



HiSET® Information Brief–2016

The purpose of the ETS High School Equivalency Test (*HiSET*®) is to certify a candidate's attainment of academic knowledge and skills equivalent to those of a high school graduate. HiSET scores will identify those candidates who have performed at a level consistent with high school equivalency. Information from the HiSET program also will help identify areas in which candidates are career and college ready, as well as areas in which additional preparation may be needed.

Candidates will be tested in five core areas: Language Arts – Reading, Language Arts – Writing, Mathematics, Science, and Social Studies. Descriptions of each of these five tests are contained in this document. Included with the descriptions are sample items that illustrate the types of items that will appear on the test. The **HiSET® Practice Tests** allow the candidates to view sample content and item types and provide them with general information about their level of preparation for taking the operational form.

Through ongoing validity research, the HiSET program has been connected to college-readiness indicators. Candidate performance relative to these indicators is part of the reporting system for the assessment.

The following “Test at a Glance” sections provide an outline of the Content and Process Categories for each subject area.

The emphasis of each category is expressed as the percent of questions per category. This percent is the average number of questions across all 2016 forms on the HiSET exam.

Language Arts – Reading

Test at a Glance	
Test Name	Language Arts – Reading
Time	65 minutes
Number of Questions	40
Format	Multiple-choice questions
<p>A pie chart with two segments. The larger segment, colored olive green, is labeled 'I' and '60%'. The smaller segment, colored light beige, is labeled 'II' and '40%'.</p>	Content Categories
	Application of concepts, analysis, synthesis, and evaluation involving: <ul style="list-style-type: none">I. Literary Texts (60%)II. Informational Texts (40%)
	Process Categories <ul style="list-style-type: none">A. ComprehensionB. Inference and InterpretationC. AnalysisD. Synthesis and Generalization

About This Test

The Language Arts – Reading test provides evidence of a candidate’s ability to understand, comprehend, interpret, and analyze a variety of reading material. The item pool from which the HiSET test forms will be assembled is 60 percent literary content and 40 percent informational content. In the ETS HiSET program, candidates will be required to read a broad range of high-quality literary and informational texts. The selections are presented in multiple genres on subject matter that varies in purpose and style. The selections will span various forms (e.g., narratives, memoirs, essays, biographical sketches, editorials, and poetry). The texts generally range in length from approximately 400 to 600 words.

Reading Process Categories

In addition to the variety of reading texts, candidates also will answer questions that may involve one or more of the processes described below.

A. Comprehension

1. Understand restatements of information
2. Determine the meaning of words and phrases as they are used in the text
3. Analyze the impact of specific word choices on meaning and tone

B. Inference and Interpretation

1. *Make inferences from the text*
2. *Draw conclusions or deduce meanings not explicitly present in the text*
3. *Infer the traits, feelings, and motives of characters or individuals*
4. *Apply information*
5. *Interpret nonliteral language*

C. Analysis

1. *Determine the main idea, topic, or theme of a text*
2. *Identify the author's or speaker's purpose or viewpoint*
3. *Distinguish among opinions, facts, assumptions, observations, and conclusions*
4. *Recognize aspects of an author's style, structure, mood, or tone*
5. *Recognize literary or argumentative techniques*

D. Synthesis and Generalization

1. *Draw conclusions and make generalizations*
2. *Make predictions*
3. *Compare and contrast*
4. *Synthesize information across multiple sources*

The following is a list of the High School College and Career Readiness Statements (CCRS)* that are included in the Language Arts – Reading test.

