ETS PRAXIS

Measuring the Power of Learning.®

The *Praxis*® Study Companion

Elementary Education: Multiple Subjects

5001

www.ets.org/praxis

Welcome to *The Praxis® Study Companion*

Prepare to Show What You Know

You have been working to acquire the knowledge and skills you need for your teaching career. Now you are ready to demonstrate your abilities by taking a *Praxis®* test.

Using the *Praxis Study Companion* is a smart way to prepare for the test so you can do your best on test day. This guide can help keep you on track and make the most efficient use of your study time.

The Study Companion contains practical information and helpful tools, including:

- An overview of the Praxis tests
- Specific information on the Praxis test you are taking
- A template study plan
- Study topics
- Practice questions and explanations of correct answers
- Test-taking tips and strategies
- Frequently asked questions
- Links to more detailed information

So where should you start? Begin by reviewing this guide in its entirety and note those sections that you need to revisit. Then you can create your own personalized study plan and schedule based on your individual needs and how much time you have before test day.

Keep in mind that study habits are individual. There are many different ways to successfully prepare for your test. Some people study better on their own, while others prefer a group dynamic. You may have more energy early in the day, but another test taker may concentrate better in the evening. So use this guide to develop the approach that works best for you.

Your teaching career begins with preparation. Good luck!

Know What to Expect

Which tests should I take?

Each state or agency that uses the *Praxis* tests sets its own requirements for which test or tests you must take for the teaching area you wish to pursue.

Before you register for a test, confirm your state or agency's testing requirements at www.ets.org/praxis/states.

How are the *Praxis* tests given?

Praxis tests are given on computer. Other formats are available for test takers approved for accommodations (see page 77).

What should I expect when taking the test on computer?

When taking the test on computer, you can expect to be asked to provide proper identification at the test center. Once admitted, you will be given the opportunity to learn how the computer interface works (how to answer questions, how to skip questions, how to go back to questions you skipped, etc.) before the testing time begins. Watch the What to Expect on Test Day video to see what the experience is like.

Where and when are the *Praxis* tests offered?

You can select the test center that is most convenient for you. The *Praxis* tests are administered through an international network of test centers, which includes Prometric® Testing Centers, some universities, and other locations throughout the world.

Testing schedules may differ, so see the *Praxis* web site for more detailed test registration information at www.ets.org/praxis/register.

Table of Contents

The Praxis® Study Companion guides you through the steps to success

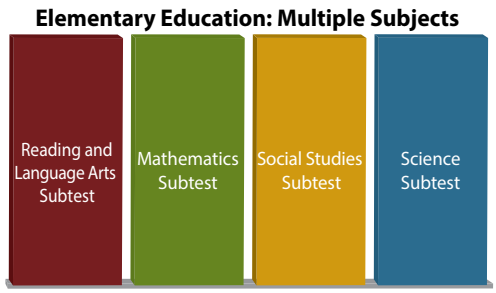
1. Learn About Your Test

Learn about the specific test you will be taking

Elementary Education: Multiple Subjects (5001)

Test at a Glance

Test Name	Elementary Education: Multiple Subjects
Test Code	5001
Total Time	4.25 hours (four separately timed subjects)
Format	Selected-response and numeric-entry questions; on-screen scientific calculator provided
Test Delivery	Computer delivered



Subtests	Subject Test Length (Minutes)	Approximate Number of Questions
5002 Reading and Language Arts	90	80
5003 Mathematics	65	50
5004 Social Studies	60	60
5005 Science	60	55

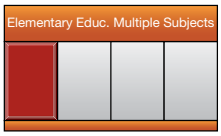
About This Test

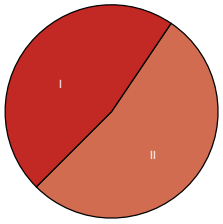
The purpose of the test is to assess whether the entry-level elementary teacher has the content knowledge that is important, necessary, and needed at time of entry to the profession to teach English, mathematics, social studies, and science at the elementary level. The test is designed to support a generalist elementary school license.

This test may contain some questions that will not count toward your score.

