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District of Columbia

Comprehensive Assessment System

Resource Guide

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OFFICE OF THE STATE SUPERINTENDENT OF EDUCATION

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Introduction

Purpose

This resource guide has been developed to provide teachers and other stakeholders with an understanding of the District of Columbia Comprehensive Assessment System (DC-CAS). When used in conjunction with other curricular materials and texts, the guide will

- help teachers as they make decisions about targeted classroom instruction and assessment,
- provide a framework and focus of instruction aligned with the skills and processes measured by test items of the DC-CAS, and
- enhance and strengthen instructional journeys.

Test Accountability

The tests of the DC-CAS have been designed to measure the academic proficiency of students in the District of Columbia, relative to their mastery of the DC Content Standards. These tests are aligned to the approved English Language Arts, Mathematics, and Science standards of the District of Columbia. The complete standards documents can be viewed online at http://www.k12.dc.us/dcps/standards2005/standardsHome.htm.

The battery of tests of the DC-CAS are administered in the spring of each school year. **DC-CAS testing will take place in April and May 2009.**

Reading and Mathematics tests have been operational since 2006 and are administered to students in grades 3–8 and 10. Per the federal requirements of the No Child Left Behind (NCLB) legislation, the goal of measuring Adequate Yearly Progress (AYP) will be attained by tracking students' reading and mathematics performance from each year to the next.

The testing of students' writing skills via the Composition component of DC-CAS became operational in Spring 2008. Prior to that administration, a series of writing prompts were piloted in 2006 and 2007.

In Spring 2007, science tests were administered to students in grades 5 and 8 as well as to students who were enrolled in their school's biology course. From the items of these pilot tests, operational items have been selected for administration in 2009.

At this time, neither writing nor science scores are included in the state's AYP, but they are reported to the United States Department of Education for accountability and included in schools' annual report cards.

Test Format

In 2009, as in previous years, the tests for reading and mathematics will be combined into one test book. For each tested grade, there will be two forms, which will be spiraled in each package of test books (i.e., each package will be stacked with a Form 1, then a Form 2, then a Form 1, etc.) Teachers should always confirm that each student has corresponding test and answer books.

For grade 3, the students write their answers in their scannable test books. Students in grades 4–8 and 10 record their answers in scannable answer booklets, color-coded by form and grade.

The science and biology tests will also have two forms each, and both a test book and answer booklet will be assigned to each student taking the test.

Only the Composition test will have one form for each tested grade.

Both selected-response (multiple-choice) and constructed-response items comprise the tests of the DC-CAS. For a selected-response item, students choose the correct answer to a test question from among four answer choices. For a constructed-response item, students write a response to a test question. Student responses are then scored according to the criteria of generic rubrics or scoring guides. Reading, writing, and mathematics rubrics can be found on pages 81 through 83 of this guide. Sample scoring guides for science items can be found on pages 84 through 86.

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Reporting Categories

As noted above, the test items of the DC-CAS are written to measure the standards of the DCPS. These standards are grouped according to strands, and these strands are the reporting categories for which students who take the tests of the DC-CAS will receive scores. Each category is not equally weighted. For a better understanding of the number of test points contributing to each category, see the test blueprint tables in this guide.

A description of the reporting categories and what each measures follows:

Reading

- **Vocabulary:** This is a subset of the Language Development strand of the DCPS Standards. Items in this category measure students' ability to identify meanings of words using prior knowledge, word structure, etymology, and/or context.
- **Informational Text:** Items of this category measure students' ability to read, comprehend, and respond to informational passages. The passages used may be expository texts, documentary or procedural texts, or persuasive texts. (Note: Persuasive texts are not used at grade 3). Students may be asked to locate or interpret details, examine the structure, identify the main idea, or explain or evaluate key ideas of a given text.
- **Literary Text:** Items of this category measure students' ability to read, comprehend, and respond to literary passages. These passages may be short stories, poems, or excerpts from larger literary works. They may also include fables or literary nonfiction, such as memoirs. Students may be asked questions about the literary elements of a given text, such as its plot elements or characters, or about the style and language of the text. They may also be asked to explain or analyze the theme of a given text, or to identify and explore the author's implicit purpose or audience.

Composition

- **Topic Development:** Student writing is evaluated on clarity of focus, development of ideas, appropriate organization, and effective use of language.
- **Language Conventions:** Sentence structure, grammar, and use of conventions are evaluated in the student's writing.

Grade 4: Each student is directed to write a story, or personal narrative, about a particular experience or situation.

Grade 7: Each student is directed to write an explanatory essay about a given topic or issue.

Grade 10: Each student is presented a quotation and question to consider and then directed to write a persuasive essay in which he/she takes a stand on a given issue or theme relative to the quotation and question.

Mathematics

- **Number Sense and Operations:** These items measure students' ability to use numbers and number relationships. Students may be asked to represent numbers, describe relationships among numbers, compute fluently, or make reasonable estimations.
- **Patterns, Relations, and Algebra:** Items of this category measure students' ability to use algebraic methods to describe patterns and functions. Students may be asked to analyze and describe patterns, relations, and functions. They may also be asked to represent and analyze mathematical situations using algebraic symbols, tables, and graphs and to perform operations on algebraic expressions, equations, and inequalities.
- **Geometry:** Items of this category measure students' ability to use geometric concepts, properties, and relationships. Students may be asked to analyze the characteristics and properties of two- and three-dimensional geometric shapes and describe spatial relationships. They may also be asked to apply transformations and specify locations using coordinate geometry.
- **Measurement:** Items of this category measure students' ability to use tools and techniques

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to measure. Students may be asked to apply appropriate techniques, tools, and formulas to determine measurements. They may also be asked to describe the measurable attributes of objects and the units, systems, and processes of measurement.

- **Data Analysis, Statistics, and Probability:** Items of this category measure students' ability to use data analysis, statistics, and probability. Students may be asked to represent and analyze data, including statistical methods, and make predictions based on data. They may also be asked to apply basic concepts of probability.

Science

Grade 5 Science

- **Scientific Thinking and Inquiry:** Items of this category measure students' knowledge of scientific design. Students may be asked to analyze experimental results and procedures and provide explanations for observed data. They may also be asked to determine the area and volume of rectangular shapes. Skills identified in this strand should be included in instruction throughout the year.
- **Science and Technology:** Items of this category measure students' ability to recognize examples of technology and describe positive and negative impacts of technology on society. Students may be asked to give examples of materials that are made available because of science and technology.
- **Earth Science:** Items of this category measure students' knowledge of the solar system and how water acts on Earth. Students may be asked to investigate and describe the three states of matter. They may also be asked to explain how global patterns influence local weather and climate.
- **Physical Science:** Items of this category measure students' basic understanding of the periodic table, force and motion, and heat transfer. Students may be asked to investigate and describe how heating and cooling affect substances. They may also be asked to investigate and describe the effect of balanced and unbalanced forces on an object.
- **Life Science:** Items of this category measure students' basic understanding of cells, inheritance, and adaptation. Students may be asked to identify organisms, examine their reactions to changes in the environment, and analyze the effect of environmental changes on their survival. Students may also be asked to describe various plant and animal characteristics.

Grade 8 Science

- **Scientific Thinking and Inquiry:** Items of this category measure students' understanding and application of scientific design. Students may be asked to design or critique investigative procedures and analyze reasoning used in scientific arguments. They may also be asked to apply simple mathematical models to problems and describe the work of pioneers of physics and cosmology. Skills identified in this strand should be included in instruction throughout the year.
- **Structure of Matter:** Items of this category measure students' basic understanding of the properties and structures of elements in the periodic table. Students may be asked to recognize and describe characteristics of atoms, molecules, and ions. They may also be asked to describe contributions of scientists who contributed to the development of current atomic theory.
- **Reactions:** Items of this category measure students' basic understanding of chemical reactions. Students may be asked to describe how elements and compounds react. They may also be asked to demonstrate a basic understanding of conservation of matter, endothermic and exothermic chemical reactions, factors that affect reaction rates, acidic and basic solutions, and evidence that chemical changes have taken place.
- **Forces/Density and Buoyancy:** Items of this category measure students' understanding of the concepts of density, buoyancy, and force and motion. Students may be asked to describe

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the mass, weight, and density of an object. They may also be asked to determine and explain the buoyant force on an object. Students may also be asked to determine and describe the effect of forces on the motion of objects.

- **Conservation of Energy:** Items of this category measure students' basic knowledge of matter and energy. Students may be asked to recognize and describe various forms of energy including but not limited to kinetic, potential, electrical, gravitational, sound, heat, and light energy.

Biology:

- **Scientific Investigation and Inquiry:** Items of this category measure students' understanding and application of scientific design. Students may be asked to create and interpret graphs, analyze relationships, and solve problems combining concepts from more than one topic area of science. They may also be asked to apply mathematical relationships to scientific situations. Skills identified in this strand should be included in instruction throughout the year.
- **Biochemistry (Chemistry of Living Things):** Items of this category measure students' basic understanding of the chemistry of living things. Students may be asked to use simplified Bohr diagrams, describe the structure and properties of water, and describe various kinds of molecules found in living things.
- **Cell Biology:** Items of this category measure students' knowledge of cell structures and functions and various cell processes. Students may be asked to compare and contrast prokaryotic and eukaryotic cells. They may also be asked to describe cell organelles. Students may also be asked to describe various processes including but not limited to cellular respiration, mitosis, and meiosis.
- **Genetics:** Items of this category measure students' knowledge of genes and heredity. Students may be asked to describe how hereditary information is passed from parents to offspring, and explain the relationship between DNA and proteins. They may also be asked to explain recombination of genes in sexual reproduction and relate DNA similarities to degrees of kinship.
- **Biological Evolution:** Items of this category measure students' knowledge of biodiversity and the theory of evolution. Students may be asked to describe the effect diversity has on survival of organisms in a changing environment. They may also be asked to relate the concepts of heredity and natural selection to the modern model of speciation and evolution.
- **Plant Biology/Mammalian Body:** Items of this category measure students' knowledge of plant and animal biology. Students may be asked to describe the structure and function of plant parts and identify the roles of plants in the ecosystem. They may also be asked to identify and analyze the complementary activity of major mammalian body systems.
- **Ecosystems:** Items of this category measure students' knowledge of biotic and abiotic factors in ecosystems. Students may be asked to analyze the effect of population changes on the ecological balance of a community. They may also be asked to assess methods for monitoring and safeguarding water quality.

This Guide and Other Resources

The samples and resources of this guide have been created and assembled by employees of the District of Columbia Public Schools and CTB/McGraw-Hill, the DC-CAS test development vendor.

To provide feedback for future editions of the guide, please complete the feedback form on page 95 and return it to DCPS.

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DC-CAS Tested Standards

The information in the tables on pages 6 through 79 has been collected to provide instructional focus relative to the DC-CAS tests. Prior to using the tables, educators should review the sample below and the explanation of the content of each column.

DC-CAS reporting category; test items measuring the targeted standard contribute to students' scores for this reporting category; the reporting categories are weighted according to an approved DC-CAS blueprint.

The number of test points in the DC-CAS mapped to the targeted standard; each selected-response item is equal to 1 test point, while each constructed-response item is worth 3 points (reading and math) or 2 points (science). See rubrics.

A targeted standard; the targeted standards in these tables will be measured by the DC-CAS operational test items.

Sample stem(s) that reflect how a question mapped to the targeted standard may be framed on the DC-CAS test items; phrasing questions similarly during classroom instruction and assessment will help prepare students for the tests.

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
6.LD-V.7	Vocabulary	2	Determine the meaning of unfamiliar words, using knowledge of English language structure, Greek and Latin roots (e.g., annus, aqua), suffixes (e.g., -itis, -osis), and prefixes (e.g., multi-, dis-, anti-, hyper-, syn-).	A. In paragraph #, the word _____ most likely comes from which Latin root word? B. The root of the word _____ means . . .

The alpha-numeric code assigned to the targeted standard

When 2 numbers are in a cell, the test points indicate both SR and CR points. For example, "2, 3 (CR)" means 3 of the 5 points come from a CR item.

The assessment stems represent only a sampling of how questions may be phrased. Items testing any skill, process, or content should represent a range of difficulty and cognitive ability.

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Reading

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.LD-V.8	Vocabulary	1	Identify the meaning of common prefixes and suffixes (e.g., un-, re-, in-, dis-, -ful, -ly, -less) and know how they change the meaning of root words (e.g., happy/unhappy, tell/retell).	If the word [word from text] means _____,then the word [word from text with affix] means . . .
3.LD-V.9	Vocabulary	1	Identify roots of words (e.g., "graph" is a common root in autograph, photograph, biography).	Read the sentence from paragraph #. The root word of _____ means _____. The word _____ as it is used in the sentence means . . .
3.LD-V.11	Vocabulary	1	Recognize that some words and phrases have both a literal and non-literal meaning (e.g., take steps).	Read the sentence from paragraph #. The words "_____" mean that [a character] thinks . . .
3.LD-V.12	Vocabulary	7	Use context of the sentence to determine the intended meaning of an unknown word or a word with multiple meanings.	Read the sentence from paragraph #. Which word in the sentence helps the reader understand that _____?
3.IT-E.1	Informational Text	6	Identify the purpose or main point and supporting details in text.	A. This article was mostly written to . . . B. Which of these would also be a good title for the article? C. The article states that _____ can do all of these things EXCEPT . . .
3.IT-E.3	Informational Text	2	Distinguish cause from effect.	According to the article, why can _____ do _____?
3.IT-E.4	Informational Text	2	Identify and use knowledge of common textual features (e.g., title, headings, table of contents, glossary, captions) to make predictions about content.	A. The title of the column "_____" means the information will probably (explain, describe, etc.) . . . B. If the article were in a book, where would a definition of _____ be found?
3.IT-E.5	Informational Text	2	Form questions about text and locate facts in response to those questions.	Which of these questions about _____ is answered in the article?

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.IT-DP.6	Informational Text	2, 3 (CR)	Locate specific information in graphic representations (e.g., charts, maps, diagrams, illustrations, tables, timelines) of text.	A. Using information from the chart, explain how _____ and _____ are different. B. According to the chart, which of the following statements about the _____ is true?
3.IT-DP.7	Informational Text	1	Use information from text and text features to determine the sequence of activities needed to carry out a procedure.	According to the directions in the _____, what do you do right after _____?
3.LT-U.3	Literary Text	2	Form questions about a text and locate facts/ details in order to answer those questions.	What does [character] do first when he arrives at _____?
3.LT-U.4	Literary Text	3	Use story details and prior knowledge to understand ideas that are not directly stated in the text.	A. Which of these sentences helps the reader know that the story takes place in _____? B. How do _____ feel after _____? C. According to the article/story, what is true about _____?
3.LT-C.5	Literary Text	3 (CR)	Compare (and contrast) literary elements (plots, setting, and characters) across stories.	Explain how [character] acts like a _____ in the story. Support your answer with important details from the story.
3.LT-T.7	Literary Text	1	Identify themes as moral lessons in folktales and fables.	What is the lesson of this story?
3.LT-F.8	Literary Text	7, 3 (CR)	Identify the elements of stories (problem, solution, character, and setting) and analyze how major events lead from problem to solution.	A. In the story, what is true about _____? B. What does _____ learn when he/she _____? C. In the beginning of the story, _____ mostly feels . . . D. Explain how [a character] does or does not solve his problem. Support your answer with important details from the story.

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.LT-F.9	Literary Text	5	Identify personality traits of characters and the thoughts, words, and actions that reveal their personalities.	A. [Character] in the story could best be described as . . . B. In paragraph #, _____ speaks in what way?
3.LT-F.10	Literary Text	1	Identify who is telling the story or speaking in a poem.	Who is telling this story?

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Grade 4

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
4.LD-V.9	Vocabulary	2	Determine the effect of affixes on roots (e.g., the effect of "un" on roots such as "happy" or "common" to make the word "unhappy" or "uncommon").	A. Read the sentence from paragraph # in the box below. [sentence] The word _____ means _____. B. In the story, [character] wanted to be [word from the text with an affix added]. What does _____ probably mean? C. Read the sentence from paragraph # in the box below. [sentence] If _____ means _____, then [a word from the text with an affix added] means . . .
4.LD-V.10	Vocabulary	2	Use knowledge of morphology or the analysis of word roots and affixes to determine the meaning of unfamiliar words (e.g., meaning of Greek root "graph" to understand the meaning of the words telegraph, photograph, and autograph).	A [word with basic root] does _____. Something [another word with same root] can be _____. A [still another word with the root] is _____. What does the word [from the text] _____ mean?
4.LD-V.12	Vocabulary	1	Identify the meaning of figurative language and phrases (e.g., "last straw," "cold feet," "I'm in hot water.").	Read the sentence from paragraph # in the box below. [sentence] What does [character] mean when she says she's _____?
4.LD-V.13	Vocabulary	5	Recognize and use words with multiple meanings (e.g., sentence, school, hard) and determine which meaning is intended from the context of the sentence.	A. Read the sentence from paragraph # in the box below. [sentence] In the sentence, the word _____ means . . . B. Read the sentence from paragraph # in the box below. [sentence] What definition of the word _____ is used in the sentence?