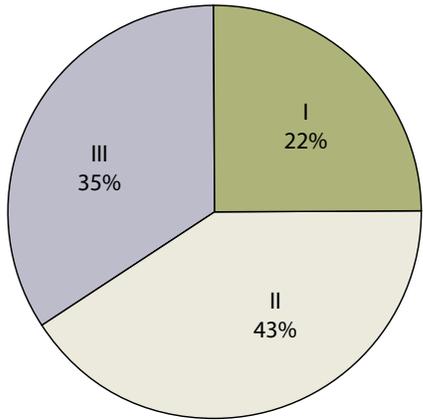
CCRS No.	College and Career Readiness Statements
RH.6-8.6	Identify aspects of a text that reveal an author’s point of view or purpose (e.g., loaded language, inclusion, or avoidance of particular facts).
RH.9-10.3	Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.
RH.9-10.6	Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
RI.6.5	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
RI.6.7	Integrate information presented in different media or formats (e.g., in charts, graphs, photographs, videos, or maps) as well as in words to develop a coherent understanding of a topic or issue.
RI.7.5	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.8.3	Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories). • Application: Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered). (RH.6-8.3)
RI.8.6	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.8.8	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.8.9	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.9-10.5	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.9-10.6	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.9-10.8	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.9-10.9	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.11-12.3	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.

*U.S. Department of Education, Office of Vocational and Adult Education, 2013. College and Career Readiness Standards for Adult Education.
URL: <https://www.vrae.org/images/customer-files/CCRStandardsAdultEd.pdf>

**CCRS
No.****College and Career Readiness Statements**

RI.11-12.5	Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points that are clear, convincing, and engaging.
RI.11-12.7	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.11-12.9	Analyze 17th-, 18th-, and 19th-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/RL.6.2	Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments. <ul style="list-style-type: none">• Application: Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (RST.6-8.2)
RI/RL.6.4	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/RL.7.1	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <ul style="list-style-type: none">• Application: Cite specific textual evidence to support analysis of primary and secondary sources. (RH.6-8.1)• Application: Cite specific textual evidence to support analysis of science and technical texts. (RST.6-8.1)
RI/RL.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <ul style="list-style-type: none">• Application: Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information. (RH.9-10.1)• Application: Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (RST.9-10.1)
RI/RL.9-10.2	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.
RI/RL.9-10.4	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). <ul style="list-style-type: none">• Application: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context. (RST.9-10.4)
RST.11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
RI.11-12.3	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.
RL.11-12.6	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).

Language Arts – Writing

Test at a Glance	
Test Name	Language Arts – Writing
Time	120 minutes
Number of Questions	51
Format	Multiple-choice questions Essay question
	Content Categories – Part 1
	I. Organization of Ideas (22%) II. Language Facility (43%) III. Writing Conventions (35%)
	Content Categories – Part 2
	A. Development of Ideas B. Organization of Ideas C. Language Facility D. Writing Conventions

About This Test

The Language Arts – Writing test provides information about a candidate’s skill in recognizing and producing effective standard American written English. Part 1 of the test measures a candidate’s ability to edit and revise written text. Part 2 of the test measures a candidate’s ability to generate and organize ideas in writing.

Part 1 requires candidates to make revision choices concerning organization, diction and clarity, sentence structure, usage, and mechanics. The test questions are embedded in complete texts and will span various forms (e.g., letters, essays, newspaper articles, personal accounts, and reports).

The texts are presented as drafts in which parts have been underlined or highlighted to indicate a possible need for revision. Questions present alternatives that may correct or improve the underlined portions. Aspects of written language that are tested may include appropriate style, logical transitions, discourse structure and organization, conciseness and clarity, or usage and mechanics.

Part 2 of the test measures proficiency in the generation and organization of ideas through a direct assessment of evidence-based writing. Candidates are evaluated on the ability to write an argument on a given substantive topic using valid reasoning and relevant and sufficient evidence.

Content Descriptions

The following are descriptions of the topics covered in the basic content categories of Part 1. Because the assessments were designed to measure the ability to analyze and evaluate writing, answering any question may involve aspects of more than one category.

