a colon to introduce a list or quotation.	L.9-10.2b		
				Spell correctly.	L.9-10.2c		
				Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.	L.6.2a		
		Knowledge of Language	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Write and edit work so that it conforms to the guidelines in a style manual (e.g., <i>MLA Handbook</i> , <i>Turabian's Manual for Writers</i>) appropriate for the discipline and writing type.	L.9-10.3a		
				Choose words and phrases for effect.	L.3.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Choose punctuation for effect.	L.4.3b		
				Vary sentence patterns for meaning, reader/listener interest, and style.†	L.6.3a	Manage Order and Relationships of Sentences and Paragraphs	
				Maintain consistency in style and tone.	L.6.3b	Manage Order and Relationships of Sentences and Paragraphs	
				Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	L.7.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 9–10</i> reading and content, choosing flexibly from a range of strategies.	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	L.9-10.4a	Determining the Meaning of Words	
				Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>analyze, analysis, analytical; advocate, advocacy</i>).	L.9-10.4b	Determining the Meaning of Words	
				Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.	L.9-10.4c		

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
				Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	L.9-10.4d	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.	L.9-10.5a	Determining the Meaning of Words	
						Understanding Literary Elements	
				Analyze nuances in the meaning of words with similar denotations.	L.9-10.5b	Determining the Meaning of Words	
			Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.9-10.6	Determining the Meaning of Words	The PSAT/NMSQT measures the use of accurate vocabulary, not acquisition.
						Manage Word Choice and Grammatical Relationships Between Words	
11-12	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.	L.11-12.1a		
				Resolve issues of complex or contested usage, consulting references (e.g., <i>Merriam-Webster's Dictionary of English Usage</i> , <i>Garner's Modern American Usage</i>) as needed.	L.11-12.1b		
				Ensure subject-verb and pronoun-antecedent agreement.	L.3.1f	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.	L.4.1f	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
				Correctly use frequently confused words (e.g., to/too/two; there/their).	L.4.1g	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb tense.	L.5.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
				Recognize and correct inappropriate shifts in pronoun number and person.	L.6.1c	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).	L.6.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	L.6.1e	Manage Word Choice and Grammatical Relationships Between Words	The PSAT/NMSQT requires that students recognize variations from standard written English in the writing of others.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
				Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	L.7.1c	Manage Grammatical Structures Used to Modify or Compare	
						Recognize Correctly Formed Sentences	
				Recognize and correct inappropriate shifts in verb voice and mood.	L.8.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
				Use parallel structure.	L.9-10.1a	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Observe hyphenation conventions.	L.11-12.2a		
				Spell correctly.	L.11-12.2b		
				Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.	L.6.2a		
		Knowledge of Language	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Vary syntax for effect, consulting references (e.g., Tufte's <i>Artful Sentences</i>) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.	L.11-12.3a	Organization and Ideas	
				Choose words and phrases for effect.	L.3.3a	Manage Order and Relationships of Sentences and Paragraphs	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
				Choose punctuation for effect.	L.4.3b		
				Maintain consistency in style and tone.	L.6.3b	Manage Order and Relationships of Sentences and Paragraphs	
				Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	L.7.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 11–12 reading and content</i> , choosing flexibly from a range of strategies.	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.	L.11–12.4a	Determining the Meaning of Words	
				Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>conceive, conception, conceivable</i>).	L.11–12.4b		
				Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.	L.11–12.4c		
				Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	L.11–12.4d	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.	L.11–12.5a	Determining the Meaning of Words	
						Understanding Literary Elements	
				Analyze nuances in the meaning of words with similar denotations.	L.11–12.5b	Determining the Meaning of Words	
			Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.11–12.6	Determining the Meaning of Words	The PSAT/NMSQT measures the use of accurate vocabulary, not acquisition.
						Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
CCR	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.		L.CCR.1	Manage Word Choice and Grammatical Relationships Between Words	The PSAT/NMSQT aligns to writing.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.		L.CCR.2	Manage Phrases and Clauses in a Sentence	The PSAT/NMSQT aligns to command of standard English punctuation.
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
		Knowledge of Language	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.		L.CCR.3	Determining the Meaning of Words	The PSAT/NMSQT aligns to reading.
						Organization and Ideas	
						Manage Word Choice and Grammatical Relationships Between Words	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.		L.CCR.4	Determining the Meaning of Words	The PSAT/NMSQT does not require that students consult references.
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		L.CCR.5	Determining the Meaning of Words	
						Understanding Literary Elements	

**English Language Arts Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Strand	Band	Standard	Skill	Standard ID	PSAT/NMSQT Skill	
			Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.CCR.6	Determining the Meaning of Words	The PSAT/NMSQT measures the use of accurate vocabulary, not acquisition.
						Manage Order and Relationships of Sentences and Paragraphs	

Appendix D

SAT[®] ELA

Side-by-Side Alignment Table

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
11-12	Reading Standards for Literature	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		RL.11-12.1	Reasoning and Inferencing	The SAT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.		RL.11-12.2	Reasoning and Inferencing	
						Organization and Ideas	
						Understanding Literary Elements	
			Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).		RL.11-12.3	Author's Craft	
		Craft and Structure	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)		RL.11-12.4	Determining the Meaning of Words	
						Author's Craft	
			Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.		RL.11-12.5	Author's Craft	
			Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).		RL.11-12.6	Understanding Literary Elements	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards							Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID			
		Integration of Knowledge and Ideas	Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)		RL.11-12.7		The SAT does not require students to analyze multiple interpretations of a single literary work.	
			(Not applicable to literature)		RL.11-12.8			
			Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.		RL.11-12.9		The SAT does not include texts of this specific type in its passage specifications.	
		Range of Reading and Level of Text Complexity	By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.		RL.11-12.10	Determining the Meaning of Words	Passages on the SAT are chosen by a process that considers complexity and grade-level appropriateness.	
						Organization and Ideas		
11-12	Reading Standards for Informational Text	Key Ideas and Details	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		RI.11-12.1	Reasoning and Inferencing	The SAT does not require that students provide textual evidence on the SAT; however, students must base inferences and analysis on the text provided in the passage or item stem.	
						Organization and Ideas		
			Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.		RI.11-12.2	Reasoning and Inferencing		
						Organization and Ideas		
			Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.		RI.11-12.3	Organization and Ideas		

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
		Craft and Structure	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines <i>faction</i> in <i>Federalist</i> No. 10).		RI.11-12.4	Determining the Meaning of Words	
						Author's Craft	
			Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.		RI.11-12.5	Organization and Ideas	
			Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.		RI.11-12.6	Author's Craft	
		Integration of Knowledge and Ideas	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.		RI.11-12.7		The SAT measures this skill in the Mathematics section.
			Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., <i>The Federalist</i> , presidential addresses).		RI.11-12.8		The SAT does not include texts of this specific type in its passage specifications.
			Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.		RI.11-12.9		The SAT does not include texts of this specific type in its passage specifications.

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
		Range of Reading and Level of Text Complexity	By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.		RI.11-12.10	Determining the Meaning of Words	Passages for the SAT are chosen by a process that considers complexity and grade-level appropriateness
						Organization and Ideas	
CCR	Reading	Key Ideas and Details	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		R.CCR.1	Reasoning and Inferencing	The SAT does not require that students provide textual evidence; however, students must base inferences and analysis on the text provided in the passage or item stem.
						Organization and Ideas	
			Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.		R.CCR.2	Reasoning and Inferencing	
						Organization and Ideas	
						Understanding Literary Elements	
			Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		R.CCR.3	Reasoning and Inferencing	
						Organization and Ideas	
			Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		R.CCR.4	Determining the Meaning of Words	
		Craft and Structure				Author's Craft	
			Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.		R.CCR.5	Organization and Ideas	
			Assess how point of view or purpose shapes the content and style of a text.		R.CCR.6	Author's Craft	
						Understanding Literary Elements	
		Integration of Knowledge and Ideas	Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*		R.CCR.7		The SAT measures this skill in the Mathematics section.