Elementary Education:
Reading and Language Arts Subtest

(5002) Time: 90 minutes; Format: Selected response





Reading and Language Arts Categories	Approximate Number of Questions	Approximate Percentage of Subtest
I. Reading	38	47%
II. Writing, Speaking, and Listening	42	53%
Total	**80**	**100%**

About This Subtest

The Elementary Education: Reading and Language Arts Subtest is designed for prospective teachers of children in primary through upper elementary school grades. The 80 selected-response questions focus on the broad knowledge of language arts and related competencies necessary to be licensed as a beginning teacher at the elementary school level. Job analysis statements used to develop the content of this test were developed by a National Advisory Committee (NAC) consisting of expert elementary teachers and educators. The statements were confirmed by a job survey of reading and language arts teachers, including reading specialists familiar with the Common Core State Standards (CCSS) and elementary education educators in higher education. The NAC drafted the test specifications based on the results of the job survey.

The test includes single-selection multiple-choice items with four answer choices and a minimum of four innovative item types, such as multiple selection, order matching, and grids.

This test may contain some questions that will not count toward your score.

Test Specifications

Test specifications describe the knowledge and skills measured by the test. Study topics to help you prepare to answer test questions can be found on page 43.

I. Reading

A. Foundational Skills

1. Understands the role of phonological awareness in literacy development
   a. Explains the importance of phonological awareness as a foundational skill for literacy development
   b. Identifies and provides examples of phonemes, syllables, onsets, and rimes
   c. Identifies and provides examples of blending, segmenting, substituting, and deleting phonemes, syllables, onsets, rimes
2. Understands the role of phonics and word analysis in literacy development
   a. Explains the importance of phonics and word analysis in literacy development
   b. Distinguishes among common letter-sound correspondences and spelling conventions
   c. Distinguishes high-frequency sight words from decodable words appropriate for particular grades
   d. Identifies roots and affixes to decode unfamiliar words
   e. Recognizes various stages of language acquisition (e.g., WIDA taxonomy)
   f. Delineates common phonics and word-recognition approaches for ELLs (pedagogy)

g. Differentiates syllabication patterns (e.g., open, closed, CVe)

3. Understands the role of fluency in literacy development
   a. Defines fluency and related terms (e.g., accuracy, rate, prosody)
   b. Explains the impact of fluency on comprehension

B. Literature and Informational Texts

1. Understands how to use key ideas and details to comprehend literature and informational text
   a. Identifies the key details, moral, and/or theme of a literary text, citing specific textual evidence
   b. Identifies the key details and/or central idea of an informational text, citing specific textual evidence
   c. Makes inferences from a text and supports them with appropriate evidence
   d. Summarizes information from a text
   e. Analyzes the characters, setting, and plot of a literary text
   f. Analyzes the relationships among individuals, events, ideas, and concepts in an informational text
2. Understands how features and structures of text across genres affect comprehension
   a. Identifies structural elements of literature across genres (e.g., casts of characters and stage directions in drama, rhyme and meter in poetry)
   b. Uses text features (e.g., headings, sidebars, hyperlinks) to locate information in a print or digital informational text
   c. Identifies organizational structures of informational text (e.g., cause/effect, problem/solution)
   d. Identifies how structural elements contribute to the development of a literary text as a whole
3. Understands the concept of point of view using evidence from the text
   a. Identifies author's point of view in various genres and supports conclusions with evidence from the text
   b. Compares multiple accounts of the same event or topic to identify similarities or differences in point of view
   c. Identifies how point of view impacts the overall structure of a literary or informational text
4. Understands how to integrate and compare written, visual, and oral information from texts and multimedia sources
   a. Explains how visual and oral elements enhance the meaning and effect of a literary text (e.g., picture book, graphic novel, multimedia presentation of a folktale)
   b. Compares the written version of a literary text with an oral, staged, or filmed version
   c. Compares two or more literary texts that address the same theme
   d. Compares two or more informational texts that address the same topic
   e. Interprets visual and multimedia elements in literary and informational texts
   f. Evaluates key claims in a text and supports them with reasons and evidence from the text
5. Knows the role of text complexity in reading development
   a. Explains the three factors (i.e., quantitative, qualitative, and reader and task) that measure text complexity
   b. Identifies features of text-leveling systems