I. Organization of Ideas

1. *Select logical or effective opening, transitional, and closing sentences*
2. *Evaluate relevance of content*
3. *Analyze and evaluate paragraph structure*
4. *Recognize logical transitions and related words and phrases*

II. Language Facility

1. *Recognize appropriate subordination and coordination, parallelism, and modifier placement*
2. *Recognize effective sentence combining*
3. *Recognize idiomatic usage*
4. *Maintain consistency and appropriateness in style and tone*
5. *Analyze nuances in the meaning of words with similar denotations*

III. Writing Conventions

1. *Recognize verb, pronoun, and modifier forms*
2. *Maintain grammatical agreement*
3. *Recognize and correct incomplete sentence fragments and run-ons*
4. *Recognize correct capitalization, punctuation, and spelling*
5. *Use reference sources appropriately*

Part 2 of the Language Arts – Writing test requires that candidates read a pair of texts, and then create written responses drawing on evidence from the texts as well as their own experience. Responses are evaluated for the candidate’s ability to develop a position supported by evidence from the materials provided as well as their own experiences.

A. Development of a Central Position or Claim

1. *Focus on central idea, supporting ideas*
2. *Explanation of supporting ideas*
3. *Command over writing an argument*

B. Organization of Ideas

1. *Introduction and conclusion*
2. *Sequencing of ideas*
3. *Paragraphing*
4. *Transitions*

C. Language Facility

1. *Word choice*
2. *Sentence structure*
3. *Expression and voice*

D. Writing Conventions

1. *Grammar*
2. *Usage*
3. *Mechanics*

The following is a list of the High School College and Career Readiness Statements (CCRS)* that are included in the Language Arts – Writing test.

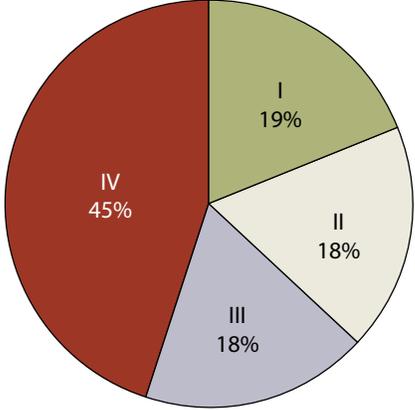
CCRS No.	College and Career Readiness Statements
Anchor 5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
L.2.2-3.2.a	Capitalize holidays, product names, and geographic names.
L.2.2-3.2.e	Use commas and quotation marks in dialogue.
L.2.2-3.2.f	Use an apostrophe to form contractions and frequently occurring possessives.
L.2.2-3.2.g	Form and use possessives.
L.4.1-5.1.k	Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.
L.4.2-5.2.a	Use correct capitalization.
L.4.2-5.2.b	Use commas and quotation marks to mark direct speech and quotations from a text.
L.4.2-5.2.c	Use punctuation to separate items in a series.
L.4.2-5.2.d	Use a comma to separate an introductory element from the rest of the sentence.
L.4.2-5.2.e	Use a comma to set off the words yes and no (e.g., Yes, thank you), to set off a tag question from the rest of the sentence (e.g., It's true, isn't it?), and to indicate direct address (e.g., Is that you, Steve?)
L.4.2-5.2.f	Use underlining, quotation marks, or italics to indicate titles of works.
L.4.2-5.2.g	Use a comma before a coordinating conjunction in a compound sentence.
L.4.2-5.2.h	Spell grade-appropriate words correctly, consulting references as needed.
L.4.3-5.3.d	Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.
L.5.5.a	Interpret figurative language, including similes and metaphors, in context.
L.5.5.b	Recognize and explain the meaning of common idioms, adages, and proverbs.
L.6.1-8.1.a	Ensure that pronouns are in the proper case (subjective, objective, possessive).
L.6.1-8.1.b	Use intensive pronouns.
L.6.1-8.1.c	Recognize and correct inappropriate shifts in pronoun number and person.
L.6.1-8.1.d	Recognize and correct vague or unclear pronouns.
L.6.1-8.1.f	Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.
L.6.1-8.1.g	Form and use verbs in the active and passive voice.
L.6.1-8.1.h	Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.
L.6.1-8.1.i	Recognize and correct inappropriate shifts in verb voice and mood.
L.6.1-8.1.j	Explain the function of phrases and clauses in general and their function in specific sentences.
L.6.1-8.1.k	Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.
L.6.1-8.1.l	Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.
L.6.2-8.2.a	Use punctuation (commas, parentheses, ellipsis, dashes) to set off nonrestrictive/parenthetical elements.
L.6.2-8.2.b	Use a comma to separate coordinate adjectives (e.g., It was a fascinating, enjoyable movie but not He wore an old [,] green shirt).