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
			Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.		R.CCR.8	Reasoning and Inferencing	
						Organization and Ideas	
			Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.		R.CCR.9	Reasoning and Inferencing	The SAT does not require students to compare more than two texts.
						Organization and Ideas	
		Range of Reading and Level of Text Complexity	Read and comprehend complex literary and informational texts independently and proficiently.		R.CCR.10	Determining the Meaning of Words	Passages for the SAT are chosen by a process that considers complexity and grade-level appropriateness
						Organization and Ideas	
11-12	Writing	Text Types and Purposes	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.	W.11-12.1a	Point of View/Position	
						Organization and Focus	
				Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.	W.11-12.1b	Point of View/Position	
						Use of Evidence and Examples	
				Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	W.11-12.1c	Manage Order and Relationships of Sentences and Paragraphs	
						Facility in the Use of Language and Vocabulary	
						Variety in Sentence Structure	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.11-12.1d	Facility in the Use of Language and Vocabulary	
						Grammar, Usage and Mechanics	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Provide a concluding statement or section that follows from and supports the argument presented.	W.11-12.1e	Manage Order and Relationships of Sentences and Paragraphs	
			Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	W.11-12.2a	Point of View/Position	Formatting and multimedia are not applicable to the SAT.
						Organization and Focus	
				Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	W.11-12.2b	Point of View/Position	
						Use of Evidence and Examples	
				Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	W.11-12.2c	Manage Order and Relationships of Sentences and Paragraphs	
						Variety in Sentence Structure	
				Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.	W.11-12.2d	Facility in the Use of Language and Vocabulary	
				Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	W.11-12.2e	Facility in the Use of Language and Vocabulary	
						Grammar, Usage and Mechanics	
				Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	W.11-12.2f	Manage Order and Relationships of Sentences and Paragraphs	
			Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	W.11-12.3a	Point of View/Position	
						Organization and Focus	
				Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	W.11-12.3b	Use of Evidence and Examples	
						Facility in the Use of Language and Vocabulary	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).	W.11-12.3c	Organization and Focus	
				Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	W.11-12.3d	Facility in the Use of Language and Vocabulary	
				Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	W.11-12.3e	Manage Order and Relationships of Sentences and Paragraphs	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)		W.11-12.4	Manage Order and Relationships of Sentences and Paragraphs	
						Point of View/Position	
						Organization and Focus	
						Facility in the Use of Language and Vocabulary	
			Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12 on page 54.)		W.11-12.5	Manage Word Choice and Grammatical Relationships Between Words	The SAT does not measure a student's ability to plan or try a new approach.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
			Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.		W.11-12.6		The use of technology is beyond the scope of the SAT.

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
		Research to Build and Present Knowledge	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		W.11-12.7		The element of research is beyond the scope of the SAT.
			Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.		W.11-12.8		The element of gathering information from multiple sources is beyond the scope of the SAT.
			Draw evidence from literary or informational texts to support analysis, reflection, and research.	Apply grades 11–12 Reading standards to literature (e.g., “Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics”).	W.11-12.9a	Use of Evidence and Examples	Students may support a position in the SAT essay with evidence from their reading.
				Apply grades 11–12 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., The Federalist, presidential addresses]”).	W.11-12.9b	Use of Evidence and Examples	Students may support a position in the SAT essay with evidence from their reading.
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.		W.11-12.10		The SAT aligns with writing over “shorter time frames” only.
CCR	Writing	Text Types and Purposes*	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.		W.CCR.1	Point of View/Position Use of Evidence and Examples	
			Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.		W.CCR.2	Point of View/Position Use of Evidence and Examples	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
						Organization and Focus	
			Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.		W.CCR.3	Point of View/Position	
						Use of Evidence and Examples	
						Organization and Focus	
		Production and Distribution of Writing	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.		W.CCR.4	Point of View/Position	
						Organization and Focus	
						Facility in the Use of Language and Vocabulary	
			Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.		W.CCR.5	Manage Word Choice and Grammatical Relationships Between Words	The SAT does not measure a student's ability to plan or try a new approach.
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
			Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.		W.CCR.6		The use of technology is beyond the scope of the SAT.
		Research to Build and Present Knowledge	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.		W.CCR.7		The element of research is beyond the scope of the SAT.
			Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.		W.CCR.8		The element of gathering information from multiple sources is beyond the scope of the SAT.
			Draw evidence from literary or informational texts to support analysis, reflection, and research.		W.CCR.9	Use of Evidence and Examples	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
		Range of Writing	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.		W.CCR.10		The SAT essay aligns with writing over "shorter time frames" only.
11-12	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.	L.11-12.1a		
				Resolve issues of complex or contested usage, consulting references (e.g., <i>Merriam-Webster's Dictionary of English Usage</i> , <i>Garner's Modern American Usage</i>) as needed.	L.11-12.1b		
				Ensure subject-verb and pronoun-antecedent agreement.	L.3.1f	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.	L.4.1f	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Correctly use frequently confused words (e.g., to/too/two; there/their).	L.4.1g	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Recognize and correct inappropriate shifts in verb tense.	L.5.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Recognize and correct inappropriate shifts in pronoun number and person.	L.6.1c	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).	L.6.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	L.6.1e	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Grammar, Usage and Mechanics	
				Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.	L.7.1c	Manage Grammatical Structures Used to Modify or Compare	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Recognize and correct inappropriate shifts in verb voice and mood.	L.8.1d	Manage Word Choice and Grammatical Relationships Between Words	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
				Use parallel structure.	L.9-10.1a	Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Observe hyphenation conventions.	L.11-12.2a	Grammar, Usage and Mechanics	
				Spell correctly.	L.11-12.2b	Grammar, Usage and Mechanics	
				Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.	L.6.2a	Grammar, Usage and Mechanics	
		Knowledge of Language	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Vary syntax for effect, consulting references (e.g., Tufte's <i>Artful Sentences</i>) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.	L.11-12.3a	Organization and Ideas	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
				Choose words and phrases for effect.	L.3.3a	Manage Order and Relationships of Sentences and Paragraphs	
						Variety in Sentence Structure	
				Choose punctuation for effect.	L.4.3b		
				Maintain consistency in style and tone.	L.6.3b	Manage Order and Relationships of Sentences and Paragraphs	
						Organization and Focus	
						Variety in Sentence Structure	
				Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.	L.7.3a	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Facility in the Use of Language and Vocabulary	
						Grammar, Usage and Mechanics	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 11–12 reading and content</i> , choosing flexibly from a range of strategies.	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	L.11-12.4a	Determining the Meaning of Words	
				Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>conceive, conception, conceivable</i>).	L.11-12.4b		
				Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.	L.11-12.4c		
				Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	L.11-12.4d	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.	L.11-12.5a	Determining the Meaning of Words	
						Understanding Literary Elements	
				Analyze nuances in the meaning of words with similar denotations.	L.11-12.5b	Determining the Meaning of Words	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
			Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.11-12.6	Determining the Meaning of Words	The SAT measures the use of accurate vocabulary, not acquisition.
						Facility in the Use of Language and Vocabulary	
						Manage Word Choice and Grammatical Relationships Between Words	
CCR	Language	Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.		L.CCR.1	Manage Word Choice and Grammatical Relationships Between Words	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	
						Recognize Correctly Formed Sentences	
						Grammar, Usage and Mechanics	
			Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.		L.CCR.2	Manage Phrases and Clauses in a Sentence	
						Grammar, Usage and Mechanics	
			Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.		L.CCR.3	Determining the Meaning of Words	
						Organization and Ideas	
						Manage Word Choice and Grammatical Relationships Between Words	
						Manage Grammatical Structures Used to Modify or Compare	
						Manage Phrases and Clauses in a Sentence	

**English Language Arts Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Strand	Band	Standard	Skill	Standard ID		
						Recognize Correctly Formed Sentences	
						Manage Order and Relationships of Sentences and Paragraphs	
						Facility in the Use of Language and Vocabulary	
						Grammar, Usage and Mechanics	
		Vocabulary Acquisition and Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.		L.CCR.4	Determining the Meaning of Words	
			Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		L.CCR.5	Determining the Meaning of Words	
						Understanding Literary Elements	
			Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.		L.CCR.6	Determining the Meaning of Words	The SAT measure the use of vocabulary, not acquisition.
						Manage Word Choice and Grammatical Relationships Between Words	
						Facility in the Use of Language and Vocabulary	