II. Writing, Speaking, and Listening

A. Writing

1. Understands the characteristics of common types of writing
   a. Distinguishes among common types of writing (e.g., opinion/argument, informative/explanatory, narrative)
   b. Identifies the purpose, key components, and subgenres (e.g., speeches, advertisements, narrative poems) of each common type of writing
   c. Evaluates the effectiveness of writing samples of each type
2. Understands the characteristics of effective writing
   a. Evaluates the appropriateness of a particular piece of writing for a specific task, purpose, and audience
   b. Evaluates the development, organization, or style of a piece of writing
   c. Identifies appropriate revisions to strengthen a piece of writing
   d. Writes clearly and coherently
   e. Identifies the interrelationships among planning, revising, and editing in the process of writing
3. Knows the developmental stages of writing (e.g., picture, scribble)
   a. Identifies the grade-appropriate continuum of student writing
4. Knows the importance of digital tools for producing and publishing writing and for interacting with others
   a. Identifies the characteristics and purposes of a variety of digital tools for producing and publishing writing
   b. Identifies the purposes of a variety of digital tools for interacting with others
5. Knows the research process
   a. Identifies the steps in the research process
   b. Distinguishes between primary and secondary sources and their uses
   c. Distinguishes between reliable and unreliable sources
   d. Distinguishes between paraphrasing and plagiarizing
   e. Knows how to locate credible print and digital sources, locate information within the sources, and cite the sources

B. Language

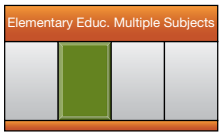
1. Knows the conventions of standard English grammar, usage, mechanics, and spelling when writing, speaking, reading, and listening
   a. Explains the function of different parts of speech
   b. Corrects errors in usage, mechanics, and spelling
   c. Identifies examples of different sentence types (e.g., simple, compound, compound-complex)
   d. Identify how varieties of English (e.g., dialects, registers) used in stories, dramas, or poems support the overall meaning
2. Understands how to determine the meaning of words and phrases
   a. Determines the literal meaning of unknown words and phrases from context, syntax, and/or knowledge of roots and affixes
   b. Identifies types of figurative language
   c. Interprets figurative language
   d. Analyzes the relationship between word choice and tone in a text
3. Understands characteristics of conversational, academic, and domain-specific language
   a. Differentiates among the three tiers of vocabulary
   b. Identifies relevant features of language such as word choice, order, and punctuation

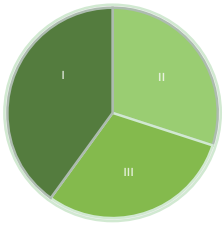
C. Speaking and Listening

1. Knows the characteristics of effective collaboration to promote comprehension
   a. Identifies techniques to communicate for a variety of purposes with diverse partners
   b. Identifies the characteristics of active listening
2. Knows the characteristics of engaging oral presentations
   a. Identifies elements of engaging oral presentations (e.g., volume, articulation, awareness of audience)

Elementary Education:
Mathematics Subtest

(5003) Time: 65 minutes; Format: Selected response and numeric entry; on-screen scientific calculator provided





Mathematics Categories	Approximate Number of Questions	Approximate Percentage of Subtest
I. Numbers and Operations	20	40%
II. Algebraic Thinking	15	30%
III. Geometry and Measurement, Data, Statistics, and Probability	15	30%
Total	**50**	**100%**

About This Subtest

The Elementary Education: Mathematics Subtest is designed for prospective teachers of children in primary through upper elementary school grades. The 50 questions focus on the broad knowledge of mathematics and related competencies necessary to be licensed as a beginning teacher at the elementary school level.