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Grade 4

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
4.IT-E.1*	Informational Text / Literary Text*	10, 3 (CR)	Identify the purpose and main points of a text and summarize its supporting details.	A. This article is mostly about . . . B. The main purpose for reading this article is to find out about . . . C. Explain how _____ is able to _____. Support your answer with important details from the story/ article.
4.IT-E.2	Informational Text	1	Distinguish fact from opinion.	Which of these statements is an opinion from the article?
4.IT-E.3*	Informational Text / Literary Text	4	Identify cause-and-effect relationships (stated and implied).	The boxes below show cause and effect in the passage. Which of the following events belongs in the empty box?
4.IT-E.4	Informational Text	1	Identify and use knowledge of common textual features (e.g., paragraphs, topic sentences, concluding sentences, glossary).	Which of the following choices would be the best heading for the first four paragraphs of the article?
4.IT-E.5*	Informational Text / Literary Text	3	Ask questions and support answers by connecting prior knowledge with literal and inferential information found in texts.	A. Which of these questions could you ask to check a classmate's understanding of _____? B. From what you have read, you can conclude that . . .
4.IT-DP.7	Informational Text	2	Locate specific information from text (e.g., letters, memos, directories, menus, schedules, pamphlets, search engines, signs, manuals, instructions, recipes, labels, forms).	According to the [recipe, chart, etc.] what is one way to tell when a _____ is _____ ?
4.LT-C.1	Literary Text	3 (CR)	Identify similarities and differences between the characters or events in a literary work and the actual experiences in an author's life (e.g., Laura Ingalls Wilder and the *Little House* books).	Explain what is the same about _____ and the message in the poem. Support your answer with important details from the story/poem/article.

*Items mapped to this standard, as well as to standards 4.IT-E.3 and 4.IT-E.5, will contribute to either the Informational Text or Literary Text reporting category, which is dependent upon the text genre associated with the item.

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Grade 4

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
4.LT-F.5	Literary Text	5	Explain how the plot, setting, or characters influence the events in a story, using evidence from the text.	A. Why does _____ decide to_____? B. At the end of the story, why does _____ decide to _____? C. The next time _____, [character] will most likely . . .
4.LT-F.6	Literary Text	9, 3 (CR)	Describe a character's traits, relationships, and feelings, using evidence from the text (e.g., thoughts, dialogue, actions).	A. Read the sentences from paragraph # in the box below. The author most likely uses the details in the sentences to show that [character] . . . B. At the beginning of the story, _____ sees himself/herself as . . . C. Explain how ____ changes from the beginning of the story to the end. Support your answer with important details from the story.

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Grade 5

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
5.LD-V.8	Vocabulary	2	Identify the meaning of common Greek and Latin roots and affixes to determine the meaning of unfamiliar words.	Read the sentence from paragraph # in the box below. [sentence] The prefix _____ in the word _____ most likely means . . .
5.LD-V.9	Vocabulary	2	Identify and apply the meanings of the terms antonym, synonym, and homophone.	Read the sentence from paragraph # in the box below. [sentence] Which word is closest in meaning to the word _____ as it is used in the sentence?
5.LD-V.10	Vocabulary	5	Determine the meaning of unfamiliar words in context using definitions and examples stated in the text.	A. In the story, _____ says [quotation]. What does the word _____ probably mean in the sentence? B. Read the sentence from paragraph # in the box below. [sentence] Which word means the same as the word _____ as it is used in the sentence?
5.LD-V.11	Vocabulary	1	Identify meanings, pronunciations, alternate word choices, correct spellings, and parts of speech or words by using dictionaries and thesauri (printed and electronic).	Read the dictionary entry in the box below. [dictionary entry] Which definition matches the meaning of the word _____ as it is used in paragraph #?
5.IT-E.1*	Informational Text	8	Identify the author's purpose and summarize the critical details of expository text, maintaining chronological or logical order.	A. According to the article, _____ happens when . . . B. The author makes a comparison between _____ and _____ in order to . . . C. The author most likely wrote this article in order to . . . D. This article is mostly about . . . E. According to the essay, what was the author's main reason for _____ ?
5.IT-E.2	Informational Text	1	Distinguish fact from opinion in expository text, providing supporting evidence from text.	Which of these sentences from the article expresses a(n) fact/opinion?

*Items mapped to this standard will contribute to either the Informational Text or Literary Text reporting category, which is dependent upon the text genre associated with the item.

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.IT-E.5	Informational Text	1	Identify common organizational structures such as chronological order and cause and effect.	Which of these best describes how the information in the article is organized?
5.IT-DP.6	Informational Text	4, 3 (CR)	Interpret details from text to complete a task, solve a problem, or perform procedures.	According to the article, what should a person do to [complete step/obtain result, etc.]?
5.LT-C.1	Literary Text	2	Relate the events and characters in a literary work to information about its setting (e.g., *The Remarkable Journey of Prince Jen* and information about China's T'ang dynasty).	Where did the events in the story take place?
5.LT-T.3*	Literary Text	3, 3 (CR)	Identify the theme (moral, lesson, meaning, message, view or comment on life) of a literary selection.	A. Which of the following statements best expresses the lesson _____ learns in the story? B. The lesson described in paragraphs #–# shows the importance of . . . C. Explain why [a character] finds ____ to be so difficult. Support your answer with important details from the story.
5.LT-F.4	Literary Text	8, 3 (CR)	Describe the relationships between major and minor characters; analyze how a character's traits influence that character's actions.	A. _____ can best be described as . . . B. What would _____ most likely do if _____? C. According to paragraph #, how does_____ feel about _____? D. Describe how _____ feels about _____. Support your answer with important details from the story.
5.LT-F.5	Literary Text	6	Identify the plot and its components (e.g., main events, conflict, resolution).	A. Which sentence best summarizes what happens in the story? B. The main problem _____ faces is . . . C. How does/do _____ respond to _____?

*Items mapped to this standard will contribute to either the Informational Text or Literary Text reporting category, which is dependent upon the text genre associated with the item.

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Grade 5

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
5.LT-S.9	Literary Text	2	Identify and draw conclusions about the author's use of sensory details, imagery, and figurative language.	In paragraph #, what does _____ mean when he says _____ [word/phrase using figurative language]?

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Grade 6

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
6.LD-V.7	Vocabulary	2	Determine the meaning of unfamiliar words, using knowledge of English language structure, Greek and Latin roots (e.g., annus, aqua), suffixes (e.g., -itis, -osis), and prefixes (e.g., multi-, dis-, anti-, hyper-, syn-).	A. In paragraph #, the word _____ most likely comes from which Latin root word? B. Read the sentence from paragraph # in the box below. The Latin root _____ means _____. What does the phrase " _____ " most likely mean?
6.LD-V.8	Vocabulary	8	Use such clues as definition, example, and restatement to determine the meanings of unfamiliar words and words with multiple meanings in context.	A. Read this sentence from paragraph # in the passage. As used in the sentence, the word _____ probably means . . . B. Which word means the opposite of _____ in paragraph #?
6.IT-E.1	Informational Text	10, 3 (CR)	Identify and analyze the author's stated purpose, main ideas, supporting ideas, and supporting evidence.	A. This passage is mostly about . . . B. What stentence shows that _____ is _____? C. What does the information in paragraph # suggest about _____? D. Based on the article, explain how _____ has changed. Support your answer with important details from the article.
6.IT-E.3	Informational Text	3	Identify and use organizational structures in text, including chronological order, comparison and contrast, cause and effect, logical order, and classification schemes.	A. In [paragraph, passage, chart] the author organizes the information according to . . . B. How is the information in the passage organized?
6.IT-DP.4	Informational Text	1	Identify the components (e.g., directions, legend, illustrations, diagram, sequence, boldface print, headings) of document and procedural text.	The _____ at the end of the article is most likely incuded to . . .

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.IT-A.6*	Informational Text	1, 3 (CR)	Recognize arguments for and against an issue.	A. Which line from the article contains a fact/ opinion? B. In the story, _____ says _____. Explain what [the character] means. Support your answer with important details from the passage.
6.LT-C.1	Literary Text	6, 3 (CR)	Analyze the relevance of the setting (e.g., time, place, and situation) to the mood and tone of the text.	A. This passage is about _____ who lives in . . . B. Which phrase best describes the [setting, time, mood, situation] of this story? C. In your own words, describe how _____ feels about _____. Support your answer with important details from the story.
6.LT-T.3	Literary Text	1	Apply knowledge that theme, whether stated or implied, refers to the basic meaning of a literary text.	Which of these sentences/sayings best expresses the theme of the story/poem?
6.LT-F.4	Literary Text	10	Describe incidents that advance plot in a story or novel, explaining how each incident gives rise to the next or foreshadows a future event.	A. What is the most likely reason _____ asks ____ for _____? B. At the beginning of the story, _____ does _____ because . . . C. What causes _____ to _____? D. This story is mostly about . . .
6.LT-F.5	Literary Text	1	Provide examples of all aspects of the setting (time, place, situation) in a story or novel.	Which statement from the story shows why [a character acts in a certain way]?
6.LT-S.9	Literary Text	2	Identify and analyze the importance of shades of meaning in determining word choice in a piece of literature.	A. Which word best describes the tone of paragraph # / the story / the poem? B. In paragraph #, what does the phrase "_____" suggest about _____?

*Items mapped to this standard may contribute to either the Informational Text or Literary Text reporting category, which is dependent upon the text genre associated with the item.

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Grade 7

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
7.LD-V.7	Vocabulary	3	Use Greek and Latin roots and affixes to determine the meaning of content area vocabulary.	A. Read the sentence from paragraph # in the box below. [sentence] The Latin word _____ means _____. What does [related word] mean? B. Read the sentence from paragraph # in the box below. The prefix in the word _____ means _____. What does the root word mean?
7.LD-V.8	Vocabulary	5	Use such clues as cause and effect and comparison and contrast to identify the meaning of unfamiliar words and words with multiple meanings in context.	A. [Character] describes _____ as _____. What does the word _____ mean? B. Read the sentence from paragraph # in the box below. [sentence] The word _____ most likely means . . . C. Based on the context of [passage], the word _____ most likely means . . . D. In paragraph #, what is the best definition for the word _____?
7.LD-V.9	Vocabulary	2	Use context to confirm meanings of metaphors, similes, and idiomatic language in prose and poetry.	Read the sentence from paragraph # in the box below. [sentence] In the sentence, what does the phrase _____ suggest about _____?
7.IT-E.1	Informational Text	4	Identify the author's purpose(s) in a text when it is not stated.	A. What is the author's most likely purpose for including [table/box/paragraph]? B. What is the article mostly about?

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Grade 7

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
7.IT-E.3	Informational Text	7, 6 (CR)	Apply knowledge of organizational structures of text to aid comprehension, including chronological order, comparison and contrast, cause and effect, logical order, and classification schemes.	A. What theme is introduced in paragraph #? B. Use your own words to explain how [character/situation] benefitted _____. Support your answer with important details from the article. C. According to paragraph #, what is the reason that _____? D. How are the details organized in paragraph #?
7.IT-A.6	Informational Text	7	Describe the facts and evidence used to support an argument.	A. What does the author mostly suggest about _____ when he/she writes, "_____"? B. [Character] wants to _____ because . . . C. Why was _____ a problem for _____? D. According to the article, which of these sentences is the best reason for _____?
7.LT-C.1	Literary Text	3 (CR)	Relate the elements of a literary work to the elements of other literary works in the same historical period.	In your own words, explain how _____ and _____ are alike and different. Support your answer with important details from the article.
7.LT-C.2	Literary Text	1	Analyze the literary techniques used by authors of fiction, poetry, or drama from the same historical period.	In the passage, the word _____ refers to . . .
7.LT-G.3	Literary Text	2	Identify various genres of fiction (e.g., mysteries, science fiction, historical fiction, adventures, fantasies, fables, myths) based on their characteristics.	This story can best be described as [a fantasy, science fiction, etc.]
7.LT-T.4	Literary Text	1	Recognize multiple themes in a text and supply evidence from the selection.	Which of these did _____ find most unusual?

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Grade 7

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
7.LT-F.5	Literary Text	2	Analyze plot development (e.g., conflict, rising action, falling action, resolution, subplots, flashbacks, parallel episodes) to determine whether and how conflicts are resolved.	A. This passage is mostly about . . . B. What will most likely happen to/after _____?
7.LT-F.6	Literary Text	2	Describe a character based on the thoughts, words, and actions of the character, the narrator's description, and what other characters say and do.	A. By saying _____ about _____, the narrator makes the character seem . . . B. The way _____ behaves with _____ shows that . . . C. The narrators of both passages feel the same about . . .
7.LT-F.7	Literary Text	3	Analyze the ways characters change or interact with others over time and give supporting evidence from the text.	According to the article, _____ might influence _____ by . . .
7.LT-P.9	Literary Text	1	Analyze the characteristics and structural elements of a variety of poetic forms (e.g., epic, sonnet, ode, ballad, lyric, narrative poem, free verse, haiku).	What is one change that occurs in line # of the poem?
7.LT-S.11	Literary Text	5	Identify and analyze how an author's use of words creates tone and mood.	A. When _____ says "_____," he/she probably means that . . . B. Read the sentence from paragraph # in the box below. [sentence] What is the author suggesting about _____ in the sentence? C. The author describes _____ as _____ in order to show that . . . D. The author emphasizes the _____ by doing which of the following?

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.LD-V.8	Vocabulary	2	Know the origins and meanings of common foreign words used in English.	A. What is the meaning of the word _____ [common foreign word from text]? B. Read the sentence from the passage in the box below. [sentence] What does the word ____ mean?
8.LD-V.9	Vocabulary	8	Monitor text for unknown words or words with novel meanings, using word, sentence, and paragraph clues to determine meaning.	A. In the sentence [quote] the word _____ probably means . . . B. Read the sentence from the passage in the box below. [sentence] What other word in the passage means about the same as _____? C. Read the sentence from paragraph # in the box below. [sentence] What is the best meaning for the word _____ as it is used in the sentence? D. In paragraph #, [character] says "_____" to show that . . .
8.IT-E.1	Informational Text	3	Compare (and contrast) the central ideas, problems, or situations from readings on a specific topic selected to represent a range of viewpoints.	A. Which of the following sentences best explains _____? B. Why did _____ decide to _____? C. How did _____ achieve his goal of _____?
8.IT-E.2	Informational Text	5	Explain how an author uses word choice and organization of text to achieve his purposes.	A. The article's main purpose is to explain . . . B. In paragraph #, why does the author refer to _____? C. The events in the article are organized by . . . D. The purpose of the footnote/boxed information/ introduction is . . .
8.IT-DP.4	Informational Text	1	Evaluate the adequacy of details and facts to achieve a specific purpose.	How do the details in paragraph # support the author's purpose?
8.IT-A.5	Informational Text	2	Recognize organizational structures and arguments for and against an issue.	Read the two sentences from the article in the box below. [Two sentences in a box.] Why does the author make this point?

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Grade 8

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
8.LT-F.4	Literary Text	1	Determine how central characters' qualities influence the resolution of the conflict.	[A character's] reaction to _____ can best be described as . . .
8.LT-F.5	Literary Text	12, 3 (CR)	Interpret a character's traits, emotions, or motivations and provide supporting evidence from a text.	A. Which of the following will probably happen if [character] _____? B. Which of these _____ does the author use to show [character's] emotion? C. The reader can conclude from the description of _____ that . . . D. What is the most likely reason _____ decides to _____?
8.LT-F.6	Literary Text	1, 6 (CR)	Analyze the influence of setting (e.g., time of day, place, historical period, situation) on the problem and resolution.	A. What does the narrator most value about _____? B. Based on the excerpt, explain how _____ has changed since _____. Support your answer with specific details from the passage. C. Explain why _____and _____ react to each other the way they do. Support your answer with specific details from the story.
8.LT-S.10	Literary Text	10	Draw conclusions about style, mood, tone and meaning of prose, poetry, and drama based on the author's word choice and use of figurative language.	A. [A character's] words to _____ are most likely meant to make her/him feel . . . B. What change in tone occurs in paragraph #? C. Read the sentence from _____ in the box below. [sentence] The use of the words _____ means that . . . D. The description in paragraph # makes _____ seem . . .

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Grade 10

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
10.LD-V.8	Vocabulary	4	Identify and use idioms, cognates, and the literal and figurative meanings of words in speaking and writing.	A. Read the sentence from the passage in the box below. [sentence] Which phrase best defines _____? B. As used in the article, the word _____ most likely means . . .
10.LD-V.9	Vocabulary	5	Distinguish between the denotative and connotative meanings of words, and interpret the connotative power of words.	A. Read the sentence from paragraph # in the box below. [sentence] In the sentence, the word _____ means about the same as . . . B. When the author says he has _____, he shows himself to be . . . C. Which of the following is closest in meaning to the word _____ as it is used in paragraph #?
10.LD-V.10	Vocabulary	1	Determine meanings, pronunciations, contextually appropriate synonyms and antonyms, replacement words and phrases, etymologies, and correct spellings of words using dictionaries, thesauri, histories of language, and books of quotations.	In the phrase _____ the word _____ probably means . . .
10.IT-E.1	Informational Text	2, 3 (CR)	Summarize the purpose and main ideas in passages; distinguish between a summary and a critique.	A. This excerpt is mostly about . . . B. Which of these describes _____'s reaction to _____? C. Based on the article, explain the characteristics of _____ that have enabled them to _____. Support your answer with relevant and specific details from the article.
10.IT-E.2	Informational Text	5	Explain the author's stated or implied purpose(s) for writing expository text.	A. The main purpose of this article is to . . . B. This passage can best be described as a . . . C. What is the author's most likely reason for including _____?