Appendix E

ReadiStep™ Math
Side-by-Side Alignment Table

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.		6.RP.1	Number & Operations	
						Communication	
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.		6.PR.2	Number & Operations	
						Communication	
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Use ratio and rate reasoning to solve real world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	6.RP.3a	Number & Operations	
						Representation	
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Use ratio and rate reasoning to solve real world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Solve unit rate problems including those involving unit pricing and constant speed.	6.RP.3b	Number & Operations	
						Problem Solving	
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Use ratio and rate reasoning to solve real world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	6.RP.3c	Number & Operations	
						Problem Solving	
6	Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	Use ratio and rate reasoning to solve real world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	6.RP.3d	Number & Operations	
						Representation	
6	The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.		6.NS.1	Number & Operations	
						Representation	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	Fluently divide multi-digit numbers using the standard algorithm.		6.NS.2	Number & Operations	
						Problem Solving	
6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.		6.NS.3	Number & Operations	
						Problem Solving	
6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples.	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.		6.NS.4	Number & Operations	
						Problem Solving	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.		6.NS.5	Number & Operations	
						Connections	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.	6.NS.6a	Number & Operations	
						Connections	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	6.NS.6b	Geometry & Measurement	
						Connections	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	6.NS.6c	Number & Operations	
						Representation	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand ordering and absolute value of rational numbers.	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.	6.NS.7a	Number & Operations	
						Reasoning	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand ordering and absolute value of rational numbers.	Write, interpret, and explain statements of order for rational numbers in real-world contexts.	6.NS.7b	Number & Operations	
						Communication	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand ordering and absolute value of rational numbers.	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.	6.NS.7c	Number & Operations	
						Communication	
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Understand ordering and absolute value of rational numbers.	Distinguish comparisons of absolute value from statements about order.	6.NS.7d	Number & Operations	
						Reasoning	

**Mathematics Side-By-Side Alignment Tables:
 ReadStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers.	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.		6.NS.8	Geometry & Measurement	
						Problem Solving	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Write and evaluate numerical expressions involving whole-number exponents.		6.EE.1	Number & Operations	
						Problem Solving	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Write, read, and evaluate expressions in which letters stand for numbers.	Write expressions that record operations with numbers and with letters standing for numbers.	6.EE.2a	Algebra & Functions	
						Communication	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Write, read, and evaluate expressions in which letters stand for numbers.	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.	6.EE.2b	Algebra & Functions	
						Communication	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Write, read, and evaluate expressions in which letters stand for numbers.	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	6.EE.2c	Algebra & Functions	
						Problem Solving	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Apply the properties of operations to generate equivalent expressions.		6.EE.3	Number & Operations	
						Algebra & Functions	
						Representation	
6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).		6.EE.4	Algebra & Functions	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Communication	
6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.		6.EE.5	Algebra & Functions	
						Reasoning	
6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.		6.EE.6	Algebra & Functions	
						Representation	
6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.		6.EE.7	Algebra & Functions	
						Problem Solving	
6	Expressions and Equations	Reason about and solve one-variable equations and inequalities.	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.		6.EE.8	Algebra & Functions	
						Representation	
6	Expressions and Equations	Represent and analyze quantitative relationships between dependent and independent variables.	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.		6.EE.9	Algebra & Functions	
						Representation	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.		6.G.1	Geometry & Measurement	
						Problem Solving	
6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.		6.G.2	Geometry & Measurement	
						Problem Solving	
6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.		6.G.3	Geometry & Measurement	
						Problem Solving	
6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.		6.G.4	Geometry & Measurement	
						Problem Solving	
6	Statistics and Probability	Develop understanding of statistical variability.	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.		6.SP.1	Data, Statistics & Probability	
						Reasoning	

**Mathematics Side-By-Side Alignment Tables:
 ReadStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
6	Statistics and Probability	Develop understanding of statistical variability.	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.		6.SP.2	Data, Statistics & Probability	
						Communication	
6	Statistics and Probability	Develop understanding of statistical variability.	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.		6.SP.3	Data, Statistics & Probability	
						Reasoning	
6	Statistics and Probability	Summarize and describe distributions.	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.		6.SP.4	Data, Statistics & Probability	ReadiStep does not require that students construct box plots.
						Representation	
6	Statistics and Probability	Summarize and describe distributions.	Summarize numerical data sets in relation to their context, such as by:	Reporting the number of observations.	6.SP.5a	Data, Statistics & Probability	
						Communication	
6	Statistics and Probability	Summarize and describe distributions.	Summarize numerical data sets in relation to their context, such as by:	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	6.SP.5b	Data, Statistics & Probability	
						Communication	
6	Statistics and Probability	Summarize and describe distributions.	Summarize numerical data sets in relation to their context, such as by:	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	6.SP.5c	Data, Statistics & Probability	ReadiStep aligns to measures of center only.
						Communication	
6	Statistics and Probability	Summarize and describe distributions.	Summarize numerical data sets in relation to their context, such as by:	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	6.SP.5d	Data, Statistics & Probability	
						Connections	
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.		7.RP.1	Geometry & Measurement	
						Problem Solving	
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities.	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	7.RP.2a	Geometry & Measurement	
						Reasoning	

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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities.	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	7.RP.2b	Algebra & Functions Representation	
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities.	Represent proportional relationships by equations.	7.RP.2c	Number & Operations Representation	
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities.	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	7.RP.2d	Number & Operations Communication	
7	Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Use proportional relationships to solve multistep ratio and percent problems.		7.RP.3	Number & Operations Problem Solving	
7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Describe situations in which opposite quantities combine to make 0.	7.NS.1a	Number & Operations Communication	
7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	7.NS.1b	Number & Operations Communication	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	7.NS.1c	Number & Operations	
						Reasoning	
7	The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Apply properties of operations as strategies to add and subtract rational numbers.	7.NS.1d	Number & Operations	
						Problem Solving	
7	The Number System	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	7.NS.2a	Number & Operations	
						Communication	
7	The Number System	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-p/q = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	7.NS.2b	Number & Operations	
						Communication	
7	The Number System	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Apply properties of operations as strategies to multiply and divide rational numbers.	7.NS.2c	Number & Operations	
						Problem Solving	
7	The Number System	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	7.NS.2d	Number & Operations	