*U.S. Department of Education, Office of Vocational and Adult Education, 2013. College and Career Readiness Standards for Adult Education.
URL: <https://www.vrae.org/images/customer-files/CCRStandardsAdultEd.pdf>

CCRS No.	College and Career Readiness Statements
L.6.2-8.2.c	Use an ellipsis to indicate an omission.
L.6.2-8.2.d	Spell correctly.
L.6.3-7.3.a	Vary sentence patterns for meaning, reader/listener interest, and style.
L.6.3-7.3.b	Maintain consistency in style and tone.
L.6.4.a	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.6.4.b	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).
L.8.6	Acquire and use accurately level-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
L.9-10.1.a	Use parallel structure.
L.9-10.1.b	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.9-10.2.a	Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.
L.9-10.2.b	Use a colon to introduce a list or quotation.
L.9-10.2.c	Spell correctly.
L.11-12.4.a	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.11-12.4.b	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).
L.11-12.6	Acquire and accurately use 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.
W.6-8.2.a	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.6-8.2.b	Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
W.6-8.2.c	Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.
W.6-8.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented.
W.6-8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
W.6-8.8	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.7.1.a	Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
W.7.1.b	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.

CCRS No.	College and Career Readiness Statements
W.7.1.c	Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.
W.7.1.d	Establish and maintain a formal style.
W.7.1.e	Provide a concluding statement or section that follows from and supports the argument presented.
W.9-10.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
W.9-10.1.b	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.9-10.1.c	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.9-10.1.d	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.9-10.1.e	Provide a concluding statement or section that follows from and supports the argument presented.
W.9-10.2.a	Introduce a topic and 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.9-10.2.b	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.9-10.2.c	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.9-10.2.f	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.9-10.8	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; and integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
W.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to the task, purpose, and audience.

Mathematics

Test at a Glance	
Test Name	Mathematics
Time	90 minutes
Number of Questions	50
Format	Multiple-choice questions
Calculator	Calculator neutral. Please refer to the state policies for the state in which you are testing.
	Content Categories (Approximate Percentage of Questions)
	<ul style="list-style-type: none">I. Numbers and Operations on Numbers (19%)II. Measurement/Geometry (18%)III. Data Analysis/Probability/Statistics (18%)IV. Algebraic Concepts (45%)
	Process Categories <ul style="list-style-type: none">A. Understand Mathematical Concepts and ProceduresB. Analyze and Interpret InformationC. Synthesize Data and Solve Problems

About This Test

The Mathematics test assesses mathematical knowledge and competencies. The test measures a candidate's ability to solve quantitative problems using fundamental concepts and reasoning skills. The questions present practical problems that require numerical operations, measurement, estimation, data interpretation, and logical thinking. Problems are based on realistic situations and may test abstract concepts such as algebraic patterns, precision in measurement, and probability. This test may contain some questions that will not count toward your score. The Mathematics test is calculator neutral. A calculator is not required, but if a test taker requests a calculator, the test center is required to provide access to one of the following: four-function or scientific calculator. Please refer to the state policies for the state in which you are testing. Some states have specified calculator type/model requirements. A test taker may not bring his or her own calculator to the testing center for use on the HiSET exam.