The test is not designed to be aligned with any particular school mathematics curriculum, but it is intended to be consistent with the recommendations of national studies on mathematics education, such as the National Governors Association Center for Best Practices and the Council of Chief State School Officers Common Core State Standards in Mathematics (2010), the National Council of Teachers of Mathematics (NCTM) and the National Council for Accreditation of Teacher Education (NCATE) NCTM NCATE Standards (2012), and the NCTM Principles and Standards for School Mathematics (2000).

The test includes selected-response questions, such as single-selection multiple-choice questions with four choices and multiple selection multiple-choice questions, and numeric entry questions.

This test may contain some questions that will not count toward your score.

On-Screen Scientific Calculator

An on-screen scientific calculator is provided for the computer-delivered test. Please consult the Praxis Calculator Use web page for further information.

You are expected to know how and when to use the scientific calculator since it will be helpful for some questions. You are expected to become familiar with its functionality before taking the test. To practice using the calculator, request access to it. The calculator may be used to perform calculations, such as exponents, roots, and percents.

Using Your Calculator

Take time to access the calculator and practice with it so that you are comfortable using the calculator on the test.

There are only some questions on the test for which a calculator is helpful or necessary. First, decide how you will solve a problem, then determine if you need a calculator. For many questions, there is more than one way to solve the problem. Don't use the calculator if you don't need to; you may waste time.

Sometimes answer choices are rounded, so the answer that you get might not match the answer choices in the question. Since the answer choices are rounded, plugging the choices into the question might not produce an exact answer.

Don't round any intermediate calculations. For example, if the calculator produces a result for the first step of a solution, keep the result in the calculator and use it for the second step. If you round the result from the first step and the answer choices are close to each other, you might choose the incorrect answer.

Read the question carefully so that you know what you are being asked to do. Sometimes a result from the calculator is NOT the final answer. If an answer you get is not one of the choices in the question, it may be that you didn't answer the question being asked. Read the question again. It might also be that you rounded at an intermediate step in solving the problem.

Think about how you are going to solve the question before using the calculator. You may only need the calculator in the final step or two. Don't use it more than necessary.

Check the calculator modes (floating decimal versus scientific notation) to see that these are correct for the question being asked.

Make sure that you know how to perform the basic arithmetic operations and calculations (e.g., exponents, roots).

Test Specifications

Test specifications describe the knowledge and skills measured by the test. Study topics to help you prepare to answer test questions can be found on page 43.

I. Numbers and Operations

A. Understands the place value system

1. Writes numbers using base-10 numerals, number names, and expanded form
2. Composes and decomposes multi-digit numbers
3. Given a digit, identifies the place the digit is in and its value in that place
4. Recognizes that a digit in one place represents ten times what it represents in the place to its right and one-tenth what it represents in the place to its left, and extends this recognition to several places to the right or left
5. Uses whole-number exponents to denote powers of 10
6. Rounds multi-digit numbers to any place value

B. Understands operations and properties of rational numbers

1. Solves multistep mathematical and real-world problems using addition, subtraction, multiplication, and division of rational numbers
   a. Identifies different problem situations for the operations (e.g., adding to, taking from, putting together, taking apart, and comparing for subtraction)
   b. Uses the relationship between addition and subtraction and the relationship between multiplication and division to solve problems (e.g., inverse operations)
   c. Interprets remainders in division problems
2. Understands various strategies and algorithms used to perform operations on rational numbers
3. Recognizes concepts of rational numbers and their operations
   a. Identifies examples where multiplication does not result in a product greater than both factors and division does not result in a quotient smaller than the dividend
   b. Composes and decomposes fractions, including the use of unit fractions.

c. Recognizes that the value of a unit fraction decreases as the value of the denominator increases

d. Recognizes that the same whole must be used when comparing fractions

4. Solves problems using the order of operations, including problems involving whole number exponents
5. Identifies properties of operations (e.g., commutative, associative, distributive) and uses them to solve problems
6. Represents rational numbers and their operations in different ways

a. Uses, interprets, and explains concrete models or drawings of the addition, subtraction, multiplication, and division of rational numbers

b. Represents rational numbers and sums and differences of rational numbers on a number line

c. Illustrates and explains multiplication and division problems using equations, rectangular arrays, and area models