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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Problem Solving	
7	The Number System	Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers.	Solve real-world and mathematical problems involving the four operations with rational numbers.		7.NS.3	Number & Operations	
						Problem Solving	
7	Expressions and Equations	Use properties of operations to generate equivalent expressions.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.		7.EE.1	Algebra & Functions	
						Problem Solving	
7	Expressions and Equations	Use properties of operations to generate equivalent expressions.	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.		7.EE.2	Algebra & Functions	
						Representation	
7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.		7.EE.3	Number & Operations	
						Algebra & Functions	
						Problem Solving	
7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	7.EE.4a	Algebra & Functions	
						Problem Solving	
7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	7.EE.4b	Algebra & Functions	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Connections	
7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.		7.G.1	Geometry & Measurement	
						Problem Solving	
7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.		7.G.2	Geometry & Measurement	
						Representation	
7	Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.		7.G.3	Geometry & Measurement	
						Communication	
7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.		7.G.4	Geometry & Measurement	
						Problem Solving	
7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.		7.G.5	Geometry & Measurement	
						Problem Solving	
7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.		7.G.6	Geometry & Measurement	
						Problem Solving	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
7	Statistics and Probability	Use random sampling to draw inferences about a population.	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.		7.SP.1	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Use random sampling to draw inferences about a population.	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.		7.SP.2	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Draw informal comparative inferences about two populations.	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.		7.SP.3	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Draw informal comparative inferences about two populations.	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.		7.SP.4	Data, Statistics & Probability	
						Communication	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.		7.SP.5	Data, Statistics & Probability	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.		7.SP.6	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.	7.SP.7a	Data, Statistics & Probability	
						Representation	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.	7.SP.7b	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	7.SP.8a	Data, Statistics & Probability	
						Reasoning	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.	7.SP.8b	Data, Statistics & Probability	
						Representation	
7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	Design and use a simulation to generate frequencies for compound events.	7.SP.8c	Data, Statistics & Probability	
						Problem Solving	
8	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.		8.NS.1	Number & Operations	ReadiStep aligns to rational numbers only.
						Representation	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
8	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).		8.NS.2	Geometry & Measurement	
						Representation	
8	Expressions and Equations	Work with radicals and integer exponents.	Know and apply the properties of integer exponents to generate equivalent numerical expressions.		8.EE.1	Number & Operations	
						Representation	
8	Expressions and Equations	Work with radicals and integer exponents.	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.		8.EE.2	Number & Operations	ReadiStep does not require students to work with cube root.
						Problem Solving	
8	Expressions and Equations	Work with radicals and integer exponents.	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.		8.EE.3	Number & Operations	
						Representation	
8	Expressions and Equations	Work with radicals and integer exponents.	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.		8.EE.4	Number & Operations	
						Communication	
8	Expressions and Equations	Understand the connections between proportional relationships, lines, and linear equations.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.		8.EE.5	Number & Operations	
						Connections	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
8	Expressions and Equations	Understand the connections between proportional relationships, lines, and linear equations.	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .		8.EE.6	Geometry & Measurement	
						Communication	
8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	Solve linear equations in one variable.	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	8.EE.7a	Algebra & Functions	
						Communication	
8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	Solve linear equations in one variable.	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	8.EE.7b	Algebra & Functions	
						Problem Solving	
8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	Analyze and solve pairs of simultaneous linear equations.	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	8.EE.8a		
8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	Analyze and solve pairs of simultaneous linear equations.	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.	8.EE.8b		
8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	Analyze and solve pairs of simultaneous linear equations.	Solve real-world and mathematical problems leading to two linear equations in two variables.	8.EE.8c	Algebra & Functions	
						Connections	
8	Functions	Define, evaluate, and compare functions.	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.		8.F.1	Algebra & Functions	
						Geometry & Measurement	
						Connections	
8	Functions	Define, evaluate, and compare functions.	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).		8.F.2	Algebra & Functions	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Reasoning	
8	Functions	Define, evaluate, and compare functions.	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.		8.F.3	Algebra & Functions	
						Communication	
8	Functions	Use functions to model relationships between quantities.	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.		8.F.4	Algebra & Functions	
						Representation	
8	Functions	Use functions to model relationships between quantities.	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.		8.F.5	Algebra & Functions	
						Communication	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Verify experimentally the properties of rotations, reflections, and translations:	Lines are taken to lines, and line segments to line segments of the same length.	8.G.1a	Geometry & Measurement	
						Reasoning	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Verify experimentally the properties of rotations, reflections, and translations:	Angles are taken to angles of the same measure.	8.G.1b	Geometry & Measurement	
						Reasoning	

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ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Verify experimentally the properties of rotations, reflections, and translations:	Parallel lines are taken to parallel lines.	8.G.1c	Geometry & Measurement	
						Reasoning	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.		8.G.2	Geometry & Measurement	
						Reasoning	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.		8.G.3	Geometry & Measurement	
						Communication	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.		8.G.4	Geometry & Measurement	
						Reasoning	
8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.		8.G.5	Geometry & Measurement	
						Communication	
8	Geometry	Understand and apply the Pythagorean Theorem.	Explain a proof of the Pythagorean Theorem and its converse.		8.G.6	Geometry & Measurement	
						Reasoning	

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ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
8	Geometry	Understand and apply the Pythagorean Theorem.	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.		8.G.7	Geometry & Measurement	
						Problem Solving	
8	Geometry	Understand and apply the Pythagorean Theorem.	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.		8.G.8	Geometry & Measurement	
						Problem Solving	
8	Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.		8.G.9	Geometry & Measurement	ReadiStep aligns to volume of a cylinder only.
						Problem Solving	
8	Statistics and Probability	Investigate patterns of association in bivariate data.	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.		8.SP.1	Data, Statistics & Probability	
						Representation	
8	Statistics and Probability	Investigate patterns of association in bivariate data.	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.		8.SP.2	Data, Statistics & Probability	
						Connections	
8	Statistics and Probability	Investigate patterns of association in bivariate data.	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.		8.SP.3	Data, Statistics & Probability	
						Problem Solving	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
8	Statistics and Probability	Investigate patterns of association in bivariate data.	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.		8.SP.4	Data, Statistics & Probability	ReadiStep does not require that students determine relative frequency.
						Representation	
K-12	Standards for Mathematical Practice		Make sense of problems and persevere in solving them.	Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	MP.1	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	
						Connections	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep	Comments
Grade	Domain	Cluster	Standard	Skill	Code	Skill	
			Reason abstractly and quantitatively.	Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	MP.2	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	
			Construct viable arguments and critique the reasoning of others.	Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	MP.3	Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Reasoning	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep	Comments
Grade	Domain	Cluster	Standard	Skill	Code	Skill	
				Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.			
			Model with mathematics.		MP.4	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	
						Communication	
				Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.			
			Use appropriate tools strategically.		MP.5	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	
				Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.			
			Attend to precision.		MP.6	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Communication	
				Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .			
			Look for and make use of structure.		MP.7	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	

**Mathematics Side-By-Side Alignment Tables:
ReadiStep™—Common Core State Standards**

Common Core State Standards						Aligned ReadiStep Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
			Look for and express regularity in repeated reasoning.	Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	MP.8	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	
						Connections	
						Communication	

Appendix F

PSAT/NMSQT® Math
Side-by-Side Alignment Table

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Number and Quantity	The Real Number System	Extend the properties of exponents to rational exponents.	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.		N-RN.1	Algebra & Functions	
						Communication	
High School—Number and Quantity	The Real Number System	Extend the properties of exponents to rational exponents.	Rewrite expressions involving radicals and rational exponents using the properties of exponents.		N-RN.2	Number & Operations	
						Representation	
High School—Number and Quantity	The Real Number System	Use properties of rational and irrational numbers.	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.		N-RN.3	Number & Operations	
						Reasoning	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		N-Q.1	Number & Operations	
						Communication	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Define appropriate quantities for the purpose of descriptive modeling.		N-Q.2	Algebra & Functions	
						Communication	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.		N-Q.3	Number & Operations	
						Reasoning	
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.		N-CN.1		
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.		N-CN.2		
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	(+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.		N-CN.3		
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.		N-CN.4		

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.		N-CN.5		
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.		N-CN.6		
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	Solve quadratic equations with real coefficients that have complex solutions.		N-CN.7		The PSAT/NMSQT does not include complex solutions.
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	(+) Extend polynomial identities to the complex numbers.		N-CN.8		
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.		N-CN.9	Algebra & Functions	
						Communication	
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v , $ v $, $\ v\ $, v).		N-VM.1		
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.		N-VM.2		
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Solve problems involving velocity and other quantities that can be represented by vectors.		N-VM.3	Algebra & Functions	
						Problem Solving	
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.	N-VM.4a		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.	N-VM.4b		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w , with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	N-VM.4c		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Multiply a vector by a scalar.	Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.	N-VM.5a		

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Multiply a vector by a scalar.	Compute the magnitude of a scalar multiple cv using $\ cv\ = c v\ $. Compute the direction of cv knowing that when $ c v \neq 0$, the direction of cv is either along v (for $c > 0$) or against v (for $c < 0$).	N-VM.5b		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.		N-VM.6		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.		N-VM.7		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Add, subtract, and multiply matrices of appropriate dimensions.		N-VM.8		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.		N-VM.9		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.		N-VM.10		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.		N-VM.11		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Work with 2×2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.		N-VM.12		
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Interpret expressions that represent a quantity in terms of its context.	Interpret parts of an expression, such as terms, factors, and coefficients.	A-SSE.1a	Algebra & Functions	
						Communication	
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Interpret expressions that represent a quantity in terms of its context.	Interpret complicated expressions by viewing one or more of their parts as a single entity.	A-SSE.1b	Algebra & Functions	
						Representation	
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Use the structure of an expression to identify ways to rewrite it.		A-SSE.2	Algebra & Functions	
						Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Factor a quadratic expression to reveal the zeros of the function it defines.	A-SSE.3a	Algebra & Functions	
						Representation	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	A-SSE.3b	Algebra & Functions Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Use the properties of exponents to transform expressions for exponential functions.	A-SSE.3c	Algebra & Functions Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.		A-SSE.4	Algebra & Functions Reasoning	The PSAT/NMSQT aligns to use of the formula to solve problems.
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.		A-APR.1	Algebra & Functions Connections	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.		A-APR.2	Algebra & Functions Communication	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.		A-APR.3	Algebra & Functions Connections	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	Prove polynomial identities and use them to describe numerical relationships.		A-APR.4	Algebra & Functions Reasoning	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n , where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.		A-APR.5	Algebra & Functions Representation	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.		A-APR.6	Algebra & Functions	