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Grade 10

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
10.IT-E.3	Informational Text	3	Describe the controlling idea or specific purpose of passages and paragraphs, and determine the essential elements that elaborate it.	A. Which of these statements from the article best conveys the author's point of view? B. What main point is supported by _____?
10.IT-E.4	Informational Text	1	Analyze implied or subtly stated interrelationships between and among ideas and concepts within expository text.	According to the passage, _____ did _____ because . . .
10.IT-E.5	Informational Text	9	Make relevant inferences by synthesizing concepts and ideas from a single reading selection.	A. In the last paragraph, the author concludes that . . . B. The author would most likely agree that . . . C. Read the sentence from _____ in the box below. [sentence] Which of these sentences best restates the idea in the sentence? D. What motivated the author to _____ ?
10.IT-DP.7	Informational Text	2	Analyze the presentation of information.	Why does the author most likely include _____ in the article?
10.IT-A.9	Informational Text	3	Analyze the logic and use of evidence in an author's argument.	A. Which of these is a fact from the article? B. According to the article, someone who does ____ will probably . . . C. According to the article, which of the following statements is true about _____?
10.IT-A.10	Informational Text	1	Describe how rhetorical techniques (e.g., text repetition, sentence variety, understatement, irony, sarcasm) contribute to the effects of persuasive text, given the audience, purpose, and occasion.	At the beginning/end of the article, how does the author make the information _____ (e.g., interesting, persuasive, appealing)?

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Grade 10

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
10.LT-T.3	Literary Text	3	Analyze the way in which the theme or meaning of a selection represents a view or comment on life, providing textual evidence for the identified theme.	A. Which of these best summarizes the passage? B. What statement best expresses the main idea of the essay? C. According to paragraph #, what lesson does the author learn about _____ ?
10.LT-F.4	Literary Text	3 (CR)	Analyze such elements in fiction as foreshadowing, flashbacks, suspense, and irony.	Explain how the author foreshadows _____. Support your answer with relevant and specific details/examples from the story.
10.LT-LNF.6	Literary Text	1	Analyze the ways in which a narrator's point of view and language affect interpretation (e.g., Ralph Ellison's *Invisible Man*).	Read this paragraph from the passage. [paragraph] What do the details about _____ mostly emphasize?
10.LT-S.10	Literary Text	3, 3 (CR)	Analyze the author's use of figurative language, including personification, symbolism, simile, metaphor, hyperbole, allusion, and imagery in a poetry selection.	A. What does the author mean when he/she writes _____? B. The author's image of _____ symbolizes . . . C. Explain how the author's story about _____ relates to his/her main idea. Support your answer with relevant and specific details/examples from the story.
10.LT-S.11	Literary Text	2	Evaluate how an author's choice of words advances the theme or purpose of a work.	Read these sentences from paragraph #. [sentences] What is being emphasized by the author's use of repetition?

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MATHEMATICS

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Grade 3

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
3.NSO-N.2	Number Sense and Operations	2	Represent, compare, and order numbers to 10,000 using various forms, including expanded notation (e.g., $3{,}206 = 3 \times 1{,}000 + 2 \times 100 + 6$) and written out in words (e.g., three thousand two-hundred six).	Put the following numbers in order from least to greatest.
3.NSO-N.3	Number Sense and Operations	1	Round whole numbers through 10,000 to the nearest 10, 100, and 1,000 (e.g., Round 1,548 to the nearest ten).	Which of the following shows [number] rounded to the nearest hundred?
3.NSO-F.5	Number Sense and Operations	1	Identify and represent fractions (between 0 and 1 with denominators through 10) as parts of unit wholes and parts of a collection.	What fraction of the [objects] are [a color/size]?
3.NSO-F.7	Number Sense and Operations	2	Know the meaning of 0.75, 0.50, and 0.25 as they relate to money; know that fractions and decimals are two different representations of the same concept (e.g., 50 cents is what fraction of a dollar? 75 cents is what fraction of a dollar?).	Which of the following amounts represents $\frac{3}{4}$ of a dollar?
3.NSO-C.10	Number Sense and Operations	2	Demonstrate an understanding of and the ability to use conventional algorithms for the addition and subtraction of up to five-digit whole numbers (e.g., $85412 - 42747 = ?$ Explain your method).	There are _____ [objects] in total. If you add ____ and then subtract _____, how many [objects] will there now be?
3.NSO.-C.11	Number Sense and Operations	1	Add and subtract up to 4-digit numbers accurately and efficiently.	Zoe and Tessa played a game.
3.NSO.-C.12	Number Sense and Operations	1	Use concrete objects and visual models to add and subtract common fractions (halves, thirds, fourths, sixths, and eighths) with like denominators.	$\frac{1}{6}$ of chocolate bar

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.NSO-C.13	Number Sense and Operations	1	Solve problems involving addition and subtraction of money amounts in decimal notation.	What is [dollar amount] + [dollar amount] − [dollar amount]?
3.NSO-C.14	Number Sense and Operations	2	Know multiplication is the result of counting the total number of objects in a set of equal groups (e.g., Write a number sentence for 3 groups of 5 objects).	*(Students are given an image representing a multiplication number sentence.)* Which of the following represents how many [objects] there are in total?
3.NSO-C.15	Number Sense and Operations	1	Know division (÷) as another way of expressing multiplication, i.e., that division is the inverse of multiplication (e.g., Find other facts related to $2 \times 3 = 6$, such as $6 \div 2 = 3$ or $6 \div 3 = 2$).	Look at the number sentence below. *(Students are given a multiplication number sentence.)* What is another way to write this number sentence? *(Student identifies division number sentence.)*
3.NSO-C.20	Number Sense and Operations	1	Use the commutative (order) and identity properties of addition and multiplication on whole numbers in computations and problem situations (e.g., Multiply 7, 2, and 5. Now multiply them in the order 2, 5, and 7. Do they yield the same answer? Which was easier? Why?).	Look at the number sentence below. . . Which of these goes in the blank to make the number sentence true? *(Student identifies commutative property for addition or multiplication number sentence.)*
3.NSO-C.22	Number Sense and Operations	1	Use multiplication and division fact families to understand the inverse relationship of these two operations and to compare and check results (e.g., Find other facts related to $3 \times 8 = 24$ ($24 \div 8 = 3$ or $24 \div 3 = 8$)).	*(Students are given a multiplication or division number sentence.)* Create two other number sentences that are a part of the same fact family.
3.NSO-E.23	Number Sense and Operations	2	Estimate the sum and difference of two numbers with three digits (sums up to 1,000) and judge reasonableness of estimates (e.g., Your friend says that 79 − 22 = 27. Without solving explain why you think the answer is wrong).	Use estimation to solve [addition or subtraction number sentence].

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Grade 3

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
3.PRA.1	Patterns, Relations, and Algebra	3	Create, describe, and extend symbolic (geometric) patterns and addition and subtraction patterns.	What is the next [object/number] in the pattern?
3.PRA.2	Patterns, Relations, and Algebra	1, 3 (CR)	Select appropriate operational and relational symbols to make an expression true (e.g., Solve the following: If 4 _____ 3 = 12, what operational symbol goes in the blank?).	*(Students are given a number sentence missing its operational symbol.)* What symbol will make the number sentence true?
3.PRA.3	Patterns, Relations, and Algebra	1	Determine values of variables in simple equations involving addition, subtraction, or multiplication.	*(Students are given a number sentence with a missing value.)* What number goes in the blank to make the equation true?
3.PRA.4	Patterns, Relations, and Algebra	2	Know and express the relationships among linear units of measure, i.e., unit conversions (e.g., How many feet are in one yard? How many inches are in one foot?).	The length of the [object] is _____ feet. How long is the [object] in inches?
3.PRA.5	Patterns, Relations, and Algebra	1	Extend and recognize a linear pattern by its rules (e.g., Find the number of legs on 6 dogs).	*(Students are given a number pattern.)* If the pattern continues, what will be the _____ number in the pattern?
3.G.1	Geometry	1	Compare and analyze attributes and other features (e.g., number and shape of sides, faces, corners, right angles) of two-dimensional geometric shapes, especially the attributes of triangles (isosceles, equilateral, right) and quadrilaterals (rectangle, square).	How many right angles does a [shape] have?
3.G.3	Geometry	1	Identify angles as right, acute (less than a right angle), or obtuse (greater than a right angle).	*(Students are given images of different classifications of angles.)* Which of the following angles is an obtuse angle?
3.G.4	Geometry	1	Identify and draw lines that are parallel, perpendicular, and intersecting.	Which of the following pictures shows parallel/perpendicular/intersecting lines?

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.G.5	Geometry	1	Identify and draw lines of symmetry in two-dimensional shapes.	*(Students are given a shape with _____ lines of symmetry.)* How many lines of symmetry does the shape have?
3.G.6	Geometry	1	Apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.	A. Which two shapes are congruent with one another? B. Which of the following is a flip of the figure across the line of reflection?
3.G.7	Geometry	2	Using ordered pairs of whole numbers and/or letters, locate and identify points on a grid.	Where is the X located on the grid?
3.M.1	Measurement	2	Demonstrate an understanding of such attributes as length, area, and weight; select the appropriate type of unit for measuring each attribute using both the US customary and metric systems.	A. Which of the following units of measurement is the best one to use to measure [object]? B. How many centimeters long is the picture of the [object]?
3.M.2	Measurement	2	Carry out simple unit conversions within a system of measurement such as hours to minutes and cents to dollars (e.g., How many minutes are in 3 hours?).	A. How many cents are in _____dollars and _____cents? B. How many minutes are in _____hours?
3.M.3	Measurement	2	Identify time to the nearest five minutes on analog and digital clocks using a.m. and p.m. Compare elapsed time using a clock (e.g., hours and minutes since…) and using a calendar (e.g., days since…).	Look at the clock below. How long will it take the minute hand to reach the _____ ?
3.M.4	Measurement	2	Estimate and find area and perimeter of a rectangle and triangle using diagrams, models, and grids, or by measuring.	A. What is the area of the shape? B. Which of the following has a perimeter of _____units?

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Grade 3

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
3.DASP.1	Data Analysis, Statistics, and Probability	2, 6 (CR)	Collect and organize data using observations, measurements, surveys, or experiments.	A. A survey is being conducted about _____. What is the best question to ask? B. A survey is being conducted about_____. What is the best way to collect the data for this survey?
3.DASP.2	Data Analysis, Statistics, and Probability	3	Construct, identify the main ideas, and make predictions from various representations of data sets in the forms of tables, bar graphs (horizontal and vertical forms), pictographs, and tallies.	Study the graph. How many more [item in the graph] are there than [different item in the graph]?
3.DASP.3	Data Analysis, Statistics, and Probability	3	Record all possible outcomes for a simple event using concrete objects (e.g., It is raining in your neighborhood. Is it certain, likely, unlikely, or impossible that the tree in your front yard will get wet?).	There is a bag of marbles that contains different colors. There are _____ blue marbles, _____ red marbles, and _____yellow marbles. If a marble is selected from the bag, what marble is *most* likely to be selected?
3.DASP.5	Data Analysis, Statistics, and Probability	2	List and count the number of possible combinations of objects from 2 sets (e.g., Using pictures of two shirts and three pairs of pants from a catalogue, how many different outfits can you make?).	There are _____types of ice-cream cones and _____ kinds of ice cream. How many different combinations of cones and ice cream can be made?

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Grade 4

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
4.NSO-N.1	Number Sense and Operations	1	Exhibit an understanding of the base 10 number system by reading, modeling, and writing whole numbers to at least 100,000; demonstrating an understanding of the values of the digits; and comparing and ordering the numbers (e.g., Write the number that has 9 ten thousands, 8 hundreds, 6 tens, and 2 ones).	*(Students are given a number.)* How would you write this number out in words? What number is in the hundreds position?
4.NSO-N.2	Number Sense and Operations	1	Represent, compare, and order numbers to 100,000 using various forms, including expanded notation.	A. *(Students are given a set of numbers.)* Order these numbers from greatest to least. B. *(Students are given a number.)* Write this number out in expanded notation.
4.NSO-N.3	Number Sense and Operations	1	Round whole numbers to 100,000 to the nearest 10, 100, 1,000, 10,000, and 100,000.	Which of the following shows [number] rounded to the nearest hundred thousand?
4.NSO-N.5	Number Sense and Operations	1	Read and interpret whole numbers and decimals up to two decimal places; relate to money and place-value decomposition.	[Name] has 6 dollar bills, 3 quarters and 7 nickles. How much money does [Name] have in all?
4.NSO-N.6	Number Sense and Operations	1	Determine if a whole number is a multiple of a given one-digit whole number and if a one-digit number is a factor of a given whole number.	A. *(Students are given a one-digit number.)* What are the first five multiples of this number? B. *(Students are given a one-digit number.)* Is this number a factor of _____ [*any given whole number*]?
4.NSO-F.11	Number Sense and Operations	1	Recognize, name, and generate equivalent forms of common decimals (0.5, 0.25, 0.2, 0.1) and fractions (halves, quarters, fifths, and tenths) and explain why they are equivalent.	At a bake sale, [Name] sold 2 whole apple pies and $\frac{1}{4}$ of another apple pie. Which model shows how much pie [Name] sold at the bake sale?
4.NSO-F.12	Number Sense and Operations	1	Select, use and explain models to relate common fractions and mixed numbers (e.g., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{8}$, $\frac{1}{10}$, $\frac{1}{12}$, and $1\frac{1}{2}$); find equivalent fractions, mixed numbers, and decimals.	*(Students are given _____ blank circles.)* How many circles must be shaded so that [*a particular fraction*] of the circles are shaded?

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Grade 4

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
4.NSO-F.13	Number Sense and Operations	1	Represent positive decimals to the hundredths.	*(Students are given a 10 × 10 grid where each box in the grid represents 0.01.)* What decimal is shown by the shaded part of the grid?
4.NSO-C.14	Number Sense and Operations	2	Demonstrate an understanding of and the ability to use conventional algorithms for the addition and subtraction of multidigit whole numbers.	Solve the following: [*multiple-digit number*] − [*multiple-digit number*] =
4.NSO-C.17	Number Sense and Operations	1	Select, use, and explain various meanings and models of multiplication and division of whole numbers. Understand and use the inverse relationship between the two operations.	Look at the equation below: 30 ÷ _____ = 6 Which equation has the same solution?
4.NSO-C.19	Number Sense and Operations	2	Demonstrate understanding of and ability to use the conventional algorithms for multiplication of up to a three-digit whole number by a two-digit whole number. Multiply three-digit whole numbers by two-digit whole numbers accurately and efficiently.	What is [*3-digit number*] × [*2-digit number*]?
4.NSO-C.20	Number Sense and Operations	1	Demonstrate understanding of and the ability to use the conventional algorithm for division of up to a three-digit whole number with a single-digit divisor (with or without remainders). Divide up to a three-digit whole number with a single-digit divisor accurately and efficiently. Interpret any remainders.	What is [*3-digit number*] ÷ [*1-digit number*]?
4.NSO-C.25	Number Sense and Operations	1	Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.	[Number] of [items] were purchased. Each one cost $_____. How much did the items cost all together?

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Grade 4

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
4.NSO-C.26	Number Sense and Operations	1	Select, use, and explain the commutative, associative, and identity properties of operations on whole numbers in problem situations.	Look at the equation below: 755 + 319 = _____ Which of these has the same answer as this equation?
4.NSO-E.28	Number Sense and Operations	2	Estimate and compute the sum or difference of whole numbers and positive decimals to two places.	Look at the following number sentence: _____ + _____ + _____ + _____ = What is the best estimate of the sum?
4.PRA.1	Patterns, Relations, and Algebra	2	Create, describe, extend, and explain geometric and numeric patterns, including multiplication patterns; generalize the rule for the pattern and make predictions when given a table of number pairs of a set of data.	A. A pattern is created by starting with a number and adding _____ each time. Which of these number patterns follows that rule? B. *(Students are given a geometric pattern.)* If the pattern continues, which figure should come next?
4.PRA.2	Patterns, Relations, and Algebra	2	Use letters and other symbols (e.g., Δ, x) as variables in expressions and in equations or inequalities (mathematical sentences that use =, < and >).	*(Students are given a number sentence with a missing number.)* What number can be put in the box to make the number sentence true?
4.PRA.3	Patterns, Relations, and Algebra	1	Use pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.	*(Students are given a number sentence.)* Create a picture/model to represent the number sentence.
4.PRA.4	Patterns, Relations, and Algebra	3	Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80 cents, so one apple costs ? cents; 1 inch represents 5 miles, so 2 inches represent ? miles).	A. [Number of] [items] were purchased for $_____. How much did each bagel cost? B. One pound of bananas cost $_____. How much will _____ pounds of bananas cost?
4.PRA.5	Patterns, Relations, and Algebra	1, 3 (CR)	Determine how change in one variable relates to a change in a second variable (e.g., input-output tables).	A. *(Students are given an input-output table.)* What is the missing number in the table? B. In relation to the input number, what rule is used to find the output number each time?