7. Compares, classifies, and orders rational numbers
8. Converts between fractions, decimals, and percents

C. Understands proportional relationships and percents

1. Applies the concepts of ratios and unit rates to describe relationships between two quantities
2. Understands percent as a rate per 100
3. Solves unit-rate problems
4. Uses proportional relationships to solve ratio and percent problems

D. Knows how to use basic concepts of number theory

1. Identifies and uses prime and composite numbers
2. Finds factors and multiples of numbers

E. Knows a variety of strategies to determine the reasonableness of results

1. Recognizes the reasonableness of results within the context of a given problem
2. Uses mental math, estimation, and rounding strategies to solve problems and determine reasonableness of results

II. Algebraic Thinking

A. Knows how to evaluate and manipulate algebraic expressions, equations, and formulas

1. Differentiates between algebraic expressions and equations
2. Adds and subtracts linear algebraic expressions
3. Uses the distributive property to generate equivalent linear algebraic expressions
4. Evaluates simple algebraic expressions (i.e., one variable, binomial) for given values of variables
5. Uses mathematical terms to identify parts of expressions and describe expressions
6. Translates between verbal statements and algebraic expressions or equations (e.g., the phrase "the number of cookies Joe has is equal to twice the number of cookies Sue has" can be represented by the equation $j = 2s$)
7. Uses formulas to determine unknown quantities
8. Differentiates between dependent and independent variables in formulas

B. Understands the meanings of the solutions to linear equations and inequalities

1. Solves multistep one-variable linear equations and inequalities
2. Interprets solutions of multistep one-variable linear equations and inequalities (e.g., graphs the solution on a number line, states constraints on a situation)
3. Uses linear relationships represented by equations, tables, and graphs to solve problems

C. Knows how to recognize and represent patterns (e.g., number, shape)

1. Identifies, extends, describes, or generates number and shape patterns
2. Makes conjectures, predictions, or generalizations based on patterns
3. Identifies relationships between the corresponding terms of two numerical patterns (e.g., find a rule for a function table)

III. Geometry and Measurement, Data, Statistics, and Probability

A. Understands how to classify one-, two-, and three-dimensional figures

1. Uses definitions to identify lines, rays, line segments, parallel lines, and perpendicular lines
2. Classifies angles based on their measure
3. Composes and decomposes two- and three-dimensional shapes
4. Uses attributes to classify or draw polygons and solids

B. Knows how to solve problems involving perimeter, area, surface area, and volume

1. Represents three-dimensional figures with nets
2. Uses nets that are made of rectangles and triangles to determine the surface area of three-dimensional figures
3. Finds the area and perimeter of polygons, including those with fractional side lengths
4. Finds the volume and surface area of right rectangular prisms, including those with fractional edge lengths
5. Determines how changes to dimensions change area and volume

C. Knows the components of the coordinate plane and how to graph ordered pairs on the plane

1. Identifies the *x*-axis, the *y*-axis, the origin, and the four quadrants in the coordinate plane
2. Solves problems by plotting points and drawing polygons in the coordinate plane

D. Knows how to solve problems involving measurement

1. Solves problems involving elapsed time, money, length, volume, and mass
2. Measures and compares lengths of objects using standard tools
3. Knows relative sizes of United States customary units and metric units
4. Converts units within both the United States customary system and the metric system

E. Is familiar with basic statistical concepts

1. Identifies statistical questions
2. Solves problems involving measures of center (mean, median, mode) and range
3. Recognizes which measure of center best describes a set of data
4. Determines how changes in data affect measures of center or range
5. Describes a set of data (e.g., overall patterns, outliers)

F. Knows how to represent and interpret data presented in various forms

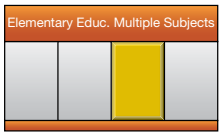
1. Interprets various displays of data (e.g., box plots, histograms, scatterplots)
2. Identifies, constructs, and completes graphs that correctly represent given data (e.g., circle graphs, bar graphs, line graphs, histograms, scatterplots, double bar graphs, double line graphs, box plots, and line plots/dot plots)
3. Chooses appropriate graphs to display data