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Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
						Representation	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.		A-APR.7	Algebra & Functions	
						Connections	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.		A-CED.1	Algebra & Functions	
						Representation	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.		A-CED.2	Algebra & Functions	
						Representation	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.		A-CED.3	Algebra & Functions	
						Reasoning	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.		A-CED.4	Algebra & Functions	
						Connections	
High School—Algebra	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.		A-REI.1	Algebra & Functions	
						Reasoning	
High School—Algebra	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.		A-REI.2	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.		A-REI.3	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve quadratic equations in one variable.	Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	A-REI.4a	Algebra & Functions	

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Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve quadratic equations in one variable.	Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .	A-REI.4b	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.		A-REI.5	Algebra & Functions	The PSAT/NMSQT aligns to use of the embedded skill to solve problems.
						Reasoning	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.		A-REI.6	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.		A-REI.7	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	(+) Represent a system of linear equations as a single matrix equation in a vector variable.		A-REI.8		The PSAT/NMSQT does not require that students represent systems in matrix form exclusively.
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).		A-REI.9		
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).		A-REI.10	Algebra & Functions	
						Communication	
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.		A-REI.11	Algebra & Functions	Students are expected to be able to identify points of intersection as the solution on the PSAT/NMSQT. They may use graphing calculators to determine the answers.
						Connections	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		A-REI.12	Algebra & Functions Representation	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.		F-IF.1	Algebra & Functions Communication	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.		F-IF.2	Algebra & Functions Communication	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.		F-IF.3	Algebra & Functions Connections	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.		F-IF.4	Algebra & Functions Communication	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.		F-IF.5	Algebra & Functions Connections	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.		F-IF.6	Algebra & Functions Problem Solving	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph linear and quadratic functions and show intercepts, maxima, and minima.	F-IF.7a	Algebra & Functions Representation	

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Common Core State Standards						Aligned	Comments
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High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	F-IF.7b	Algebra & Functions Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	F-IF.7c	Algebra & Functions Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	(+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	F-IF.7d	Algebra & Functions Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	F-IF.7e	Algebra & Functions Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	F-IF.8a	Algebra & Functions Problem Solving	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Use the properties of exponents to interpret expressions for exponential functions.	F-IF.8b	Algebra & Functions Reasoning	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).		F-IF.9	Algebra & Functions Reasoning	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write a function that describes a relationship between two quantities.	Determine an explicit expression, a recursive process, or steps for calculation from a context.	F-BF.1a	Algebra & Functions Problem Solving	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write a function that describes a relationship between two quantities.	Combine standard function types using arithmetic operations.	F-BF.1b	Algebra & Functions Representation	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities	Write a function that describes a relationship between two quantities.	(+) Compose functions.	F-BF.1c	Algebra & Functions Representation	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.		F-BF.2	Algebra & Functions	

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						Representation	
High School—Functions	Building Functions	Build new functions from existing functions.	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.		F-BF.3	Algebra & Functions	
						Connections	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.	F-BF.4a	Algebra & Functions	
						Problem Solving	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Verify by composition that one function is the inverse of another.	F-BF.4b	Algebra & Functions	
						Reasoning	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Read values of an inverse function from a graph or a table, given that the function has an inverse.	F-BF.4c	Algebra & Functions	
						Communication	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Produce an invertible function from a non-invertible function by restricting the domain.	F-BF.4d	Algebra & Functions	
						Problem Solving	
High School—Functions	Building Functions	Build new functions from existing functions.	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.		F-BF.5	Algebra & Functions	
						Problem Solving	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	F-LE.1a	Algebra & Functions	
						Reasoning	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	F-LE.1b	Algebra & Functions	
						Communication	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	F-LE.1c	Algebra & Functions	
						Communication	

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High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).		F-LE.2	Algebra & Functions Representation	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.		F-LE.3	Algebra & Functions Reasoning	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.		F-LE.4		
High School—Functions	Linear, Quadratic, and Exponential Models*	Interpret expressions for functions in terms of the situation they model.	Interpret the parameters in a linear or exponential function in terms of a context.		F-LE.5	Algebra & Functions Reasoning	
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.		F-TF.1		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.		F-TF.2		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x , where x is any real number.		F-TF.3		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.		F-TF.4		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.		F-TF.5		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.		F-TF.6		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.		F-TF.7		

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High School—Functions	Trigonometric Functions	Prove and apply trigonometric identities.	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to calculate trigonometric ratios.		F-TF.8		
High School—Functions	Trigonometric Functions	Prove and apply trigonometric identities.	(+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.		F-TF.9		
High School—Geometry	Congruence	Experiment with transformations in the plane.	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.		G-CO.1	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).		G-CO.2	Geometry & Measurement	
						Representation	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.		G-CO.3	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.		G-CO.4	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.		G-CO.5	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.		G-CO.6	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.		G-CO.7	Geometry & Measurement	
						Communication	

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Common Core State Standards						Aligned	Comments
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High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.		G-CO.8	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.		G-CO.9	Geometry & Measurement	The PSAT/NMSQT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.		G-CO.10	Geometry & Measurement	The PSAT/NMSQT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.		G-CO.11	Geometry & Measurement	The PSAT/NMSQT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Make geometric constructions.	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.		G-CO.12	Geometry & Measurement	
						Representation	
High School—Geometry	Congruence	Make geometric constructions.	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.		G-CO.13	Geometry & Measurement	
						Representation	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Verify experimentally the properties of dilations given by a center and a scale factor:	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	G-SRT.1a	Geometry & Measurement	
						Reasoning	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Verify experimentally the properties of dilations given by a center and a scale factor:	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	G-SRT.1b	Geometry & Measurement	

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						Reasoning	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.		G-SRT.2	Geometry & Measurement	
						Communication	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.		G-SRT.3	Geometry & Measurement	
						Communication	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.		G-SRT.4	Geometry & Measurement	The PSAT/NMSQT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.		G-SRT.5	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.		G-SRT.6	Geometry & Measurement	
						Reasoning	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Explain and use the relationship between the sine and cosine of complementary angles.		G-SRT.7		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.		G-SRT.8	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.		G-SRT.9		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Prove the Laws of Sines and Cosines and use them to solve problems.		G-SRT.10		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).		G-SRT.11		

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Common Core State Standards						Aligned	Comments
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High School—Geometry	Circles	Understand and apply theorems about circles.	Prove that all circles are similar.		G-C.1	Geometry & Measurement	The PSAT/NMSQT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Circles	Understand and apply theorems about circles.	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.		G-C.2	Geometry & Measurement	
						Communication	
High School—Geometry	Circles	Understand and apply theorems about circles.	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.		G-C.3	Geometry & Measurement	PSAT/NMSQT aligns to understanding of the properties of angles of the quadrilateral inscribed in a circle.
						Representation	
High School—Geometry	Circles	Understand and apply theorems about circles.	(+) Construct a tangent line from a point outside a given circle to the circle.		G-C.4	Geometry & Measurement	PSAT/NMSQT aligns to understanding of the properties of a line outside a circle tangent to the circle.
						Representation	
High School—Geometry	Circles	Find arc lengths and areas of sectors of circles.	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.		G-C.5	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.		G-GPE.1	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	Derive the equation of a parabola given a focus and directrix.		G-GPE.2	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	(+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.		G-GPE.3	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Use coordinates to prove simple geometric theorems algebraically.		G-GPE.4	Geometry & Measurement	