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Grade 4

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
4.G.1	Geometry	1	Compare and analyze attributes and other features (e.g., number of sides, faces, corners, right angles, diagonals, and symmetry) of two- and three-dimensional geometric shapes.	A. Which of these solid figures has _____ number of faces? B. *(Students are given a shape to study.)* How many corners does the shape have? How many sides does the shape have?
4.G.2	Geometry	1	Describe, model, draw, compare, and classify two- and three-dimensional shapes (e.g., circles, polygons, parallelograms, trapezoids, cubes, spheres, pyramids, cones, cylinders).	A. *(Students are given an image of a three-dimensional figure.)* Name the three-dimensional figure. B. What are 3 similarities between a [two- or three-dimensional shape/figure] and a [two- or three-dimensional shape/figure]?
4.G.3	Geometry	1	Know the definitions of a right angle, an acute angle, and an obtuse angle. Understand that 90°, 180°, 270°, and 360° are associated respectively with $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and full turns.	*(Students are given different angle measures.)* Which angle is an obtuse angle?
4.G.4	Geometry	1	Describe and draw intersecting, parallel, and perpendicular lines.	Which of the following diagrams shows perpendicular/parallel/intersecting lines?
4.G.6	Geometry	1	Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.	*(Students are given different images of shapes where only 3 of the given shapes are congruent to one another. The congruent shapes have been reflected/rotated/translated.)* Which of these shapes are congruent with one another?
4.G.7	Geometry	1	Predict and validate the results of partitioning, folding, and combining two- and three-dimensional shapes.	*(Students are given pattern blocks that can be combined together to create a new shape.)* What shape is made by combining the pattern blocks together?

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Grade 4

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
4.G.8	Geometry	2	Using ordered pairs of numbers and/or letters, graph, locate, and identify points and describe paths (first quadrant).	A. *(Students are given 4 ordered pairs.)* Plot the following points on a grid. B. *(Students are given a graph with an X plotted on it.)* Name the ordered pair that gives the location of the X.
4.M.1	Measurement	2	Identify and use appropriate metric and US customary units and tools (e.g., ruler, protractor, graduated cylinder, thermometer) to estimate, measure, and solve problems involving length, area, volume, weight, time, angle size, and temperature.	A. What unit of measurement is <u>best</u> used to measure _____? B. *(Students are given a picture/figure.)* Use your ruler to measure the length of the _____in inches.
4.M.2	Measurement	2	Carry out simple unit conversions within a system of measurement.	A house is _____ meters tall. How many centimeters tall is the house?
4.M.3	Measurement	2	Identify time to the minute on analog and digital clocks using a.m. and p.m. Compute elapsed time using a clock (e.g., hours and minutes since…) and using a calendar (e.g., days since…).	A. *(Students are shown analog clocks.)* Which of the following clocks shows a time of _____? B. If the date today is _____, then in 23 days what will the date be?
4.M.5	Measurement	1	Recognize that rectangles that have the same area can have different perimeters; understand that rectangles that have the same perimeter can have different areas.	Look at the rectangle below.*(Students are given a rectangle with certain dimensions.)* Construct a rectangle that has the same area but has a different perimeter.
4.DASP.1	Data Analysis, Statistics, and Probability	1, 6 (CR)	Collect and organize data using observations, measurements, surveys, or experiments and identify appropriate ways to display the data.	A. *(Students are given results of a survey.)* Display the following information in a _____ graph. B. *(Students are given information about a survey that was conducted.)* What type of graph should be created to best display the data?

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Grade 4

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
4.DASP.3	Data Analysis, Statistics, and Probability	3	Compare two data sets represented in two bar graphs, pie graphs, and histograms.	*(Students are given 2 graphs to compare.)* Students from 2 different schools were asked what their favorite sport was. According to the bar graphs, which school has more students that chose baseball as their favorite sport?
4.DASP.4	Data Analysis, Statistics, and Probability	3	Represent the possible outcomes for a simple probability situation.	There are _____red marbles, _____ blue marbles, and _____ green marbles in a bag. What is the probability that a red marble will be selected from the bag?
4.DASP.5	Data Analysis, Statistics, and Probability	2	List and count the number of possible combinations of objects from 3 sets (e.g., With pictures of three shirts, a set of two pairs of pants, and two hats from a catalogue, record all of the possible outfits).	*(Students are given pictures of 2 different kinds of ice-cream cones and 3 different kinds of scoops of ice cream.)* How many different combinations of ice-cream cones and scoops of ice cream can be made?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.NSO-N.1	Number Sense and Operations	1	Estimate, round, and manipulate very large (e.g., billions) and very small (e.g., thousandths) numbers; demonstrate an understanding of place value to billions and thousandths.	Look at the following number. [*Insert number that ranges from billions place to thousandths place, e.g., 456 721.38*]. What digit in this number is in the ten thousands place?
5.NSO-N.2	Number Sense and Operations	1	Represent and compare very large (billions) and very small (thousandths) positive numbers in various forms such as expanded notation without exponents (e.g., $9724 = 9 \times 1000 + 7 \times 100 + 2 \times 10 + 4$).	Write out the following number in expanded notation. [*Insert number that ranges from billions place to thousandths place, e.g., 93 456 721*].
5.NSO-F.8	Number Sense and Operations	1	Explain different interpretations of fractions as a ratio of whole numbers, as parts of unit wholes, as parts of a collection, as division of whole numbers by whole numbers, and as locations on the number line.	*(Students are given an improper fraction.)* Locate this fraction on the number line.
5.NSO-F.9	Number Sense and Operations	1	Interpret percents as parts out of 100, use % notation, and express a part of a whole as a percentage.	[Name] answered 15 out of 20 of the questions correct on a test. What percentage of questions was answered correctly?
5.NSO-F.10	Number Sense and Operations	2	Identify and determine common equivalent fractions, mixed numbers (with denominators 2, 4, 5, 10), decimals, and percents and explain why they represent the same value.	A. Write out two fractions that are equivalent to ____ [*insert a fraction with a denominator of 2, 4, 5, or 10*]. B. Express _____ [*insert a fraction with a denominator of 2, 4, 5, or 10*] as a percent.
5.NSO-F.11	Number Sense and Operations	2	Write improper fractions as mixed numbers, and know that a mixed number represents the number of "wholes" and the part of a whole remaining (e.g., Write $\frac{5}{4}$ as a mixed number; $1\frac{1}{4}$ means "1 plus $\frac{1}{4}$").	Which of the following is equal to _____ [*insert an improper fraction*]?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.NSO-C.13	Number Sense and Operations	1	Add and subtract fractions (including mixed numbers) with like and unlike denominators (of 2, 3, 4, 5, 6, and 10), and express answers in the simplest form.	Add/Subtract the following fractions: _____ + _____ =
5.NSO-C.19	Number Sense and Operations	1	Multiply positive decimals with whole numbers.	One flower costs $1.75. What is the cost of 8 flowers?
5.NSO-C.22	Number Sense and Operations	1	Demonstrate an understanding of how parentheses affect expressions involving addition, subtraction, and multiplication, and use that understanding to solve problems (e.g., Solve $3 \times (4 + 2) = ?$).	Solve the following: $(9 + 3) \times 6 - 4 =$
5.NSO-E.23	Number Sense and Operations	2	Estimate sums and differences of whole numbers, positive fractions, and positive decimals. Estimate products of whole numbers and products of positive decimals with whole numbers. Use a variety of strategies and judge reasonableness of answers.	[Name] bought 4 items from a department store. The items were for $256.95, $105.36, $48.50, and $18.99. What is the estimated total for [Name's] purchase?
5.PRA.1	Patterns, Relations, and Algebra	2	Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions (e.g., ABBCCC…; 1, 5, 9, 13, …; 3, 9, 27, …).	*(Students are given a number pattern.)* What rule could be used to find the next number in the pattern?
5.PRA.2	Patterns, Relations, and Algebra	2	Replace variables with given values, evaluate and simplify.	*(Students are given an expression with a variable n.)* What is the value of the expression if $n = 6$?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.PRA.3	Patterns, Relations, and Algebra	1	Use the properties of equality to solve problems with whole numbers (e.g., if $x + 7 = 13$, then $x = 13 - 7$, therefore $x = 6$; if $3 \times F = 15$, then $\frac{1}{3} \times 3 \times F = \frac{1}{3} \times 15$, therefore $F = 5$).	*(Students are given an equation with the variable n.)* What value of *n* would make this equation true?
5.PRA.4	Patterns, Relations, and Algebra	2	Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols (e.g., input-output tables).	*(Students are given a visual representation of a scale with two different expressions with the variable n on each side of the scale.)* What would *n* have to be to keep the scale balanced?
5.PRA.5	Patterns, Relations, and Algebra	4	Interpret and evaluate mathematical expressions that use parentheses; use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations.	What is the value of the expression below? $5 + (3 \times 7) - 6$
5.PRA.6	Patterns, Relations, and Algebra	2	Solve problems involving proportional relationships using concrete models, tables, graphs, and paper-pencil methods.	[Name] charges an hourly rate for babysitting. *(Students are given a graph to represent the number of hours she baby-sits and the amount she charges.)* Based on the graph, how much does [Name] charge for 5 hours of babysitting?
5.PRA.7	Patterns, Relations, and Algebra	2, 3 (CR)	Interpret graphs that represent the relationship between two variables in everyday situations.	*(Students are given a line graph that shows the relationship between the number of hours [Name] worked and the amount of money earned.)* How much money did [Name] earn after working for 7 hours?
5.G.2	Geometry	2	Identify, describe, and compare special types of three-dimensional shapes (e.g., cubes, prisms, spheres, cones, and pyramids) based on their properties, such as edges and faces.	A. How many faces does a hexagonal prism have? B. Which of the following shapes is a triangular prism?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.G.3	Geometry	1	Identify relationships among points, lines, and planes (e.g., intersecting, parallel, perpendicular).	*(Students are given an image with 3 labeled lines. Two of those lines are intersecting, two of those lines are parallel, and two of those lines are perpendicular.)* Name the two lines that are perpendicular with one another.
5.G.4	Geometry	1, 3 (CR)	Identify and describe types of symmetry, including line and rotational.	*(Students are given an image that contains a design on one half of it.)* Complete the design so that the image has a vertical line of symmetry.
5.G.6	Geometry	2	Predict, describe, and perform transformations on two-dimensional shapes (e.g., translations, rotations, and reflections).	*(Students are given a shape with detailed designs.)* Which of the following represents the shape after it has been reflected over the reflection line?
5.G.7	Geometry	2	Graph points and identify coordinates of points on the Cartesian coordinate plane in the first two quadrants.	*(Students are given a map using a coordinate grid where one unit on the grid is equal to one block.)* [Name] left his/her house and travelled 3 blocks north and 5 blocks east. What location was [Name] going to?
5.M.1	Measurement	1	Apply the concepts of perimeter and area to the solution of problems involving triangles and rectangles. Apply formulas where appropriate.	[Name] has a rectangular garden. The garden is 6 feet long and 4 feet wide. What is the area of the garden?
5.M.2	Measurement	1	Apply formulas for the areas of triangles, rectangles, and parallelograms; recognize that shapes with the same number of sides but different appearances can have the same area.	A triangle has a height of 5 and a base of 4. What is the area of the triangle?
5.M.3	Measurement	1	Solve problems involving proportional relationships and units of measurement.	One package weighs 32 ounces. How many pounds do 4 packages weigh?
5.M.5	Measurement	2	Find volumes and surface areas of rectangular prisms.	*(Students are given an image of a rectangular prism with its dimensions.)* What is the volume of the rectangular prism?

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Grade 5

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
5.M.6	Measurement	2	Know that angles on a straight line add up to 180°, interior angles of a triangle add up to 180°, angles surrounding a point add up to 360°, and interior angles of a quadrilateral add up to 360°; use these properties to solve problems.	*(Students are given an image of a triangle and the measurements of 2 of the angles.)* What is the measurement of the third angle?
5.DASP.1	Data Analysis, Statistics, and Probability	5	Define and apply the concepts of mean to solve problems.	[Name] recorded the number of points he/she scored in each basketball game for the first 6 games of the season. What is the average number of points [Name] scored per game?
5.DASP.2	Data Analysis, Statistics, and Probability	2	Construct, draw conclusions, and make predictions from various representations of data sets, including tables, line graphs, line plots, circle graphs, and bar graphs (where symbols or scales represent multiple units).	*(Students are given a bar graph that represents favorite types of music among grade 5 students.)* How many students chose [genre] as their favorite type of music?
5.DASP.3	Data Analysis, Statistics, and Probability	1, 3 (CR)	Predict the probability of outcomes of simple experiments and test the predictions.	*(Students are given an image of a spinner divided into 5 equal sections.) _____'s name is in 3 of the sections and _____'s name is in 2 of the sections.* [Name and Name] are playing a game with the spinner shown. Each time the arrow lands on a name, that person earns a point. If [Name] spins the arrow one time, what is the probability that he/she will earn a point?

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.NSO-N.1	Number Sense and Operations	1	Explain the properties of and compute with rational numbers, expressed in a variety of forms.	Solve the following: 700×0.006
6.NSO-N.2	Number Sense and Operations	2	Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line.	Place the following numbers on a number line: $\frac{3}{2}, \frac{3}{4}, \frac{3}{6} \ldots$
6.NSO-N.4	Number Sense and Operations	1	Represent rational numbers as repeating or terminating decimals when possible and translate between these representations.	Write $\frac{2}{9}$ as a decimal.
6.NSO-N.6	Number Sense and Operations	3 (CR)	Apply number theory concepts–including prime and composite numbers, prime factorization; greatest common factor; least common multiple; and divisibility rules for 2, 3, 4, 5, 6, 9, and 10–to the solution of problems.	Find the lowest common multiple for 4, 8, and 12.
6.NSO-N.7	Number Sense and Operations	1	Round whole numbers and decimals to any given place.	What is 6,459,821.891 rounded to the nearest hundred?
6.NSO-C.8	Number Sense and Operations	1	Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers and with positive fractions, mixed numbers, decimals, and percentages.	[Name] was at a restaurant. The total cost of his/her meal was $16.00. [Name] left a 20% tip for the server. How much tip did [Name] leave?
6.NSO-C.9	Number Sense and Operations	1	Know integer subtraction is the inverse of integer addition; use the number line to model addition and subtraction of integers and add and subtract integers.	In the following equation what is the value of x? $(^{-}9) - (^{-}3) = x$
6.NSO-C.10	Number Sense and Operations	1	Accurately and efficiently add, subtract, multiply, and divide (with multidigit divisors) whole numbers and positive decimals.	Solve the following: $9.15 - 6.37 =$

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.NSO-C.11	Number Sense and Operations	1	Use prime factorization to add and subtract fractions with like and unlike denominators.	Solve the following: $\frac{4}{6} + \frac{3}{8} =$
6.NSO-C.14	Number Sense and Operations	1	Solve simple proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $\frac{a}{b} = \frac{c}{d}$.	[Name] bought 12 bagels for $3.60. What was the cost of one bagel?
6.NSO-C.15	Number Sense and Operations	1	Apply laws of exponents to multiply whole number powers with like bases.	Solve the following: $6^{12} \times 6^{5} =$
6.NSO-E.18	Number Sense and Operations	2	Estimate results of computations with whole numbers and with positive fractions, mixed numbers, decimals, and percentages. Determine reasonableness of estimates.	[Name] works between 5 hours and 7 hours each day. He/She earns $6.25 an hour. How much money can [Name] expect to earn each day?
6.PRA.1	Patterns, Relations, and Algebra	2	Use the properties of equality to solve problems using letter name variables (e.g., $\frac{1}{4} + x = \frac{7}{12}$).	Find the value of *x* in the following equation: $\frac{2}{3} + x = \frac{8}{9}$
6.PRA.2	Patterns, Relations, and Algebra	2	Write and solve one-step linear equations and check the answers.	Student A (a) is 6 years younger than Student B (b). If Student A is 14, then how old is Student B? Write an equation to represent this problem and then solve.
6.PRA.4	Patterns, Relations, and Algebra	2	Simplify expressions of the first degree by combining like terms, and evaluate using specific values.	Solve the following when $x = 3$. $6x - 3x - 5$
6.PRA.5	Patterns, Relations, and Algebra	2	Understand that adding or subtracting the same number to both sides of an equation creates a new equation that has the same truth values.	Write an equation that is equivalent to $8x + 2 = 26$. *(Students should practice adding or subtracting the same number from each side.)*

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.PRA.6	Patterns, Relations, and Algebra	2	Understand that multiplying or dividing both sides of an equation by the same non-zero number creates a new equation that has the same truth values.	Write an equation that is equivalent to $5x = 20$. *(Students should practice multiplying or dividing the same number from each side.)*
6.PRA.8	Patterns, Relations, and Algebra	1	Recognize when information given in a table, graph, or formula suggests a proportional or linear relationship.	*(Students are given a chart with values for x and y that form a linear relationship.)* Which of these equations represents the relationship between *x* and *y* in the table?
6.PRA.9	Patterns, Relations, and Algebra	1	Produce and interpret graphs that represent the relationship between two variables (x and y) in everyday situations.	*(Students are given a chart that displays linear data on the height a plant has grown and time in weeks.)* On a coordinate grid, create a line graph that shows the relationship between the number of weeks a plant has been growing and the height of the plant in inches.
6.G.1	Geometry	4	Match three-dimensional objects and their two-dimensional representations (e.g., nets, projections, and perspective drawings).	Which of the following nets will form a rectangular prism when folded on the dotted lines?
6.G.2	Geometry	2	Identify angles as vertical, adjacent, complementary, or supplementary; provide descriptions of these terms; and use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle.	[Name] measured two angles of a triangle. One angle was 38 degrees and the other angle was 57 degrees. What is the measure of the third angle of the triangle?
6.G.3	Geometry	2	Determine if two shapes are congruent by motions or series of motions (e.g., translations, rotations, and reflections); predict the results of transformations on unmarked planes and draw the transformed figure (e.g., predict how tessellations transform under translation, reflection, and rotation).	Which pair of shapes appear to be congruent?