Content Descriptions

The following are descriptions of the topics covered in the basic content categories. Because the assessments were designed to measure the ability to integrate knowledge of mathematics, answering any question may involve more than one topic and may involve content from more than one category.

Subsequently, some test questions require the use of formulas. The formulas needed to answer certain questions will be provided via a formula sheet. Test takers should know some formulas prior to testing. Some of these include: distance-rate-time, Pythagorean theorem, and quadratic formula. The formulas below will not be provided on the formula sheet.

- distance = (rate) (time) or $d = rt$; note d is distance, r is rate, and t is time
- Pythagorean theorem: $a^2 + b^2 = c^2$. Note c is the longest side of the triangle; a and b are the other two sides of the triangle
- quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, where $ax^2 + bx + c = 0$ and $a \neq 0$

Representative descriptions of topics covered in each category are provided below.

I. Numbers and Operations on Numbers

1. Use properties of operations with real numbers, including rational and irrational numbers.
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
3. Solve problems using scientific notation.
4. Reason quantitatively and use units to solve problems.
5. Choose a level of accuracy appropriate to limitations on measurement.
6. Solve multistep real-world and mathematical problems involving rational numbers in any form and proportional relationships (settings may include money, rate, percent, average, estimation/rounding).

II. Measurement/Geometry

1. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
2. Know properties of polygons and circles, including angle measure, central angles, inscribed angles, perimeter, arc length and area of a sector, circumference, and area.
3. Understand and apply the Pythagorean theorem.
4. Understand transformations in the plane, including reflections, translations, rotations, and dilations.
5. Use equations of circles.
6. Understand properties of lines, including parallel, perpendicular, and midpoint of line segments.
7. Use definitions of sine, cosine, and tangent to solve simple problems involving right triangle trigonometry.*
8. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
9. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

III. Data Analysis/Probability/Statistics

1. Summarize and interpret data presented verbally, tabularly, and graphically; make predictions and solve problems based on the data. Recognize possible associations and trends in the data.
2. Identify line of best fit.
3. Find the probabilities of single and compound events.

*Indicates topic will be eliminated in 2017. Topic goes beyond College and Career Readiness description.

4. *Approximate the probability of a chance event, and develop a probability model and use it to find probabilities of events.*
5. *Use measures of center (mean) to draw inferences about populations including summarizing numerical data sets and calculation of measures of center.*
6. *Understand how to use statistics to gain information about a population, generalizing information about a population from a sample of the population.*

IV. Algebraic Concepts

1. *Interpret parts of an expression, such as terms, factors, and coefficients in terms of its context.*
2. *Perform arithmetic operations on polynomials and rational expressions.*
3. *Write expressions in equivalent forms to solve problems. Factor a quadratic expression to reveal the zeros of the function it defines.*
4. *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*
5. *Solve quadratic equations in one variable.*
6. *Solve simple rational and radical equations in one variable.*
7. *Solve systems of equations.*
8. *Represent and solve equations and inequalities graphically.*
9. *Create equations and inequalities to represent relationships and use them to solve problems.*
10. *Rearrange formulas/equations to highlight a quantity of interest.*
11. *Understand the concept of a function and use function notation; interpret key features of graphs and tables in terms of quantities. Evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Write a function that describes a relationship between two quantities.*
12. *Understand domain and range of a function.*
13. *Write a function that describes a relationship between two quantities, including arithmetic and geometric sequences both recursively and with an explicit formula; use them to model situations, and translate between the two forms.*
14. *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.*
15. *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.*
16. *Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate rate of change from a graph.*

Mathematics Process Categories

In addition to knowing and understanding the mathematics content explicitly described in the Content Descriptions section, candidates also will answer questions that may involve one or more of the processes described on the following page. Any of the processes may be applied to any of the content areas of the Mathematics test.