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						Connections	
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).		G-GPE.5	Geometry & Measurement	
						Connections	
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.		G-GPE.6	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.		G-GPE.7	Geometry & Measurement	
						Connections	
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri’s principle, and informal limit arguments.		G-GMD.1	Geometry & Measurement	PSAT/NMSQT aligns to the concepts within the standard but does not require construction of an informal argument.
						Reasoning	
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	(+) Give an informal argument using Cavalieri’s principle for the formulas for the volume of a sphere and other solid figures.		G-GMD.2	Geometry & Measurement	PSAT/NMSQT aligns to the concepts within the standard but does not require construction of an informal argument.
						Reasoning	
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.		G-GMD.3	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Geometric Measurement and Dimension	Visualize relationships between two-dimensional and three-dimensional objects.	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.		G-GMD.4	Geometry & Measurement	
						Representation	
High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).		G-MG.1	Geometry & Measurement	
						Representation	
High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).		G-MG.2	Geometry & Measurement	
						Connections	

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High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).		G-MG.3	Geometry & Measurement	
						Problem Solving	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Represent data with plots on the real number line (dot plots, histograms, and box plots).		S-ID.1	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.		S-ID.2	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).		S-ID.3	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.		S-ID.4	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.		S-ID.5	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.	S-ID.6a	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Informally assess the fit of a function by plotting and analyzing residuals.	S-ID.6b	Data, Statistics & Probability	
						Reasoning	

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Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Fit a linear function for a scatter plot that suggests a linear association.	S-ID.6c	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.		S-ID.7	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Compute (using technology) and interpret the correlation coefficient of a linear fit.		S-ID.8		
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Distinguish between correlation and causation.		S-ID.9	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.		S-IC.1	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?		S-IC.2	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.		S-IC.3	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.		S-IC.4	Data, Statistics & Probability	
						Problem Solving	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.		S-IC.5	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Evaluate reports based on data.		S-IC.6	Data, Statistics & Probability	
						Reasoning	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).		S-CP.1	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.		S-CP.2	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.		S-CP.3	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.		S-CP.4	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.		S-CP.5	Data, Statistics & Probability	
						Connections	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	Find the conditional probability of A given B as the fraction of B’s outcomes that also belong to A, and interpret the answer in terms of the model.		S-CP.6	Data, Statistics & Probability	
						Problem Solving	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.		S-CP.7	Data, Statistics & Probability	
						Problem Solving	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)$, and interpret the answer in terms of the model.		S-CP.8	Data, Statistics & Probability	
						Problem Solving	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	(+) Use permutations and combinations to compute probabilities of compound events and solve problems.		S-CP.9	Data, Statistics & Probability Problem Solving	
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.		S-MD.1	Data, Statistics & Probability Communication	
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.		S-MD.2		
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value.		S-MD.3	Data, Statistics & Probability Communication	
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value.		S-MD.4	Data, Statistics & Probability Communication	
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.	Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.	S-MD.5a	Data, Statistics & Probability Reasoning	
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.	Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	S-MD.5b	Data, Statistics & Probability Reasoning	
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).		S-MD.6	Data, Statistics & Probability Reasoning	
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).		S-MD.7	Data, Statistics & Probability Reasoning	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.			
K-12	Standards for Mathematical Practice		Make sense of problems and persevere in solving them.		MP.1	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	
						Connections	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.			
			Reason abstractly and quantitatively.		MP.2	Number & Operations Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				<p>Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.</p>			
			Construct viable arguments and critique the reasoning of others.		MP.3	Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Reasoning	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.			
			Model with mathematics.		MP.4	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	
						Communication	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.			
			Use appropriate tools strategically.		MP.5	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned	Comments
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	
				Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.			
			Attend to precision.		MP.6	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Communication	
				Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .			
			Look for and make use of structure.		MP.7	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	

**Mathematics Side-By-Side Alignment Tables:
PSAT/NMSQT®—Common Core State Standards**

Common Core State Standards						Aligned		
Grade	Domain	Cluster	Standard	Skill	Code	PSAT/NMSQT Skill	Comments	
						Representation		
						Connections		
				Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.				
			Look for and express regularity in repeated reasoning.		MP.8	Number & Operations		
						Algebra & Functions		
						Geometry & Measurement		
						Data, Statistics & Probability		
						Problem Solving		
						Representation		
						Reasoning		
						Connections		
						Communication		

Appendix G

SAT[®] Math
Side-by-Side Alignment Table

**Mathematics Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
High School—Number and Quantity	The Real Number System	Extend the properties of exponents to rational exponents.	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.		N-RN.1	Algebra & Functions	
						Communication	
High School—Number and Quantity	The Real Number System	Extend the properties of exponents to rational exponents.	Rewrite expressions involving radicals and rational exponents using the properties of exponents.		N-RN.2	Number & Operations	
						Representation	
High School—Number and Quantity	The Real Number System	Use properties of rational and irrational numbers.	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.		N-RN.3	Number & Operations	
						Reasoning	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		N-Q.1	Number & Operations	
						Communication	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Define appropriate quantities for the purpose of descriptive modeling.		N-Q.2	Algebra & Functions	
						Communication	
High School—Number and Quantity	Quantities*	Reason quantitatively and use units to solve problems.	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.		N-Q.3	Number & Operations	
						Reasoning	
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.		N-CN.1		
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.		N-CN.2		
High School—Number and Quantity	The Complex Number System	Perform arithmetic operations with complex numbers.	(+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.		N-CN.3		
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.		N-CN.4		

**Mathematics Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation.		N-CN.5		
High School—Number and Quantity	The Complex Number System	Represent complex numbers and their operations on the complex plane.	(+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.		N-CN.6		
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	Solve quadratic equations with real coefficients that have complex solutions.		N-CN.7		The SAT does not include complex solutions.
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	(+) Extend polynomial identities to the complex numbers.		N-CN.8		
High School—Number and Quantity	The Complex Number System	Use complex numbers in polynomial identities and equations.	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.		N-CN.9	Algebra & Functions	
						Communication	
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., v , $ v $, $\ v\ $, v).		N-VM.1		
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.		N-VM.2		
High School—Number and Quantity	Vector and Matrix Quantities	Represent and model with vector quantities.	(+) Solve problems involving velocity and other quantities that can be represented by vectors.		N-VM.3	Algebra & Functions	
						Problem Solving	
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.	N-VM.4a		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.	N-VM.4b		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Add and subtract vectors.	Understand vector subtraction $v - w$ as $v + (-w)$, where $-w$ is the additive inverse of w , with the same magnitude as w and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	N-VM.4c		
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Multiply a vector by a scalar.	Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.	N-VM.5a		

**Mathematics Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards							Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on vectors.	(+) Multiply a vector by a scalar.	Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $\ c\mathbf{v}\ = c v$. Compute the direction of $c\mathbf{v}$ knowing that when $ c v \neq 0$, the direction of $c\mathbf{v}$ is either along \mathbf{v} (for $c > 0$) or against \mathbf{v} (for $c < 0$).	N-VM.5b			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.		N-VM.6			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.		N-VM.7			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Add, subtract, and multiply matrices of appropriate dimensions.		N-VM.8			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.		N-VM.9			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.		N-VM.10			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.		N-VM.11			
High School—Number and Quantity	Vector and Matrix Quantities	Perform operations on matrices and use matrices in applications.	(+) Work with 2×2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.		N-VM.12			
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Interpret expressions that represent a quantity in terms of its context.	Interpret parts of an expression, such as terms, factors, and coefficients.	A-SSE.1a	Algebra & Functions		
						Communication		
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Interpret expressions that represent a quantity in terms of its context.	Interpret complicated expressions by viewing one or more of their parts as a single entity.	A-SSE.1b	Algebra & Functions		
						Representation		
High School—Algebra	Seeing Structure in Expressions	Interpret the structure of expressions.	Use the structure of an expression to identify ways to rewrite it.		A-SSE.2	Algebra & Functions		
						Representation		
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Factor a quadratic expression to reveal the zeros of the function it defines.	A-SSE.3a	Algebra & Functions		