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.G.4	Geometry	2	Graph points and identify coordinates of points on the Cartesian coordinate plane in all four quadrants.	Which of the following ordered pairs describes the point on the coordinate grid below?
6.M.2	Measurement	2	Find areas of triangles and parallelograms. Recognize that shapes with the same number of sides but different appearances can have the same area.	Find the area of a parallelogram in square inches with a height of 7 inches and a base of 4.2 inches.
6.M.3	Measurement	1	Develop strategies to find the area and perimeter of complex shapes (e.g., subdividing them into basic shapes such as quadrilaterals, triangles, circles).	*(Students are given an image of a complex shape.)* Find the area/perimeter of this shape.
6.M.4	Measurement	1, 3 (CR)	Solve problems involving proportional relationships and units of measurement (e.g., same system unit conversions, scale models, maps, and speed).	A model of a building has a 1:80 scale factor of the actual building. If the model is 12 inches tall, how tall is the actual building?
6.M.5	Measurement	1	Understand the concept of volume; use the appropriate units in common measuring systems (e.g., cubic inch, cubic centimeter, cubic meter, cubic yard) to compute the volume of rectangular solids, including rectangular prisms.	[Name] has a storage box that measures 5 feet in length, 4 feet in width, and has a height of 3 feet. What is the total volume of [Name's] storage box?
6.M.7	Measurement	1	Understand the concept of the constant π; know the formulas for the circumference and area of a circle. Use the concepts to solve problems.	What is the circumference of a circle if the diameter is 5?
6.DASP.1	Data Analysis, Statistics, and Probability	3	Describe and compare data sets using the concepts of median, mean, mode, maximum and minimum, and range.	*(Students are given a stem-and-leaf plot.)* The stem-and-leaf plot below shows the scores for 20 students on a math test. What is the range of the math test scores?

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Grade 6

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
6.DASP.2	Data Analysis, Statistics, and Probability	2	Construct circle graphs using ratios, proportions, and percentages.	A survey was conducted to see what type of ice cream was among student favorites. 50% of the students liked vanilla ice cream, 25% liked chocolate, 20% liked strawberry, and the rest chose "other." Which circle graph shows the results of this survey?
6.DASP.3	Data Analysis, Statistics, and Probability	2	Construct, label, and interpret stem-and-leaf plots.	*(Students are given a table with data.)* The table below shows how 10 students scored on a test. Create a stem-and-leaf plot to represent this data.
6.DASP.4	Data Analysis, Statistics, and Probability	1	Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials.	[Name] has 2 pairs of pants and 5 shirts [he/she] can choose from. *(Students are given a chart listing the pants on one side and the shirts on the other side.)* Which diagram shows all the possible ways [Name] can choose one pair of pants and one shirt?
6.DASP.6	Data Analysis, Statistics, and Probability	1, 3 (CR)	Compute probabilities of events from simple experiments with equally likely outcomes (e.g., tossing dice, flipping coins, spinning spinners) by listing all possibilities and finding the fraction that meets given conditions. Analyze the outcomes.	There are 5 pink, 4 purple, and 3 red candies in a bag. Without looking [Name] will choose one candy from the bag. What is the probability that [Name] will choose a purple candy?
6.DASP.7	Data Analysis, Statistics, and Probability	1	Use appropriate ratios between 0 and 1 to represent the probability of the outcome and associate the probability with the likelihood of the event; know that 0 probability means an event will not occur and that probability 1 means an event will occur.	There are 4 white, 3 blue, and 7 green marbles in a bag. [Name] said that the probability of choosing a yellow marble is 0. Is [Name] correct? Explain your answer.

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Grade 7

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
7.NSO-N.1.	Number Sense and Operations	1	Compare, order, estimate, and translate among integers, fractions, and mixed numbers (i.e., rational numbers), decimals, and percents.	Order the following from least to greatest: $\frac{3}{4}$, 1.6, 80%, 0.74, $1\frac{1}{2}$.
7.NSO-N.2.	Number Sense and Operations	1	Know that in decimal form, rational numbers either terminate or eventually repeat; locate rational numbers on the number line; convert between common repeating decimals and fractions.	Which of the following is a rational number?
7.NSO-N.4.	Number Sense and Operations	1	Represent numbers in scientific notation (positive powers of 10 only), and use that notation in problem situations.	The distance that light travels in a year is about 5,680,000,000,000 miles. Express this number in scientific notation.
7.NSO-N.7.	Number Sense and Operations	2	Apply number theory concepts, including prime factorization and relatively prime numbers, to the solution of problems (e.g., find the prime factorization of whole numbers, and write the results using exponents: $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$).	Which of these shows the prime factorization of 200?
7.NSO-N.9.	Number Sense and Operations	1	Know the meaning of a square root of a number and its connection to the square whose area is the number.	Which square below has a side length of 6 inches?
7.NSO-C.10	Number Sense and Operations	3 (CR)	Compute with fractions (including simplification of fractions), integers, decimals, and percents (including those greater than 100 and less than 1) using the four operations and combinations of the four operations.	Solve $3\frac{3}{4} + 5(\frac{2}{3} - \frac{1}{2})$

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Grade 7

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
7.NSO-C.12.	Number Sense and Operations	2	Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents—to solve problems with rational numbers and negative integers.	A. $^{-}51 \div 3 =$ B. 30% of 50 = C. $^{-}6 \times {}^{-}7$ D. $10\frac{1}{2} - 5\frac{3}{4} =$
7.NSO-C.13.	Number Sense and Operations	1	Calculate the percentage increase and decrease of a quantity.	[Name] paid $28.00 for a video game originally marked $35.00. What percent did [Name] save on the purchase?
7.NSO-C.18	Number Sense and Operations	1	Use the associative, commutative, and distributive properties; properties of the identity and inverse elements (e.g., $-7 + 7 = 0$; $\frac{3}{4} \times \frac{4}{3} = 1$).	Which of the following expressions is equivalent to $(2 + 5) + 4$?
7.NSO-C.19.	Number Sense and Operations	1	Know and apply the Order of Operations rules to expressions involving powers and roots.	What is the value of the expression below? $25 - 2^2 \times 5 =$
7.PRA.1.	Patterns, Relations, and Algebra	2	Extend, represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic expressions. Include arithmetic and geometric progressions (e.g., compounding).	[Name] made the number pattern below: 4 15 26 37 . . . What is the next number in the sequence?
7.PRA.2.	Patterns, Relations, and Algebra	2	Evaluate simple algebraic expressions for given variable values (e.g., $3a^2 - b$ for $a = 3$ and $b = 7$).	Look at the expression below: $a^2 - 3b$ What is the value of the expression if $a = 8$ and $b = {}^{-}2$?
7.PRA.3.	Patterns, Relations, and Algebra	2	Use the correct order of operations to evaluate expressions (e.g., $3(2x) = 5$).	What is the value of the expression below? $2(3 + 4) - 35 \div 5$
7.PRA.4.	Patterns, Relations, and Algebra	1	Create and use symbolic expressions for linear relationships, and relate them to verbal and graphical representations.	Look at the table below. Which of the following equations shows the relationship between x and y?

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Grade 7

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
7.PRA.5.	Patterns, Relations, and Algebra	1	Use variables and appropriate operations to write an expression, equation, or inequality that represents a verbal description (e.g., 3 less than a number, $\frac{1}{2}$ as large as area A).	A class ring cost $260.00. [Name] has $80.00 in a savings account and earns $20.00 a week babysitting. Write an equation to represent the number of weeks (W) [Name] needs to work in order to purchase the ring.
7.PRA.6.	Patterns, Relations, and Algebra	3	Write and solve two-step linear equations and check the answers.	Solve for x. $15x + 30 = 105$
7.PRA.7.	Patterns, Relations, and Algebra	2	Identify, describe, and analyze linear relationships between two variables. Compare positive rate of change (e.g., $y = 3x + 1$) to negative rate of change (e.g., $y = {}^{-}3x + 1$).	What is the value of the expression below when $x = 3$ and $y = {}^{-}4$? $x^2 + 2y + 1$
7.PRA.8.	Patterns, Relations, and Algebra	3 (CR)	Use linear equations to model and analyze problems involving proportional relationships.	[Name] bought 5 cookies for $2.40. How much would it cost [Name] to buy 9 cookies?
7.PRA.10.	Patterns, Relations, and Algebra	1	Use algebraic terminology including, but not limited to, variable, equation, term, coefficient, inequality, expression, and constant.	What is the constant in the expression $10x + 2$?
7.G.1.	Geometry	1	Identify three-dimensional figures (e.g., prisms, pyramids) by their physical appearance, distinguishing attributes, and spatial relationships such as parallel faces.	How many parallel faces does a pyramid have?
7.G.3.	Geometry	2	Classify figures in terms of congruence and similarity, and apply these relationships to the solution of problems.	Look at the similar rectangles below. If side a = 20 inches, what is the length of side c?

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Grade 7

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
7.G.4.	Geometry	1	Know and understand the Pythagorean theorem and its converse. Apply the theorem to the solution of problems, including using it to find the length of the missing side of a right triangle, and perimeter, area, and volume problems.	Given the measure of the sides of the right triangle below, what is the measure of the hypotenuse?
7.G.5.	Geometry	1	Use compass, straightedge, and protractor to perform basic geometric constructions to draw polygons and circles.	Which of the following figures can be constructed using only a straightedge and compass?
7.G.6.	Geometry	4	Understand and use coordinate graphs to plot simple figures; determine lengths and areas related to them; and determine their image under translations, reflections, and rotations (e.g., predict how tessellations transform under translations, reflections, and rotations).	A. What is the area of the circle below? B. Look at the figure below. How many lines of symmetry does this figure have? C. Plot the following points on the coordinate grid.
7.M.1.	Measurement	2	Select, convert (between systems of measurement), and use appropriate units of measurement or scale.	A football player ran from the 10 yard line to the 50 yard line. How many meters did he run?
7.M.2.	Measurement	1	Demonstrate an understanding of the concepts and apply formulas and procedures for determining measures, including those of area and perimeter/circumference of parallelograms, trapezoids, and circles. Given the formulas, determine the surface area and volume of rectangular prisms and cylinders.	A. A rectangle has a length of 4 inches and a width of 8 inches. What is the perimeter? B. Look at the map below: Using the inch side of your ruler, determine the distance from Washington, DC to Baltimore, MD. [Scale: 1 inch = 10 miles]
7.M.4.	Measurement	2	Construct and read drawings and models made to scale.	Given the two similar figures below and their measurements, what is the ratio of their lengths?
7.M.5.	Measurement	1	Use ratio and proportion, including scale factors, in the solution of problems.	On Leon's map the distance from Washington D.C. to New York City is approximately 4.5 inches. If the map has a scale of 1 inch = 50 miles, how many miles are between the two cities?

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Grade 7

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
7.DASP.1.	Data Analysis, Statistics, and Probability	5, 3 (CR)	Find, describe, and interpret appropriate measures of central tendency (mean, median, and mode) and spread (range) that represent a set of data.	The table below shows the test scores of a math class. What is the mean score?
7.DASP.2.	Data Analysis, Statistics, and Probability	4	Select, create, interpret, and use various tabular and graphical representations of data (e.g., circle graphs, Venn diagrams, stem-and-leaf plots, histograms, tables, and charts).	A. Which circle graph correctly displays the data given below? B. Create a stem-and-leaf plot to display the test grades listed below.
7.DASP.4.	Data Analysis, Statistics, and Probability	2	Use tree diagrams, tables, organized lists, and area models to compute probabilities for simple compound events (e.g., multiple coin tosses or rolls of dice).	There are 5 red, 3 yellow, 8 green, and 7 blue marbles in a bag. If you reach into the bag without looking, what is the probability that you will take a red or a yellow marble from the bag?

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.NSO-N.1	Number Sense and Operations	1	Explain the properties of and compute with real numbers expressed in a variety of forms.	A. $6\frac{1}{2} \times 3\frac{3}{4}$ B. $^{-}7 - {}^{-}10$ C. $(2 \times 6) \div \frac{1}{2}$
8.NSO-N.2	Number Sense and Operations	1	Know that every rational number is either a terminating or repeating decimal and that every irrational number is a nonrepeating decimal.	Which of the following is an irrational number?
8.NSO-N.5	Number Sense and Operations	1	Define, compare, order, and apply frequently used irrational numbers, such as $\sqrt{2\pi}$ and π (e.g., show that if π is known to be irrational, then 3π and $\pi/3$ are also irrational).	Order the list of numbers below from least to greatest.
8.NSO-N.6	Number Sense and Operations	1	Use the laws of exponents for integer exponents (e.g., write $2^2 \times 2^3$ as $2 \times 2 \times \ldots$ and then as a single power of 2; write 2^{-3} as a fraction).	Express 97 billion in scientific notation.
8.NSO-C.9	Number Sense and Operations	3	Solve problems involving ratio units such as miles per hour, dollars per pound, or persons per square mile.	If apples cost \$0.60/lb., how much would $5\frac{1}{2}$ lbs. of apples cost?
8.NSO-C.11	Number Sense and Operations	3 (CR)	Solve problems that involve markups, commissions, profits, and simple and compound interest.	Tam made a friendship bracelet. The materials cost \$1.20. If Tam sells the bracelet for 75% more than it cost to make, how much does it sell for?
8.NSO-C.13	Number Sense and Operations	1	Use the inverse relationship between squaring and finding the square root of a perfect square integer to solve problems.	Kim bought a carpet that is 81 square feet. The carpet's length and width are the same. How wide is the carpet?
8.NSO-C.15	Number Sense and Operations	2	Select and use appropriate operations—addition, subtraction, multiplication, division, and positive integer exponents—to solve problems with rational numbers, including negative rationals.	A. A store is having a sale featuring 20% off all clothing. [Name] finds a shirt originally priced \$52.50. What is the sale price of the shirt before taxes? B. Multiply $^{-}8 \times 6$ C. Add $1.4567 + 0.05932 + 0.134$

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.NSO-E.17	Number Sense and Operations	2	Determine estimates to a certain stated accuracy.	Two friends went to a movie. Tickets cost $7.75 each. At the snack bar, they each bought a soda for $3.99 and popcorn for $4.49. Which of these is the best estimate for the total amount of money spent?
8.PRA.1	Patterns, Relations, and Algebra	1	Use tables and graphs to represent and compare linear growth patterns. In particular, compare rates of change and x- and y-intercepts of different linear patterns.	A. Look at the table below. Which equation represents the data shown? B. Continue the pattern below.
8.PRA.2	Patterns, Relations, and Algebra	3, 3 (CR)	Set up and solve linear equations and inequalities with one or two variables using algebraic methods, models, and graphs.	A. If $x = 2$, in which of these equations does $y = 7$? B. Solve for x: $3x + 14 = 7$
8.PRA.3	Patterns, Relations, and Algebra	4	Use linear equations to model and analyze problems involving proportional relationships.	A box of 34 pens costs $11.22 at the store. What is the cost of 10 pens?
8.PRA.4	Patterns, Relations, and Algebra	1	Identify the slope of a line as a measure of its steepness and as a constant rate of change from its table of values, equation, or graph. Apply the concept of slope to the solution of problems.	At take off, the plane rises 150 feet for each 500 feet traveled horizontally. What is the slope of its path?
8.PRA.5	Patterns, Relations, and Algebra	1	Identify the roles of variables within an equation (e.g., $y = mx + b$, expressing y as a function of x with parameters m and b).	Which of these functions has a slope of 4 and a y-intercept of 2?
8.PRA.7	Patterns, Relations, and Algebra	2	Interpret the formula $(-x)(-y) = xy$ in calculations involving such things as distance, speed, and time, or in the graphing of linear functions. Use this identity to simplify algebraic expressions [e.g., $(-2)(-x + 2) = 2x - 4$)].	Which of the following is equivalent to $(-5)(4x - 6)$?