A. Understand Mathematical Concepts and Procedures

1. *Select appropriate procedures*
2. *Identify examples and counterexamples of concepts*

B. Analyze and Interpret Information

1. *Make inferences or predictions based on data or information*
2. *Interpret data from a variety of sources*

C. Synthesize Data and Solve Problems

1. *Reason quantitatively*
2. *Evaluate the reasonableness of solutions*

The following is a list of the High School College and Career Readiness Statements (CCRS)* that are included in the Mathematics test.

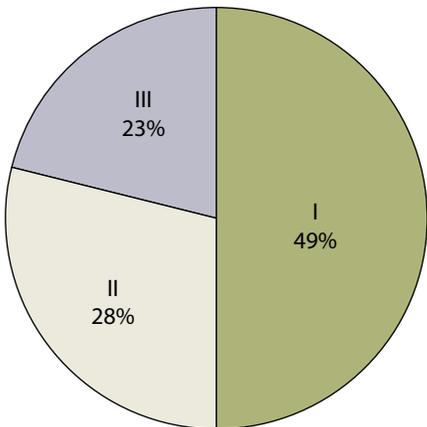
CCRS No.	College and Career Readiness Statements
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.
A.SSE.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
A.SSE.3a	Factor a quadratic expression to reveal the zeros of the function it defines.
A.APR.1	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.6	Rewrite simple rational expressions in different forms.
A.CED.1	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.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
A.REI.1	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.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
A.REI.4	Solve quadratic equations in one variable.
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

*U.S. Department of Education, Office of Vocational and Adult Education, 2013. College and Career Readiness Standards for Adult Education.
URL: <https://www.vrae.org/images/customer-files/CCRStandardsAdultEd.pdf>

**CCRS
No.****College and Career Readiness Statements**

F.IF.1	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.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
F.IF.4	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.
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
F.IF.6	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.BF.1	Write a function that describes a relationship between two quantities.
F.LE.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
S.ID.3	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.5	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.

Science

Test at a Glance	
Test Name	Science
Time	80 minutes
Number of Questions	50
Format	Multiple-choice questions
	Content Categories
	I. Life Science (49%) II. Physical Science (28%) III. Earth Science (23%)
	Process Categories
	A. Interpret and Apply B. Analyze C. Evaluate and Generalize

About This Test

The Science test provides evidence of a candidate's ability to use science content knowledge, apply principles of scientific inquiry, and interpret and evaluate scientific information. Most of the questions in the test are associated with stimulus materials that provide descriptions of scientific investigations and their results. Scientific information is based on reports that might be found in scientific journals. Graphs, tables, and charts are used to present information and results.

The science situations use material from a variety of content areas such as: physics, chemistry, botany, zoology, health, and astronomy. The questions may ask candidates to identify the research question of interest, select the best design for a specific research question, and recognize conclusions that can be drawn from results. Candidates also may be asked to evaluate the adequacy of procedures and distinguish among hypotheses, assumptions, and observations.

Content Descriptions

The following are descriptions of the topics covered in the basic content categories. Because the assessments were designed to measure the ability to analyze and evaluate scientific information, answering any question may involve content from more than one category.

I. Life Science

1. Understand organisms, their environments, and their life cycles
2. Understand the interdependence of organisms
3. Recognize the relationships between structure and function in living systems
4. Understand the human body systems

II. Physical Science

1. *Recognize observable properties such as size, weight, shape, color, and temperature*
2. *Recognize concepts relating to the position and motion of objects*
3. *Understand principles of light, heat, electricity, and magnetism*
4. *Understand the principles of matter and atomic structure*
5. *Understand the principles of chemical reactions*

III. Earth Science

1. *Recognize the properties of earth materials*
2. *Understand Earth's systems, processes, geologic structures, and time*
3. *Understand Earth's movements and position in the solar system*
4. *Understand the sun, other stars, and the solar system*

Science Process Categories

In addition to knowing and understanding the science content explicitly described in the Content Descriptions section, candidates also will answer questions on this assessment that may involve one or more of the processes described below. Any of the processes may be applied to any of the content topics.