**Mathematics Side-By-Side Alignment Tables:
SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	A-SSE.3b	Algebra & Functions	
						Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	Use the properties of exponents to transform expressions for exponential functions.	A-SSE.3c	Algebra & Functions	
						Representation	
High School—Algebra	Seeing Structure in Expressions	Write expressions in equivalent forms to solve problems.	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.		A-SSE.4	Algebra & Functions	The SAT aligns to use of the formula to solve problems.
						Reasoning	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.		A-APR.1	Algebra & Functions	
						Connections	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a , the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.		A-APR.2	Algebra & Functions	
						Communication	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Understand the relationship between zeros and factors of polynomials.	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.		A-APR.3	Algebra & Functions	
						Connections	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	Prove polynomial identities and use them to describe numerical relationships.		A-APR.4	Algebra & Functions	
						Reasoning	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Use polynomial identities to solve problems.	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n , where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.		A-APR.5	Algebra & Functions	
						Representation	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.		A-APR.6	Algebra & Functions	

**Mathematics Side-By-Side Alignment Tables:
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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Representation	
High School—Algebra	Arithmetic with Polynomials and Rational Expressions	Rewrite rational expressions.	(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.		A-APR.7	Algebra & Functions	
						Connections	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.		A-CED.1	Algebra & Functions	
						Representation	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.		A-CED.2	Algebra & Functions	
						Representation	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.		A-CED.3	Algebra & Functions	
						Reasoning	
High School—Algebra	Creating Equations*	Create equations that describe numbers or relationships.	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.		A-CED.4	Algebra & Functions	
						Connections	
High School—Algebra	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.		A-REI.1	Algebra & Functions	
						Reasoning	
High School—Algebra	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.		A-REI.2	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.		A-REI.3	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve quadratic equations in one variable.	Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	A-REI.4a	Algebra & Functions	

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						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve equations and inequalities in one variable.	Solve quadratic equations in one variable.	Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .	A-REI.4b	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.		A-REI.5	Algebra & Functions	The SAT aligns to use of the embedded skill to solve problems.
						Reasoning	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.		A-REI.6	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.		A-REI.7	Algebra & Functions	
						Problem Solving	
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	(+) Represent a system of linear equations as a single matrix equation in a vector variable.		A-REI.8		The SAT does not require that students represent systems in matrix form exclusively.
High School—Algebra	Reasoning with Equations and Inequalities	Solve systems of equations.	(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).		A-REI.9		
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).		A-REI.10	Algebra & Functions	
						Communication	
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.		A-REI.11	Algebra & Functions	Students are expected to be able to identify points of intersection as the solution on the SAT. They may use graphing calculators to determine the answers.
						Connections	

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Grade	Domain	Cluster	Standard	Skill	Code		
High School—Algebra	Reasoning with Equations and Inequalities	Represent and solve equations and inequalities graphically.	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		A-REI.12	Algebra & Functions	
						Representation	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.		F-IF.1	Algebra & Functions	
						Communication	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.		F-IF.2	Algebra & Functions	
						Communication	
High School—Functions	Interpreting Functions	Understand the concept of a function and use function notation.	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.		F-IF.3	Algebra & Functions	
						Connections	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.		F-IF.4	Algebra & Functions	
						Communication	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.		F-IF.5	Algebra & Functions	
						Connections	
High School—Functions	Interpreting Functions	Interpret functions that arise in applications in terms of the context.	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.		F-IF.6	Algebra & Functions	
						Problem Solving	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph linear and quadratic functions and show intercepts, maxima, and minima.	F-IF.7a	Algebra & Functions	

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						Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	F-IF.7b	Algebra & Functions	
						Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	F-IF.7c	Algebra & Functions	
						Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	(+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	F-IF.7d	Algebra & Functions	
						Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	F-IF.7e	Algebra & Functions	
						Representation	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	F-IF.8a	Algebra & Functions	
						Problem Solving	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	Use the properties of exponents to interpret expressions for exponential functions.	F-IF.8b	Algebra & Functions	
						Reasoning	
High School—Functions	Interpreting Functions	Analyze functions using different representations.	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).		F-IF.9	Algebra & Functions	
						Reasoning	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write a function that describes a relationship between two quantities.	Determine an explicit expression, a recursive process, or steps for calculation from a context.	F-BF.1a	Algebra & Functions	
						Problem Solving	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write a function that describes a relationship between two quantities.	Combine standard function types using arithmetic operations.	F-BF.1b	Algebra & Functions	
						Representation	
High School—Functions	Building Functions	Build a function that models a relationship between two quantities	Write a function that describes a relationship between two quantities.	(+) Compose functions.	F-BF.1c	Algebra & Functions	
						Representation	

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Common Core State Standards							Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code			
High School—Functions	Building Functions	Build a function that models a relationship between two quantities.	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.			F-BF.2	Algebra & Functions	
							Representation	
High School—Functions	Building Functions	Build new functions from existing functions.	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.			F-BF.3	Algebra & Functions	
							Connections	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.		F-BF.4a	Algebra & Functions	
							Problem Solving	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Verify by composition that one function is the inverse of another.		F-BF.4b	Algebra & Functions	
							Reasoning	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Read values of an inverse function from a graph or a table, given that the function has an inverse.		F-BF.4c	Algebra & Functions	
							Communication	
High School—Functions	Building Functions	Build new functions from existing functions.	Find inverse functions.	(+) Produce an invertible function from a non-invertible function by restricting the domain.		F-BF.4d	Algebra & Functions	
							Problem Solving	
High School—Functions	Building Functions	Build new functions from existing functions.	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.			F-BF.5	Algebra & Functions	
							Problem Solving	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.		F-LE.1a	Algebra & Functions	
							Reasoning	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.		F-LE.1b	Algebra & Functions	
							Communication	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Distinguish between situations that can be modeled with linear functions and with exponential functions.	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.		F-LE.1c	Algebra & Functions	

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SAT®—Common Core State Standards**

Common Core State Standards						Aligned SAT Skill	Comments
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						Communication	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).		F-LE.2	Algebra & Functions	
						Representation	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.		F-LE.3	Algebra & Functions	
						Reasoning	
High School—Functions	Linear, Quadratic, and Exponential Models*	Construct and compare linear, quadratic, and exponential models and solve problems.	For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology.		F-LE.4		
High School—Functions	Linear, Quadratic, and Exponential Models*	Interpret expressions for functions in terms of the situation they model.	Interpret the parameters in a linear or exponential function in terms of a context.		F-LE.5	Algebra & Functions	
						Reasoning	
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.		F-TF.1		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.		F-TF.2		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x , where x is any real number.		F-TF.3		
High School—Functions	Trigonometric Functions	Extend the domain of trigonometric functions using the unit circle.	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.		F-TF.4		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.		F-TF.5		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.		F-TF.6		

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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
High School—Functions	Trigonometric Functions	Model periodic phenomena with trigonometric functions.	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.		F-TF.7		
High School—Functions	Trigonometric Functions	Prove and apply trigonometric identities.	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to calculate trigonometric ratios.		F-TF.8		
High School—Functions	Trigonometric Functions	Prove and apply trigonometric identities.	(+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.		F-TF.9		
High School—Geometry	Congruence	Experiment with transformations in the plane.	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.		G-CO.1	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).		G-CO.2	Geometry & Measurement	
						Representation	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.		G-CO.3	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.		G-CO.4	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Experiment with transformations in the plane.	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.		G-CO.5	Geometry & Measurement	
						Problem Solving	
High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.		G-CO.6	Geometry & Measurement	
						Problem Solving	

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Grade	Domain	Cluster	Standard	Skill	Code		
High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.		G-CO.7	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Understand congruence in terms of rigid motions.	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.		G-CO.8	Geometry & Measurement	
						Communication	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.		G-CO.9	Geometry & Measurement	The SAT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.		G-CO.10	Geometry & Measurement	The SAT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Prove geometric theorems.	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.		G-CO.11	Geometry & Measurement	The SAT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Congruence	Make geometric constructions.	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.		G-CO.12	Geometry & Measurement	
						Representation	
High School—Geometry	Congruence	Make geometric constructions.	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.		G-CO.13	Geometry & Measurement	
						Representation	