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.PRA.9	Patterns, Relations, and Algebra	2	Graph a linear equation using ordered pairs; identify and represent the graphs of linear functions.	Which graph below represents the equation $y = -3x + 4$?
8.G.1	Geometry	2	Analyze, apply, and explain the relationship between the number of sides and the sums of the interior and exterior angle measures of polygons.	What is the sum of the interior angles of a pentagon?
8.G.2	Geometry	1, 3 (CR)	Demonstrate an understanding of the relationships of angles formed by intersecting lines, including parallel lines cut by a transversal.	In the figure below [two parallel lines cut by a transversal], if $A = 60$ degrees, what is the measure of the remaining angles?
8.G.3	Geometry	1	Demonstrate an understanding of conditions that indicate two triangles are similar: the corresponding angles are congruent (AAA similarity); the ratios of two pairs of corresponding sides are equal and the included angles are congruent (SAS similarity); ratios of all pairs of corresponding sides are equal (SSS similarity).	Which pair of triangles below are similar?
8.G.5	Geometry	2	Apply spatial reasoning by recognizing and drawing two-dimensional representations of three-dimensional objects (e.g., nets, projections, and perspective drawings of cylinders, prisms, and cones).	Which of the nets below will form a rectangular prism?
7.M.1.*	Measurement	1	Select, convert (between systems of measurement), and use appropriate units of measurement or scale.	The Washington monument is approximately 555 feet tall by 55 feet wide. [Name] wants to draw a scale model of the monument on a sheet of paper that measures 11 inches high by $8\frac{1}{2}$ inches wide. Which of the following scales should he use?

*A few grade 8 items have been mapped to grade 7 math standards. The DC-CAS is transitioning away from this practice.

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.M.1	Measurement	3	Given the formulas, convert from one system of measurement to another.	The Tour de France covers approximately 4,000 kilometers. Approximately how many miles does it cover?
8.M.2	Measurement	2	Understand the concept of surface area and volume; given the formulas, determine the surface area and volume of rectangular prisms, cylinders, and spheres.	A. What is the volume of a cylinder with a radius of 3cm and a height of 8cm? B. What is the surface area of a sphere with a diameter of 5 feet?
8.M.4	Measurement	1	Solve problems about similar figures and scale drawings. Understand that when the lengths of all dimensions of an object are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.	The triangles shown below are similar. What is the scale factor used? What is the area of both triangles. Explain the relationship between the scale factor and the area of the triangles.
8.DASP.1.	Data Analysis, Statistics, and Probability	2	Revisit measures of central tendency (mean, median, and mode) and spread (range) that represent a set of data and then observe the change in each when an "outlier" is adjoined to the data set or removed from it. Use these notions to compare different sets of data and explain how each can be useful in a different way to summarize social phenomena such as price levels, clothing sizes, and athletic performances.	A. The table below shows the gas prices [Name] paid on his trip across the country. What was the average price he paid for gas? B. The box-and-whisker plot below shows the scores for last week's test. Because [Name] was absent last week, he took the test this week. Given his score below, explain how his score affects the box-and-whisker plot.
8.DASP.2.	Data Analysis, Statistics, and Probability	1	Select, create, interpret, and use various tabular and graphical representations of data (e.g., scatterplots, box-and-whisker plots).	Which of the following scatter plots represents the data in Sean's table?

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Grade 8

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
8.DASP.4.	Data Analysis, Statistics, and Probability	3	Use data to estimate the probability of future events (e.g., batting averages).	Given the spinner below, what is the probability of the arrow landing on yellow?
8.DASP.6.	Data Analysis, Statistics, and Probability	3	Apply the Fundamental Counting Principle (basic combinatorics) to find total number of outcomes possible for independent and dependent events, and calculate the probabilities using organized lists or tree diagrams.	[Name] has two number cubes, numbered 1 through 6. Use a tree diagram to show the probability of rolling a 1 on both cubes.
8.DASP.7.	Data Analysis, Statistics, and Probability	3	Understand the difference between independent and dependent events, and recognize common misconceptions involving probability (e.g., Alice rolls a 6 on a number cube three times in a row; she is just as likely to roll a 6 on the fourth roll as she was on any previous roll).	The following table shows the results of 10 spins using the spinner below. What is the probability of landing on blue? Explain the difference between the table data and probability calculated.

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Grade 10

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
AI.N.1	Number Sense and Operations	3	Use the properties of operations on real numbers, including the associative, commutative, identity, and distributive properties, and use them to simplify calculations.	Which of the following is equivalent to $(x + 9) + 6$?
AI.N.2	Number Sense and Operations	2	Simplify numerical expressions, including those involving positive integer exponents or the absolute value, e.g., $3(24 - 1) = 45$, $4\|3 - 5\| + 6 = 14$; apply such simplifications in the solution of problems.	A. Solve the equation: $\|x\| = 5.1$ B. Simplify this expression: $(4 - 6) \div \|3 - 5\|$
AI.N.3	Number Sense and Operations	2	Calculate and apply ratios, proportions, rates, and percentages to solve a range of consumer and practical problems.	The Game Store is having a sale. The video system you want to buy costs $300. You have a coupon for 15% off. The store is offering an additional 10% off for today only. If you use both discounts, how much will the video system cost?
AI.N.4	Number Sense and Operations	5	Use estimation to judge the reasonableness of results of computations and of solutions to problems involving real numbers, including approximate error in measurement and the approximate value of square roots. (Reminder: This is without the use of calculators.)	Dinner at a resturant cost $62.83. [Name] wants to leave approximately 15% for the tip. Which of the following tip amounts should he leave?
AI.N.5	Number Sense and Operations	2	Understand the concept of *nth* roots of postive real numbers and of raising a postive real number to a fractional power. Use the rules of exponents also for fractional exponents.	Which of the following is equivalent to $25^{\frac{1}{2}}$?

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Grade 10

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
AI.P.1	Patterns, Relations, and Algebra	1	Recognize, describe, and extend patterns governed by a linear, quadratic or exponential functional relationship or by a simple interactive process (e.g., the Fibonacci sequence).	A school is sponsoring a dance contest in which 256 couples are participating. At the end of the first song, $\frac{1}{4}$ of the couples are still on the dance floor. At the end of the second song, $\frac{1}{4}$ of the remaining couples are still on the dance floor. If this pattern continues, how many songs will be played before a winning couple is determined?
AI.P.3	Patterns, Relations, and Algebra	1	Demonstrate an understanding of relations and functions. Identify the domain, range, and dependent and independent variables of functions.	Given the Input/Output Table below, which of the following is the domain of the function?
AI.P.5	Patterns, Relations, and Algebra	1	Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x- and y-intercepts from its graph or from a linear equation that represents the line.	Look at the graph below. What is the slope of the line?
AI.P.6	Patterns, Relations, and Algebra	1, 3 (CR)	Find a linear function describing a line from a graph or a geometric description of the line (e.g., by using the point-slope or slope y-intercept formulas). Explain the significance of a positive, negative, zero, or undefined slope.	On the coordinate grid, graph a line with a slope of 2 and a y-intercept of $^{-}4$.
AI.P.8	Patterns, Relations, and Algebra	3	Add, subtract, and multiply polynomials with emphasis on 1st- and 2nd-degree polynomials.	Simplify $(2x^2 + 4x - 7) + (3x + 10)$

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Grade 10

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
AI.P.9	Patterns, Relations, and Algebra	2	Demonstrate facility in symbolic manipulation of polynomial and rational expressions by rearranging and collecting terms, factoring (e.g., $a^2 - b^2 = (a + b)(a - b)$, $x^2 + 10x + 21 = (x + 3)(x + 7)$, $5x^4 + 10x^3 - 5x^2 = 5x^2(x^2 + 2x - 1)$), identifying and cancelling common factors in rational expressions, and applying the properties of positive integer exponents.	What are the factors of $x^2 + 5x + 6$?
AI.P.12	Patterns, Relations, and Algebra	2	Find solutions to quadratic equations (with real roots) by factoring, completing the square, or using the quadratic formula. Demonstrate an understanding of the equivalence of the methods.	What are the solutions to $x^2 + 5x + 6$?
AI.P.14	Patterns, Relations, and Algebra	1	Solve everyday problems (e.g., compound interest and direct and inverse variation problems) that can be modeled using linear or quadratic functions. Apply appropriate graphical or symbolic methods to the solution.	A deposit of $500.00 is made to an account that pays 6% interest compounded yearly. What will be the account balance after 6 years?
AI.P.15	Patterns, Relations, and Algebra	2	Solve everyday problems (e.g., mixture, rate, and work problems) that can be modeled using systems of linear equations or inequalities. Apply algebraic and graphical methods to the solution.	One day a movie theater collected $4,750 from 710 people. Admission is $8 for an adult and $5 for a child. How many adults and children were admitted to the movie theater that day?
G.G.03	Geometry	1	Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons.	The rhombus below is cut by diagonals. What is the value of angle EBC?
G.G.07	Geometry	1	Use properties and theorems about congruent and similar figures and about perpendicular and parallel lines to solve problems.	In the figure below, the pool and the patio around the pool are similar rectangles. What is the ratio of the length of the patio to the length of the pool?

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Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
G.G.12	Geometry	1	Apply congruence and similarity correspondences (e.g., ▲ABC ≅ ▲XYZ) and properties of the figures to find missing parts of geometric figures, and provide logical justification.	Determine whether the triangles below are congruent.
G.G.13	Geometry	1	Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.	In the figure below [two parallel lines cut by a transversal], if angle A = 60 degrees, what is the measure of angle B?
G.G.14	Geometry	1	Solve simple triangle problems using the triangle angle sum property and/or the Pythagorean theorem; study and understand more than one proof of this theorem.	Using the Pythagorean theorem, find the unknown side length of the triangle shown.
G.G.15	Geometry	1	Use the properties of special triangles (e.g., isosceles, equilateral, 30° ⁻60° ⁻90°, ⁻45°⁻45° ⁻90°) to solve problems.	In the isosceles triangle drawn below, what is the measure of angle A?
G.G.16	Geometry	1	Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.	In the triangle below, what represents the tangent of angle A?
G.G.18	Geometry	3 (CR)	Using rectangular coordinates, calculate the midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.	What is the midpoint of line segment AB on the coordinate grid below?
G.G.20	Geometry	1	Draw the results and interpret transformations on figures in the coordinate plane such as translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems.	Which transformation was applied to figure ABCD to arrive at figure A'B'C'D'?

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Grade 10

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
G.G.22	Measurement	5	Find and use measures of perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.	What is the perimeter of a square with an area of 25 square feet?
G.G.23	Measurement	1	Find and use measures of lateral areas, surface areas, and volumes of prisms, pyramids, spheres, cylinders, and cones, and relate these measures to each other using formulas (e.g., find the volume of a sphere with a specified surface area).	What is the volume of a cone with a height of 9 inches and a radius of 3 inches?
AI.D.1	Data Analysis, Statistics, and Probability	9, 3 (CR)	Select, create, and interpret an appropriate graphical representation (e.g., scatter plot, table, stem-and-leaf plots, circle graph, line graph, and line plot) for a set of data, and use appropriate statistics (e.g., mean, median, range, and mode) to communicate information about the data. Use these notions to compare different sets of data.	A. Create a circle graph to display the data table below. B. Find the mean, median, and mode of the following data set.

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Science and Biology

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.1.1	Scientific Thinking and Inquiry	3, 2 (CR)	Recognize and describe how results of similar scientific investigations may turn out differently because of inconsistencies in methods, materials, and observations, or because of limitations of the precision of the instruments used.	A. Two researchers want to know [fact]. After one month, one researcher finds [different result] than the other researcher. Which of these best explains why the two researchers had different results? B. Two scientists performed the same experiment but got very different results. Which of these statements best explains why this could happen?
5.1.4	Scientific Thinking and Inquiry	2	Write instructions that others can follow to carry out an investigation.	A. Which of these statements best describes a good set of instructions for an investigation? B. [Name] wants to see [testable question]. She writes out the steps for her investigation and shows them to her teacher. Which of these steps did [Name's] teacher most likely say needed to be more clear?
5.1.6	Scientific Thinking and Inquiry	2	Identify the controlled variable and at least one independent variable in a scientific investigation, when appropriate.	A. [Name] wants to know if [testable question]. [Brief description of the experiment.] The independent variable in [Name's] investigation is the . . . B. Which of these statements best describes a controlled variable in an investigation?
5.1.8	Scientific Thinking and Inquiry	1	Realize and explain why predictions may be more accurate if they are based on large collections of similar events for statistical accuracy.	A. Which of these statements describes the kind of data that are needed to make a good prediction about an event? B. [Name] wants to know [fact]. Which of these groups would help [Name] make the best prediction?

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Grade 5

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
5.1.9	Scientific Thinking and Inquiry	2	Determine area and volume of rectangular shapes from linear dimensions, using the expressions $A = l \times w$ and $V = l \times w \times h$.	A. The equation for the area (A) of a rectangle is shown below. [Equation] An [object] is [value] long and [value] wide. What is the area of the [object]? B. The equation for the volume (V) of a rectangle is shown below. [Equation] [Name] wants to know the volume of the [object] shown below. What is the volume of the [object]?
5.1.11	Scientific Thinking and Inquiry	2	Explain the distortion inherent in using only a portion of the data collected to describe the whole. Understand that it is sometimes acceptable to discard data.	[A teacher's] science class is collecting data on [subject of study]. The class finds [data] for all of the [subjects] except for [number of missing data]. OR The students decide to use only the average [data] to make it easier to report their results. Which of the following statements best explains what [the teacher's] class should do about the missing data before making a conclusion from their study? OR Which of the following is the most likely problem with this procedure?
5.2.1	Science and Technology	3	Give examples of technology, such as telescopes, microscopes, and cameras, that enable scientists and others to observe things that are too small or too far away to be seen without them and to study the motion of objects that are moving very rapidly or are hardly moving.	A. Which of these tools helped scientists to study [a planet]? B. Scientists know [information about an object or objects]. These [objects] are too small/far away to see without a tool. Which of these tools can be used to see [object]?
5.2.2	Science and Technology	2	Give examples of advances in technology that have positively and/or negatively affected society.	A. [Brief history about a technological device]. Which of the following statements explains how [technological device] has positively affected society? B. [Brief history about a technological device]. Which of these statements best explains a way these devices can negatively affect people?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.2.3	Science and Technology	2	Give examples of materials not present in nature that have become available because of science and technology, such as cloth, metal alloys, plastic, ceramics, and concrete.	Which of these materials/objects is/is not present in nature OR made from a material that is naturally produced on Earth OR made of natural material?
5.3.1	Earth Science	1, 2 (CR)	Describe Earth as part of a system called the *solar system,* which includes the sun (a star), planets, comets, asteroids, and many moons.	A. Identify various types of objects that are part of our solar system. B. Which of these best describes a solar system?
5.3.2	Earth Science	1	Recognize that Earth is the third planet from the sun in our solar system.	Which of these [choices] describes Earth's position from the sun OR where Earth is found in the solar system?
5.3.7	Earth Science	1	Observe and describe that stars vary in size, but they are so far away that they look like points of light.	A. [Name] is looking at some stars in the night sky. She thinks they look like little points of light. Which of these causes the stars to look like points of light? B. Describe why the sun looks much larger than other stars.
5.4.1	Earth Science	2	Investigate and describe that when liquid water evaporates, it turns into a gas (vapor) mixed into the air, and can condense and reappear as a liquid when cooled or as a solid (ice) if cooled below the freezing point of water.	A. Which picture/of these [choices] shows/is an example of a substance as both a liquid and a gas [or solid] OR a liquid changing to a solid? B. Which of these [pictures] shows that there is water vapor in the air?
5.4.6	Earth Science	3	Explain how global patterns, such as the jet stream and ocean currents, influence local weather and climate in ways that can be measured in terms of temperature, pressure, wind direction and speed, and amounts of precipitation.	A. Which of these will least likely affect the weather in an area? B. Describe how ocean currents and the wind work together to affect weather patterns.