A. Interpret and Apply

1. *Interpret observed data or information*
2. *Apply scientific principles*

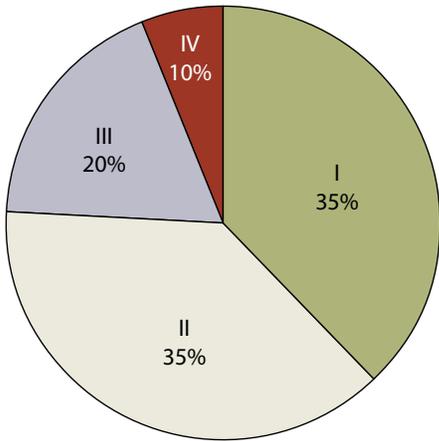
B. Analyze

1. *Discern an appropriate research question suggested by the information presented*
2. *Identify reasons for a procedure and analyze limitations*
3. *Select the best procedure*

C. Evaluate and Generalize

1. *Distinguish among hypotheses, assumptions, data, and conclusions*
2. *Judge the basis of information for a given conclusion*
3. *Determine relevance for answering a question*
4. *Judge the reliability of sources*

Social Studies

Test at a Glance	
Test Name	Social Studies
Time	70 minutes
Number of Questions	50
Format	Multiple-choice questions
	Content Categories
	I. History (35%) II. Civics/Government (35%) III. Economics (20%) IV. Geography (10%)
	Process Categories
	A. Interpret and Apply B. Analyze C. Evaluate and Generalize

About This Test

The Social Studies test provides evidence of a candidate's ability to use social studies content knowledge as well as analyze and evaluate various kinds of social studies information. The test uses materials from a variety of content areas, including history, political science, geography, and economics. Primary documents, posters, cartoons, timelines, maps, graphs, tables, charts, and reading passages may be used to present information. The questions may ask candidates to distinguish statements of fact from opinion; recognize the limitations of procedures and methods; and make judgments about the reliability of sources, the validity of inferences and conclusions, and the adequacy of information for drawing conclusions.

Content Descriptions

The following are descriptions of the topics covered in the basic content categories. Because the assessments were designed to measure the ability to analyze and evaluate various kinds of social studies information, answering any question may involve content from more than one category.

Representative descriptions of topics covered in each category are provided below.

I. History

- Analyze historical sources and recognize perspectives*
- Identify interconnections among the past, present, and future*
- Understand specific eras in U.S. and world history, including the people who have shaped them and the political, economic, and cultural characteristics of those eras*

II. Civics/Government

1. *Understand the role of the citizen in a democratic society, including rights and responsibilities, and informed participation*
2. *Recognize the structure and functions of different levels of government in the United States, including concepts of power and authority*
3. *Understand the purposes and characteristics of various governance systems, with particular emphasis on the U.S. government*

III. Economics

1. *Recognize fundamental economic concepts, including principles of supply and demand*
2. *Understand government involvement in the economy, including comparative economic systems and globalization*
3. *Understand consumer economics*

IV. Geography

1. *Understand concepts and know terminology of physical and human geography*
2. *Use geographic concepts to analyze spatial phenomena and discuss economic, political, and social factors*
3. *Interpret maps and other visual and technological tools, and analyze case studies*

Social Studies Process Categories

In addition to knowing and understanding the social studies content described in the Content Descriptions section, candidates also will answer questions that may involve one or more of the processes described below. Any of the processes may be applied to any of the content topics.

A. Interpret and Apply

1. *Make inferences or predictions based on data or other information*
2. *Infer unstated relationships*
3. *Extend conclusions to related phenomena*

B. Analyze

1. *Distinguish among facts, opinions, and values*
2. *Recognize the author's purpose, assumptions, and arguments*

C. Evaluate and Generalize

1. *Determine the adequacy of information for reaching conclusions*
2. *Judge the validity of conclusions*
3. *Compare and contrast the reliability of sources*