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High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Verify experimentally the properties of dilations given by a center and a scale factor:	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	G-SRT.1a	Geometry & Measurement		
						Reasoning		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Verify experimentally the properties of dilations given by a center and a scale factor:	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	G-SRT.1b	Geometry & Measurement		
						Reasoning		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.		G-SRT.2	Geometry & Measurement		
						Communication		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations.	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.		G-SRT.3	Geometry & Measurement		
						Communication		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.		G-SRT.4	Geometry & Measurement	The SAT aligns to use of the concepts within the proof to solve problems.	
						Reasoning		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Prove theorems involving similarity.	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.		G-SRT.5	Geometry & Measurement		
						Problem Solving		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.		G-SRT.6	Geometry & Measurement		
						Reasoning		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Explain and use the relationship between the sine and cosine of complementary angles.		G-SRT.7			
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios and solve problems involving right triangles.	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.		G-SRT.8	Geometry & Measurement		
						Problem Solving		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.		G-SRT.9			

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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Prove the Laws of Sines and Cosines and use them to solve problems.		G-SRT.10		
High School—Geometry	Similarity, Right Triangles, and Trigonometry	Apply trigonometry to general triangles.	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).		G-SRT.11		
High School—Geometry	Circles	Understand and apply theorems about circles.	Prove that all circles are similar.		G-C.1	Geometry & Measurement	The SAT aligns to use of the concepts within the proof to solve problems.
						Reasoning	
High School—Geometry	Circles	Understand and apply theorems about circles.	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.		G-C.2	Geometry & Measurement	
						Communication	
High School—Geometry	Circles	Understand and apply theorems about circles.	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.		G-C.3	Geometry & Measurement	The SAT aligns to understanding of the properties of angles of the quadrilateral inscribed in a circle.
						Representation	
High School—Geometry	Circles	Understand and apply theorems about circles.	(+) Construct a tangent line from a point outside a given circle to the circle.		G-C.4	Geometry & Measurement	The SAT aligns to understanding of the properties of a line outside a circle tangent to the circle.
						Representation	
High School—Geometry	Circles	Find arc lengths and areas of sectors of circles.	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.		G-C.5	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.		G-GPE.1	Geometry & Measurement	
						Communication	
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	Derive the equation of a parabola given a focus and directrix.		G-GPE.2	Geometry & Measurement	

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						Communication		
High School—Geometry	Expressing Geometric Properties Equations	Translate between the geometric description and the equation for a conic section.	(+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.			G-GPE.3	Geometry & Measurement	
						Communication		
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Use coordinates to prove simple geometric theorems algebraically.			G-GPE.4	Geometry & Measurement	
						Connections		
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).			G-GPE.5	Geometry & Measurement	
						Connections		
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.			G-GPE.6	Geometry & Measurement	
						Problem Solving		
High School—Geometry	Expressing Geometric Properties Equations	Use coordinates to prove simple geometric theorems algebraically.	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.			G-GPE.7	Geometry & Measurement	
						Connections		
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.			G-GMD.1	Geometry & Measurement	The SAT aligns to the concepts within the standard but does not require construction of an informal argument.
						Reasoning		
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	(+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.			G-GMD.2	Geometry & Measurement	The SAT aligns to the concepts within the standard but does not require construction of an informal argument.
						Reasoning		
High School—Geometry	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.			G-GMD.3	Geometry & Measurement	
						Problem Solving		
High School—Geometry	Geometric Measurement and Dimension	Visualize relationships between two-dimensional and three-dimensional objects.	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.			G-GMD.4	Geometry & Measurement	
						Representation		

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High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).		G-MG.1	Geometry & Measurement	
						Representation	
High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).		G-MG.2	Geometry & Measurement	
						Connections	
High School—Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).		G-MG.3	Geometry & Measurement	
						Problem Solving	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Represent data with plots on the real number line (dot plots, histograms, and box plots).		S-ID.1	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.		S-ID.2	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).		S-ID.3	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.		S-ID.4	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.		S-ID.5	Data, Statistics & Probability	
						Communication	

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Grade	Domain	Cluster	Standard	Skill	Code		
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.	S-ID.6a	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Informally assess the fit of a function by plotting and analyzing residuals.	S-ID.6b	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on two categorical and quantitative variables.	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.	Fit a linear function for a scatter plot that suggests a linear association.	S-ID.6c	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.		S-ID.7	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Compute (using technology) and interpret the correlation coefficient of a linear fit.		S-ID.8		
High School—Statistics and Probability	Interpreting Categorical and Quantitative Data	Interpret linear models.	Distinguish between correlation and causation.		S-ID.9	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.		S-IC.1	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?		S-IC.2	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.		S-IC.3	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.		S-IC.4	Data, Statistics & Probability	
						Problem Solving	

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Grade	Domain	Cluster	Standard	Skill	Code		
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.		S-IC.5	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Making Inferences and Justifying Conclusions	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	Evaluate reports based on data.		S-IC.6	Data, Statistics & Probability	
						Reasoning	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).		S-CP.1	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.		S-CP.2	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.		S-CP.3	Data, Statistics & Probability	
						Communication	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.		S-CP.4	Data, Statistics & Probability	
						Representation	
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.		S-CP.5	Data, Statistics & Probability	
						Connections	

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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.		S-CP.6	Data, Statistics & Probability	Problem Solving
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.		S-CP.7	Data, Statistics & Probability	Problem Solving
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B A) = P(B)P(A B)$, and interpret the answer in terms of the model.		S-CP.8	Data, Statistics & Probability	Problem Solving
High School—Statistics and Probability	Conditional Probability and the Rules of Probability	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	(+) Use permutations and combinations to compute probabilities of compound events and solve problems.		S-CP.9	Data, Statistics & Probability	Problem Solving
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.		S-MD.1	Data, Statistics & Probability	Communication
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.		S-MD.2		
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value.		S-MD.3	Data, Statistics & Probability	Communication
High School—Statistics and Probability	Using Probability to Make Decisions	Calculate expected values and use them to solve problems.	(+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value.		S-MD.4	Data, Statistics & Probability	Communication
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.	Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.	S-MD.5a	Data, Statistics & Probability	Reasoning

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Grade	Domain	Cluster	Standard	Skill	Code			
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.	Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	S-MD.5b	Data, Statistics & Probability		
						Reasoning		
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).		S-MD.6	Data, Statistics & Probability		
						Reasoning		
High School—Statistics and Probability	Using Probability to Make Decisions	Use probability to evaluate outcomes of decisions.	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).		S-MD.7	Data, Statistics & Probability		
						Reasoning		
K-12	Standards for Mathematical Practice		Make sense of problems and persevere in solving them.	Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	MP.1	Number & Operations		
						Algebra & Functions		
						Geometry & Measurement		
						Data, Statistics & Probability		
						Problem Solving		
						Representation		
						Reasoning		
						Connections		

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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
						Communication	
				Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.			
			Reason abstractly and quantitatively.		MP.2	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Reasoning	

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Common Core State Standards						Aligned SAT Skill	Comments
Grade	Domain	Cluster	Standard	Skill	Code		
			Construct viable arguments and critique the reasoning of others.	<p>Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.</p>	MP.3	Algebra & Functions Geometry & Measurement Data, Statistics & Probability Reasoning Communication	

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				Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.			
			Model with mathematics.		MP.4	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	
						Communication	

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Common Core State Standards						Aligned SAT Skill	Comments
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				<p>Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.</p>			
			Use appropriate tools strategically.		MP.5	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	

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				Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.			
			Attend to precision.		MP.6	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Communication	
				Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .			
			Look for and make use of structure.		MP.7	Number & Operations	
						Algebra & Functions	
						Geometry & Measurement	
						Data, Statistics & Probability	
						Problem Solving	
						Representation	
						Connections	

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Common Core State Standards						Aligned SAT Skill	Comments	
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			Look for and express regularity in repeated reasoning.	Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.		MP.8	Number & Operations	
							Algebra & Functions	
							Geometry & Measurement	
							Data, Statistics & Probability	
							Problem Solving	
							Representation	
							Reasoning	
							Connections	
							Communication	