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Grade 5

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
5.5.2	Physical Science	1	Recognize that there are more than 100 different kinds of atoms (each called an *element*), which are displayed on the periodic table of the elements.	A. Look at the diagram [of the periodic table] below. The diagram shows part of the . . . B. Which of these best describes the difference/a similarity between all of the elements in the periodic table?
5.5.4	Physical Science	1	Investigate and describe that heating and cooling cause changes in the properties of substances. For example, liquid water can turn into steam by boiling, and liquid water can turn into ice by freezing.	A. Which of these will help change a [phase] to a [different phase]? B. Describe what happens to the volume of a given amount of water when it freezes.
5.5.6	Physical Science	2	Explain that when a warm object and a cool one are placed in contact, heat flows from the warmer object to the cooler one until they are both at the same temperature. Know that heat transfer can also occur at a distance by radiation.	A. A hot [object] is placed on/next to a cold [object]. Which of these describes the final temperature of the two objects? B. Which of these describes heat transfer by radiation?
5.6.2	Physical Science	1	Demonstrate that if the forces acting on an object are balanced so that the net force is zero, the object will remain at rest if it is initially at rest or will maintain a constant speed and direction if it is initially moving.	A. [Diagram of two objects leaning against each other]. Which of these statements is true? B. Which of these best describes what will happen to an object moving at a constant speed if there is no net force acting on it?
5.6.3	Physical Science	3	Investigate and describe that unbalanced forces cause changes in the speed and/or direction of motion of an object (acceleration).	A. Unbalanced forces will most likely result in . . . B. [Names] are [moving] forward at the same speed. At one point, [Name 1] accidentally bumps into [Name 2] from the side. Which of these statements best describes what happens to [Name 2's] movement?

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Grade 5

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
5.6.4	Physical Science	2	Describe that, for an object moving in a straight line, acceleration, *a,* is the change in velocity, *v*, divided by the time, *t,* that change takes ($a = v \div t$).	A. [Name] wants to calculate the acceleration of a falling [object]. Which of these pairs of measurements does [Name] need to calculate acceleration? B. The equation for acceleration is shown below. [Equation] Which of these examples describes an instance when this equation could best be used?
5.8.2	Life Science	2	List some characteristics of plants and animals that are fully inherited (e.g., form of flower, shape of leaves) and others that are affected by the climate or environmental conditions (e.g., browning of leaves from too much sun, language spoken).	A. Which of these characteristics is least likely to be passed on to an [organism] from its parents? B. [Name] has [list of noninheritable traits with one inheritable trait]. Which of these statements describes something [Name] inherited from her parents?
5.9.2	Life Science	3	Identify organisms that are not native to the Washington, D.C., area and how they undergo changes to increase their chance of survival in the area.	A. An [organism] can [ability]. This organism has this ability because this helps it . . . B. [Animal] can change color. Describe when this animal will most likely change color and why this is an advantage to the animal.
5.9.3	Life Science	3	Explain how organisms can cause changes in their environment to ensure survival, and how these changes may affect the ecosystem (the living and nonliving components of the environment).	A. A population of [animal] is growing so quickly that it eats most of the [food] in an area. Which of these statements explains how this may affect other organisms in the area? B. [Description of a parasite]. Which of these describes the most likely effect of the [parasite] on a host animal?

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Grade 5

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
5.9.4	Life Science	2	Explain that organisms fit enough to survive in a particular environment will typically produce offspring fit enough to survive and reproduce in that particular environment. Over time, these inherited characteristics are carried as the predominant forms (e.g., adaptations such as shape of beak, length of neck, shape of teeth).	A. A/An [animal] is successful at [activities related to survival]. Which of these is the most likely result of these characteristics? B. Which of these statements describes how traits are passed on to the offspring in a population that successfully survives in a changing environment?
5.9.5	Life Science	1, 2 (CR)	Explain how changes in an organism's habitat are sometimes beneficial and sometimes harmful, and how changes in the environment (drought, cold) have caused some plants and animals to die, migrate, or become extinct.	A. Which of these describes an impact that [occurrence] can have on [population]? B. Which of these would probably have the greatest impact on the survival of an [animal] population living in an [area]?

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.1.3	Scientific Thinking and Inquiry	1, 2 (CR)	Describe how if more than one variable changes at the same time in an experiment, the outcome of the experiment may not be attributable to a change in any single variable.	A. [Description of an experiment with more than one manipulated variable]. [Name's] comparison would have been more valid if he had . . . B. Which of these best explains why there should only be one variable changed in an experiment?
8.1.7	Scientific Thinking and Inquiry	1	Use tables, charts, and graphs in making arguments and claims in presentations about lab work.	A. This graph shows [data]. According to the graph, [question asking student to analyze data in the graph]. B. Study the time line/chart below. According to the chart, [question asking student to analyze data in the time line/chart].
8.1.12	Scientific Thinking and Inquiry	4	Apply simple mathematical models to problems (e.g., formulas such as $F = ma$).	A. The formula used to convert [change in units] is shown below. [Equation] If the [physical property] is [value], what is the [physical property] in [different type of units]? B. To the nearest [unit], how long will it take [Name] to [activity] with a [value] at a [value]?
8.2.2	Structure of Matter	4, 2 (CR)	Construct a model of an atom and know the atom is composed of protons, neutrons, and electrons.	A. An atom of [element] has [protons] and a charge of [charge]. How many electrons does an atom of [element] have? B. Which of these describes the location of the neutrons/protons/electrons in an atom OR structure of an atom?
8.2.7	Structure of Matter	3	Understand how an ion is an atom or group of atoms (molecule) that has acquired an electric charge by losing or gaining one or more electrons.	A. A molecule acquires an electric charge when it loses or gains which of the following types of particle? B. An ion of [element] has a charge of [charge] and takes one electron from a neutral atom of [element]. Which of these shows the final charge on the [element] ion?

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Grade 8

Standard Code	Reporting Category	Test Points	Standard	Assessment Stem(s)
8.2.8	Structure of Matter	1	Describe how the atoms, molecules, or ions comprising an object are in constant individual motion, and explain how their average motional (kinetic) energy determines the temperature of the object, and how the strength of the forces between them determines the state of matter at that temperature.	A. In which of these substances are molecules most free to move around? B. Which of these best describes the reaction of water molecules to heat?
8.2.10	Structure of Matter	2	Describe the contributions of the scientists involved with the development of current atomic theory, including John Dalton, Marie and Pierre Curie, Joseph John Thomson, Albert Einstein, Max Planck, Ernest Rutherford, Niels Bohr, and Erwin Schroedinger.	A. Which of these statements best describes the [law or theory] proposed by [scientist]? B. Which of these statements was not a part of [scientist's] [law or theory]?
8.3.3	Reactions	3	Explain how the idea of atoms, as proposed by John Dalton, explains the conservation of matter: In chemical reactions, the number of atoms stays the same no matter how they are arranged, and the mass of atoms does not change significantly in chemical reactions, so their total mass stays the same.	A. Which of these does not stay the same during a chemical reaction? B. Which of these best describes how the idea of atoms explains the conservation of matter?
8.3.4	Reactions	1	Investigate and explain how during endothermic chemical reactions heat energy is absorbed from the surroundings and in exothermic reactions heat energy is released to the surroundings.	A. Which of these types of reactions absorbs heat from/gives off heat to the surroundings? B. Two chemicals are mixed and a chemical reaction takes place. A thermometer measures the temperature inside the beaker over time. The data are shown in the table below. [Table] According to the data in the table, which of these must be true about the reaction?

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Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.3.5	Reactions	5	Investigate and explain that reactions occur at different rates, slow to fast, and that reaction rates can be changed by changing the concentration of reactants, the temperature, the surface areas of solids and by using a catalyst.	A. How do low temperatures affect the speed of chemical reactions? B. [Details about a chemical reaction] as shown in the equation below. [Equation] Which of these best describes what will happen if the temperature at which this reaction takes place is increased?
8.3.6	Reactions	2	Recognize that solutions can be acidic, basic, or neutral depending on the concentration of hydrogen ions in the solution. Understand that because this concentration can vary over a very large range, the logarithmic (each increase of one in the pH scale is an increase of 10 times in concentration) pH scale is used to describe how acidic or basic a solution is.	A. Which of these best describes why the pH scale is used to describe how acidic or basic a solution is? B. [Chart of pH values for various substances] [Substance] has a pH of about [value]. What acid in the chart would neutralize [substance] when both are used in equal volumes?
8.4.2	Forces/ Density and Buoyancy	3	Know that density is mass per unit volume.	A. [Name] wants to find the density of [object]. Which of these pairs of properties will she need to measure to determine the density? B. Which of these measurements represents an object with the highest density?
8.4.4	Forces/ Density and Buoyancy	1	Determine and explain that the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced; this principle can be used to predict whether an object will float or sink in a given fluid.	[Names] are investigating [material]. They measured the mass and volume of [two or more types of the material] and recorded their data in the table below. [Table] The density of water is 1.0 gram per milliliter. If both [materials] are placed in water, which of these results will the students observe?
8.7.2	Forces/ Density and Buoyancy	2 (CR)	Observe and explain that when the forces on an object are balanced (equal and opposite forces that add up to zero), the motion of the object does not change.	A. An [object] is moving through space at a constant speed. If no outside force interacts with the [object], which of these is true about its motion? B. Which of these best describes the forces acting on an object moving at a constant velocity?

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Grade 8

Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
8.7.3	Forces/ Density and Buoyancy	2	Explain why an unbalanced force acting on an object changes the object's speed or direction of motion or both.	A. When a moving [object] collides with a stationary [object] and moves it, the moving [object] will usually . . . B. If two people are pushing in opposite directions on an object with an unequal force, how will the motion of the object change?
8.7.5	Forces/ Density and Buoyancy	4	Know that the greater the mass of an object, the more force is needed to change its motion.	A. A force is applied to an [object] that causes the [object] to move across the floor with a constant acceleration. Which of these describes the motion of an [object] with twice the mass of the first [object] if the same force is applied? B. An [object] is being pushed with a constant acceleration. Another [object] is being pushed with twice the force of the first [object] and the acceleration remains the same. Which of these describes the mass of the second [object]?
8.5.2	Conservation of Energy	2	Describe kinetic energy as the energy of motion (e.g., a rolling ball) and potential energy as the energy of position or configuration (e.g., a raised object or a compressed spring).	A. Which of these <u>best</u> describes an example of kinetic energy/potential energy? B. An [object] rolling across a carpet slows and eventually stops. Which of these <u>best</u> describes the kinetic energy of the [object] described above?
8.5.4	Conservation of Energy	4	Recognize and describe that energy is a property of many systems and can take the forms of mechanical motion, gravitational energy, the energy of electrostatic and magnetostatic fields, sound, heat, and light (electromagnetic field energy).	A. A [device] converts electrical energy into which kinds of energy? B. A battery can be used to make an electromagnet. Describe how chemical energy from the battery is eventually converted into mechanical energy. (Include a description of electrostatic and magnetostatic fields in your answer.)

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Grade 8

Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
8.5.7	Conservation of Energy	1	Know that the sun's radiation consists of a wide range of wavelengths, mainly visible light, infrared, and ultraviolet radiation.	A. [Name] is looking at the colors of light produced by sunlight passing through a glass prism. Which of these colors that [Name] sees has the longest wavelength? B. How can exposure to the sun's ultraviolet radiation be harmful?
8.5.8	Conservation of Energy	2	Investigate and explain that heat energy is a common product of an energy transformation, such as in biological growth, the operation of machines, the operation of a light bulb, and the motion of people.	A. Several students walk into a cold classroom. After several minutes, they feel as though the temperature in the room has increased. Which of these statements <u>best</u> describes why the room feels warmer to the students? B. Most [objects] have fans to keep the [object] from overheating. Which of these <u>best</u> describes why this is necessary?
8.5.10	Conservation of Energy	1	Investigate and explain that in processes at the scale of atomic size or greater, energy cannot be created or destroyed but only changed from one form into another.	A. Which of these best describes what happens to the energy of an [object] as it falls out of a tree? B. Which of these describes a situation in which energy can be destroyed?

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Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
B.1.10	Scientific Investigation and Inquiry	5	Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)	A. [Name] is looking at [object]. She needs to measure [a certain distance]. Which of these units should [Name] use for her measurements? B. The [data] for several years is shown in the graph below. [Graph] Which of these is a true statement about the [data] shown in the graph?
B.1.12	Scientific Investigation and Inquiry	1	Analyze situations and solve problems that require combining concepts from more than one topic area of science and applying these concepts.	A. Scientists are tracking the path of a large storm as it moves closer to the coast. Which of these statements describes what the scientists would be least concerned with regarding the storm? B. Explain why scientists in many different fields are concerned about the effects of global warming.
B.1.13	Scientific Investigation and Inquiry	2	Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.	A. Which of these conclusions about a population can not be made according to the equation? B. According to the two growth equations, how does the size of the prey population depend on the size of the predator population?

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Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
B.1.15	Scientific Investigation and Inquiry	1	Explain that science discoveries can have both positive and negative implications, involve different decisions regarding ethics and allocation of resources (e.g., organ transplants, stem cell research, forest management, and land use).	A. Which of these statements best explains why the U.S. government would want to [policy]? B. Which of these statements could be given as a reason for certain areas of the United States to remain undeveloped?
B.2.1	Chemistry of Living Things	1	Describe basic atomic structure using simplified Bohr diagrams to understand the basis of chemical bonding in covalent and ionic bonds.	A. Which of these statements best describes why an ionic bond occurs between two elements? B. Based on the [Bohr diagram], [atom] started with . . .
B.2.2	Chemistry of Living Things	2	Describe the structure and unique properties of water and its importance to living things.	A. The existence of all known forms of life depends on which of these compounds? B. Which of these statements about the properties of water is not correct?
B.2.3	Chemistry of Living Things	2	Describe the central role of carbon in the chemistry of living things because of its ability to combine in many ways with itself and other elements.	A. Which of these elements is essential to the makeup of all living things because of its ability to [quality of carbon]? B. Which of these statements about carbon is true/false?

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Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
B.3.4	Cell Biology	1, 2 (CR)	Describe the organelles that plant and animal cells have in common (e.g., ribosomes, Golgi bodies, endoplasmic reticulum) and some that differ (e.g., only plant cells have chloroplasts and cell walls).	One way that animal cells are similar to/different from plant cells is . . .
B.3.5	Cell Biology	2	Demonstrate and explain that cell membranes act as highly selective permeable barriers to penetration of substances by diffusion or active transport.	A. The sodium-potassium pump requires energy to move sodium and potassium ions across the cell membrane. Which of these describes the process used by the sodium-potassium pump? B. Very small molecules, such as water, move across the cell membrane through which process?
B.3.14	Cell Biology	2	Recognize and describe that cellular respiration is important for the production of adenosine triphosphate (ATP), which is the basic energy source for cell metabolism.	A. Which of these processes uses [substance] to produce energy for cells? B. Which of these is the basic source of energy for cell metabolism?
B.3.15	Cell Biology	1	Differentiate between the functions of mitosis and meiosis: Mitosis is a process by which a cell divides into each of two daughter cells, each of which has the same number of chromosomes as the original cell. Meiosis is a process of cell division in organisms that reproduce sexually, during which the nucleus divides eventually into four nuclei, each of which contains half the usual number of chromosomes.	A. The picture shows a parent cell with [number] chromosomes. Which of these shows the daughter cells that will result after the parent cell goes through one complete cycle of mitosis/meiosis? B. The diagram below shows a type of cell division that happens in humans. Identify the process shown in the diagram. Describe the purpose of this type of cell division in humans.
B.3.17	Cell Biology	2	Describe that all organisms begin their life cycles as a single cell, and in multicellular organisms the products of mitosis of the original zygote form the embryonic body.	A. Which of these statements about organisms is true? B. An embryo grows from the size of one cell to numerous cells through the process of . . .

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Standard Code	*Reporting Category*	*Test Points*	*Standard*	*Assessment Stem(s)*
B.4.6	Genetics	2	Explain how the genetic information in DNA molecules provides the basic form of instructions for assembling protein molecules and that this mechanism is the same for all life forms.	A. Which of these molecules is assembled using the code sequence provided by DNA? B. Amino acids linked together in a chain create a polypeptide. One or more polypeptides makes a functional protein. Which of these provides the instructions for the assembly of a protein?
B.4.7	Genetics	1, 2 (CR)	Understand and describe how inserting, deleting, or substituting short stretches of DNA alters a gene. Recognize that changes (mutations) in the DNA sequence in or near a specific gene may (or may not) affect the sequence of amino acids in the encoded protein or the expression of the gene.	A. The DNA sequence shown below codes for a specific protein. [Sequence] Which of these describes the most likely result of the change in the DNA sequence? B. Describe three different ways a scientist could alter a strand of DNA and discuss how each change could affect the organism in which this change takes place.
B.4.10	Genetics	1	Explain how the sorting and recombination of genes in sexual reproduction result in a vast variety of potential allele combinations in the offspring of any two parents.	In [an organism], there are two alleles for [trait]. There are also two alleles for [other trait]. Two plants that are heterozygous/homozygous for both of these traits are crossed. Which of these Punnett squares correctly shows the genotypes that could result from this cross?
B.4.11	Genetics	1	Explain that genetic variation can occur from such processes as crossing over, jumping genes, and deletion and duplication of genes.	A. Which of these involves the exchange of chromatid segments between chromosomes? B. Which of the following statements correctly describes the type of movement that jumping genes make in DNA?

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Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
B.4.13	Genetics	2	Investigate and describe how a biological classification system that implies degrees of kinship between organisms or species can be deduced from the similarity of their nucleotide (DNA) or amino acids (protein) sequences. Know that such systems often match the completely independent classification systems based on anatomical similarities.	A. [Name] learns that two organisms have many of the same protein sequences. Which of these can [Name] best conclude about these two organisms according to this information? B. The classification chart below shows how closely related four species are to each other. [Chart] According to the chart, which of these is the best conclusion about the species?
B.5.2	Biological Evolution	2	Explain how a large diversity of species increases the chance that at least some living things will survive in the face of large or even catastrophic changes in the environment.	How does the amount of diversity observed within a species affect its chance for survival in the event of a sudden change in the environment?
B.5.6	Biological Evolution	2	Explain that prior to the theory first offered by Charles Darwin and Alfred Wallace, the universal belief was that all known species had been created *de novo* at about the same time and had remained unchanged.	A. Charles Darwin is credited with which of the following theories? B. Which of these was the accepted belief before Charles Darwin and Alfred Wallace's theory about the development of species?
B.5.10	Biological Evolution	3	Explain that evolution builds on what already exists, so the more variety there is, the more there can be in the future.	A. Which of these statements about evolution is false? B. Which of these statements best describes why some populations have greater variation among individuals than other populations?
B.6.2	Plant Biology/ Mammalian Biology	1	Identify the roles of plants in the ecosystem: Plants make food and oxygen, provide habitats for animals, make and preserve soil, and provide thousands of useful products for people (e.g., energy, medicines, paper, resins).	Which of these statements does/does not describe a role of plants in an ecosystem?

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Standard Code	***Reporting Category***	***Test Points***	***Standard***	***Assessment Stem(s)***
B.6.4	Plant Biology/ Mammalian Biology	3	Explain the photosynthesis process: Plants make simple sugars and other molecules in their leaves, and chlorophyll found in the leaves can make the food and nutrients that the plant can use from carbon dioxide, water, nutrients, and energy from sunlight.	A. Which of these is the original source of energy for photosynthesis? B. Which of these is a true statement about photosynthesis?
B.7.2	Plant Biology/ Mammalian Biology	2	Analyze the complementary activity of major body systems, such as how the respiratory and circulatory systems provide cells with oxygen and nutrients, and remove toxic waste products such as carbon dioxide.	A. Which of these sets of body systems are involved in [major function]? B. Which of these describes how two body systems are involved in [major function]?
B.8.1	Ecosystems	1	Illustrate and describe the cycles of biotic and abiotic factors (matter, nutrients, energy) in an ecosystem.	A. Which of these is an abiotic/biotic factor in the [type of cycle]? B. Look at the diagram of the [type of cycle] below. [Diagram] Which of these is a true statement about the cycle?
B.8.3	Ecosystems	2, 2 (CR)	Explore and explain how changes in population size have an impact on the ecological balance of a community and how to analyze the effects.	[Information about an organism's relationship with other organisms in its environment] Which of these is not a likely result of an increase in an [organism] population OR would most likely result due to the decline of the [organism]?
B.8.10	Ecosystems	1	Assess the method for monitoring and safeguarding water quality, including local waterways such as the Anacostia and Potomac rivers, and know that macroinvertebrates can be early warning signs of decreasing water quality.	A. Which qualities of water can be monitored to asses water quality? B. Why is it important to assess water quality?

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DC-CAS Scoring Tools

On the following pages are the rubrics used to score student responses to constructed-response (CR) items on the DC-CAS. Holistic rubrics are used for scoring reading, mathematics, and writing CRs. Science CRs are scored according to the criteria of item-specific scoring guides. For this guide, a sample item and scoring guide have been created for each of the science tests.

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Writing Rubrics . . . . . Page 83

Mathematics Rubric . . . . . Page 84

Science and Biology Sample Scoring Guides . . . . . Page 85

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Rubric for DC-CAS Constructed-Response Items: Reading

Score	*Description*
3	The response demonstrates a complete understanding of the passage as it relates to the question. The response includes support that • is clear and complete • provides relevant and specific details/information from the text
2	The response demonstrates a partial understanding of the passage as it relates to the question. The response includes support that • is partially clear and/or partially complete • provides mostly relevant but somewhat general and/or inaccurate details/information from the text
1	The response demonstrates a minimal understanding of the passage as it relates to the question. The response includes support that • is minimally correct or incomplete • provides inadequate, incorrect, or no relevant details/information from the text
0	The response demonstrates no understanding of the passage as it relates to the question. Any details/information that is included is incorrect or irrelevant.

Student responses that are awarded a score of 3 have

- fully answered all parts of the question posed
- demonstrated the student's understanding of the whole text relative to the question
- offered appropriate, clear, and full textual support for the answer
- explained direct quotations from the text that are used as support
- included inferences, when appropriate, based on the text

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Rubrics for DC-CAS Constructed-Response Item: Writing

Topic/Idea Development

Score	*Description*
6	• Rich topic/idea development • Careful and/or subtle organization • Effective/rich use of language
5	• Full topic/idea development • Logical organization • Strong details • Appropriate use of language
4	• Moderate topic/idea development and organization • Adequate, relevant details • Some variety in language
3	• Rudimentary topic/idea development and/or organization • Basic supporting ideas • Simplistic language
2	• Limited or weak topic/idea development, organization, and/or details • Limited awareness of audience and/or task
1	• Limited topic/idea development, organization, and/or details • Little or no awareness of audience and/or task

Standard English Conventions

Score	*Description*
4	• Control of sentence structure, grammar and usage, and mechanics (length and complexity of essay provide opportunity for student to show control of standard English conventions)
3	• Errors do not interfere with communication and/or • Few errors relative to length of essay or complexity of sentence structure, grammar and usage, and mechanics
2	• Errors interfere somewhat with communication and/or • Too many errors relative to length of the essay or complexity of sentence structure, grammar and usage, and mechanics
1	• Errors seriously interfere with communication AND • Little control of sentence structure, grammar and usage, and mechanics

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Rubric for DC-CAS Constructed-Response Items: Mathematics

Score	*Description*
3	The response demonstrates a thorough understanding of the mathematical concepts and processes needed to complete the task. • Response is correct and complete. • Response shows application of a reasonable and relevant strategy. • Mathematical ideas are expressed coherently through clear, complete, logical, and fully developed responses using words, calculations, and/or symbols as appropriate.
2	The response demonstrates a general and/or partial understanding of the mathematical concepts and processes needed to complete the task. • Response is mostly correct, and may be only partially complete. • Response shows application of a reasonable and relevant strategy, even though only partially applied. • Mathematical ideas are expressed generally or partially using words, calculations, and/or symbols as appropriate.
1	The response demonstrates a minimal and/or limited understanding of the mathematical concepts and processes needed to complete the task. • Response is only minimally correct or incomplete. • Application of a strategy is indicated or implied, but the strategy may reflect a misunderstanding of mathematical concepts and/or procedures. • Mathematical ideas are expressed in a limited manner and are flawed. Words, calculations, and/or symbols are attempted to be used appropriately but may be missing.
0	The response demonstrates no understanding of the mathematical concepts and processes needed to complete the task. • Response is incorrect, incomplete, or missing. • Response shows no application of a strategy or application of an irrelevant strategy. • Mathematical ideas cannot be interpreted or lack sufficient evidence to support even a limited understanding.

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Grade 5 Science: Sample Constructed-Response Item with Scoring Guide

A student placed several ice cubes into a plastic container. After sitting at room temperature for an hour, the ice melted into water.

A Describe the physical change that the ice went through. Write your answer on the lines in the answer booklet.

B What would need to happen to change the water back into ice? Write your answer on the lines in the answer booklet.

Item-Specific Rubric	Score Points	2

Key Elements:

The ice changed from solid to liquid.

Any reasonable description of cooling the water until it freezes.

Score Points:

2 points Two key elements
1 point One key element
0 points Other

Sample Student Responses & Score Points Awarded

A The solid ice changed into a liquid.

B You could put it in the freezer until it turned back into ice.

Score: 2 points

A The ice changed into water.

B You would need to refreeze it.

Score: 1 point
Note: For Part A, no point awarded for a response of the ice changing into *water*, which is already stated in the item.

A The ice changed.

B You would need to undo it.

Score: 0 points
Note: No points awarded as the response to both parts are too vague.

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Grade 8 Science: Sample Constructed-Response Item with Scoring Guide

A student has several objects made of different materials. The student wants to find the density of each object in order to predict which objects will float when placed into water.

A Which two properties should the student measure in order to find the density of each object? Write your answer on the line in the answer booklet.

B Explain how the student could use the density of each object to predict which objects will float when placed into water. Write your answer on the line in the answer booklet.

Item-Specific Rubric	Score Points	2

Key Elements:

Mass **AND** volume

Any reasonable explanation of comparing the density of each object to the density of water to see which objects have a lower density than water (1.0 g/mL).

Score Points:

2 points	Two key elements
1 point	One key element
0 points	Other

Sample Student Responses & Score Points Awarded

A Mass and volume

B You could see if an object's density was less than the density of water, then it would float.

Score: 2 points
Note: For Part B, students may state the 'density of water' or give the value of 1.0 g/mL.

A Mass

B If the object's density was less than water's, then it would float.

Score: 1 point
Note: No point awarded for just one property named in Part A.

A Weight and space

B A large density means the object won't float.

Score: 0 points
Note: No point awarded for Part A as the properties are incorrect, and no point awarded for Part B as there is no comparison to the density of water and/or the reasoning is incorrect.

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Biology: Sample Constructed-Response Item with Scoring Guide

Many different substances can enter and exit a cell by passing through the cell membrane.

A Name the process by which oxygen molecules would enter through the cell membrane, and identify whether this process would require energy to occur. Write your answers in the chart provided in the answer booklet.

B Name the process by which sodium ions would exit through the cell membrane, and identify whether this process would require energy to occur. Write your answers in the chart provided in the answer booklet.

Item-Specific Rubric	Score Points	2

Key Elements:

Diffusion **AND** No (no energy required)

Active transport **AND** Yes (energy required)

Score Points:

2 points Two key elements
1 point One key element
0 points Other

Sample Student Responses & Score Points Awarded

	Process	Energy Required?
A	Diffusion	no
B	Active Transport	yes

Score: 2 points

	Process	Energy Required?
A	Diffusion	yes
B	Active Transport	yes

Score: 1 point
Note: Both parts must be correct for a student to earn a point for the specific process.

	Process	Energy Required?
A	Easy	no
B	Pumping	yes

Score: 0 points
Note: Neither process was named correctly, so the student did not earn a point for either process.

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Additional Resource Information and Glossary

In this section of the *DC-CAS Resource Guide* is a list of additional resources identified by educators of the District of Columbia. These resources have been used in classrooms because of their curricular and assessment alignment to DC standards.

Also included in this section are a glossary of assessment terms, and a feedback form.

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Feedback Form . . . . . Page 96

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Additional Resources

Teachers and content specialists of the District of Columbia schools recommend the following resources for use by teachers in their instructional planning. The resources have been selected for their alignment to the state standards and the DC-CAS.

Resource	*Description of Content*	*Content Alignment*
www.dcps.org and www.k12.dc.us	• All standards documents • Standards-based worksheets • Instructional activities aligned to standards • Link to pacing guides	All content areas
http://www.ccsso.org/projects/State_Education_Indicators/Key_State_Education_Policies/3160.cfm	• Links to all state standards	All content areas
www.brainpop.com	• Cartoon video, with quizzes • Requires money for access to most videos	All content areas
McDougal-Littell CD-ROM, website, and textbooks www.classzone.com	• Test generator and videos • General questions aligned to standards • Cartoon videos aligned to DC standards	All content areas
www.doe.mass.edu/mcas/	• MCAS sample assessment items aligned to Massachusetts' and DC's standards • Test preparation strategies	All content areas
www.schooldirect.com	• Sponsored by Houghton Mifflin • Comprehensive curricular and assessment resources	All content areas
http://eduplace.com	• Houghton Mifflin Education Place • Links to resources from other states	All content areas

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Resource	Description of Content	Content Alignment
TerraNova Classroom Connections www.ctb.com	• Published by CTB/McGraw-Hill • Curricular, instructional, and assessment resources	All content areas
http://mdk12.org/ http://mdk12.org/whats_new/high.html	• Reading and Mathematics Toolkits • Standards-aligned instructional ideas • Released Maryland State Assessment and High School Assessment test items	All content areas
www.thinklinklearning.com	DC-BAS Probes and Think Link Learning/Discovery Education ancillary materials	All content areas
Discovery Education Curricular Products http://dsc.discovery.com/	• Key Language Arts Series • Math Number Crew • Math Nutshell Math Plus • HELP math for LEP students • Discovery Education Science	All content areas
www.continentalpress.com	• MCAS Reading Finish Line • MCAS Mathematics Finish Line • Practice guides	All content areas
www.ctb.com/dc-cas	Performance Level Descriptors • Skills and concepts needed to achieve proficiency levels of DC-CAS • Based on student performance on DC-CAS	Reading and Mathematics
www.RALLYEDUCATION.com	• Essential Skills for Reading Success • Essential Skills for Math Success • Practice guides	Reading and Mathematics
www.triumphlearning.com	• Practice guides aligned to FCAT • Published by Educational Design	Reading and Mathematics

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Resource	Description of Content	Content Alignment
www.curriculumassociates.com	• Strategies to Achieve Reading Success • Test Ready Reading • Test Ready Omni Mathematics	Reading and Mathematics
http://www.indiana.edu/~crls/rogerfarr/mcr/usingta/usingta.html and http://www.readingrockets.org/article/102 and http://walloon.com/conference_handouts/Walloon2006/ThinkAloudProgression.doc	• Metacognitive reading strategies • Features Dr. Roger Farr's Think Aloud process • Dr. Farr is past president of International Reading Association • Appropriate for all grades • Applicable to other content areas	Reading
Utah State University http://nlvm.usu.edu/en/nav/vlibrary.html	• Virtual manipulatives by content strands • PreK-12	Mathematics
NCTM's Illuminations http://illuminations.nctm.org	• Standards-based resources • Online activities, lessons, and web links	Mathematics
Everyday Mathematics Center http://everydaymath.uchicago.edu/educators.index.shtml	• Variety of resources for users and non-users of Everyday Mathematics Program • Links to professional journals, organizations, web resources, EM learning goals	Mathematics
Lawrence Hall of Science www.lawrencehallofscience.org	• Science lab activities	Science: Reactions
Science and Technology in Middle School: Series from Smithsonian www.smithsonianeducation.org	• Hands-on curriculum • Labs and text	Science: Forces/Density and Buoyancy
www.exploratorium.org	• Exploratorium snacks and online exhibits • Series of hands-on activities about light • Online exhibits to learn about perception and light	Science: Conservation of Energy

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Resource	Description of Content	Content Alignment
Glencoe biology text www.glencoe.com	• DVDs and CDs • Test generating website • Quizzes, tests, reading assignments, worksheets	Science: Biology
Smithsonian Museum www.smithsonian.org	• Botanic garden • Bodies exhibit (mammalian bodies)	Science: Biology
www.biologycorner.com	• Variety of biology-related lessons • Online assignments • Practice tests	Science: Biology
NIH www.science.education.nih.gov	• Curriculum guides correlated to Scientific Investigation and Inquiry	Science
DC Environmental Education Consortium www.dcnaturally.org	• Local non-profit environmental education groups	Science: Ecosystems
Science in Motion at www.macmillanmh.com www.foss.com NIH www.science.education.nih.gov	• Textbooks are correlated to elementary DC Science Standards • Hands-on activities are correlated to elementary DC Science Standards • Curriculum guides correlated to Scientific Investigation and Inquiry	Science

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Glossary

constructed response (CR)
a test item for which a student must write a response, usually to provide and then support an answer to a question OR to provide an answer and then show or explain a process for determining the answer

content standard
the skill and knowledge expected of students at a specific grade level

Performance-Level Descriptors (PLDs)
PLDs provide descriptions of students' performance at each achievement level. The PLDs for DC-CAS are included in the 2007 *Guide to Test Interpretation* distributed to schools.

rubric
a framework of criteria that defines how a student response, usually to a constructed-response item, will be evaluated and scored; a holistic, or generic, rubric gives criteria that is general in nature and can be used to score items of similar construct and content (e.g., reading comprehension items)

scoring guide
a guide that may include notes or sample responses that are specific to a constructed-response item; scoring guides are developed to help scorers as they apply scoring criteria to student responses

selected response (SR)
a test item, also known as a multiple-choice item, in which a student is presented answer choices from which to select the correct response to a posed question or problem

strand
a main category of a content area, such as Informational Text or Number Sense and Operations

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DC-CAS Resource Guide: Feedback

Thank you for taking the time to provide feedback about this resource guide. Your input will help in the preparation of future editions.

1. What is your position at your school? _____

2. How did you learn about the *DC-CAS Resource Guide?* _____

3. Were you given a hard copy of the guide or did you download it from a website? _____

4. Did anyone provide training or professional development before you used the guide? If so, who? _____

   _____

5. What information and resources in the guide did you find most useful? _____

   _____

6. What additional information or resources should be included in future editions of this guide? _____

   _____

   _____

7. Comments: _____

   _____

   _____

Please fax or email your comments to

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