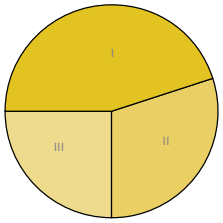
G. Is familiar with how to interpret the probability of events

1. Interprets probabilities relative to likelihood of occurrence

Elementary Education:
Social Studies Subtest

(5004) Time: 60 minutes; Format: Selected response





Social Studies Categories	Approximate Number of Questions	Approximate Percentage of Subtest
I. United States History, Government, and Citizenship	27	45%
II. Geography, Anthropology, and Sociology	18	30%
III. World History and Economics	15	25%
Total	**60**	**100%**

About This Subtest

The Elementary Education: Multiple Subjects: Social Studies subtest is designed to assess whether an examinee has the broad knowledge and competencies necessary to be licensed as a beginning teacher at the elementary school level. The 60 selected-response questions are based on the material typically covered in a bachelor's degree program in elementary education.

This subtest may contain some questions that will not count toward your score.

Test Specifications

Test specifications describe the knowledge and skills measured by the test. Study topics to help you prepare to answer test questions can be found on page 43.

I. United States History, Government, and Citizenship

A. Knows European exploration and colonization in United States history and growth and expansion of the United States

B. Knows about the American Revolution and the founding of the nation in United States history

C. Knows the major events and developments in United States history from founding to present (e.g., westward expansion, industrialization, Great Depression)

D. Knows about twentieth-century developments and transformations in the United States (e.g., assembly line, space age)

E. Understands connections between causes and effects of events

F. Understands the nature, purpose, and forms (e.g., federal, state, local) of government

G. Knows key documents and speeches in the history of the United States (e.g., United States Constitution, Declaration of Independence, Gettysburg Address)

H. Knows the rights and responsibilities of citizenship in a democracy

II. Geography, Anthropology, and Sociology

A. Knows world and regional geography (e.g., spatial terms, places, regions)

B. Understands the interaction of physical and human systems (e.g., how humans change the environment, how the environment changes humans, importance of natural and human resources)

C. Knows the uses of geography (e.g., apply geography to interpret past, to interpret present, to plan for future)

D. Knows how people of different cultural backgrounds interact with their environment, family, neighborhoods, and communities

III. World History and Economics

A. Knows the major contributions of classical civilizations (e.g., Egypt, Greece, Rome)

B. Understands twentieth-century developments and transformations in world history

C. Understands the role of cross-cultural comparisons in world history instruction

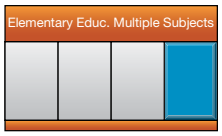
D. Knows key terms and basic concepts of economics (e.g., supply and demand, scarcity and choice, money and resources)

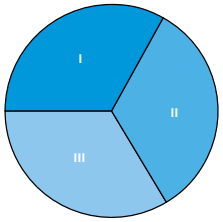
E. Understands how economics affects population, resources, and technology

F. Understands the government's role in economics and the impact of economics on government

Elementary Education:
Science Subtest

(5005) Time: 60 minutes; Format: Selected response; on-screen scientific calculator provided





Science Categories	Approximate Number of Questions	Approximate Percentage of Subtest
I. Earth Science	17–18	33%
II. Life Science	18–19	33%
III. Physical Science	18–19	33%
Total	**55**	**100%**

About This Subtest

The Elementary Education: Multiple Subjects: Science subtest is designed to assess whether an examinee has the broad knowledge and competencies necessary to be licensed as a beginning teacher at the elementary school level. The 55 selected-response questions are based on the material typically covered in a bachelor's degree program in elementary education. The development of the test questions and the construction of the test reflect the National Science Education Standards (NSES) and the National Science Teacher Association (NSTA) standards.

This subtest may contain some questions that will not count toward your score.

On-Screen Scientific Calculator

An on-screen scientific calculator is provided for the computer-delivered test. Please consult the Praxis Calculator Use web page for further information.

You are expected to become familiar with the functionality of the calculator before taking the test. To practice using the calculator, request access to it.

Using Your Calculator

Take time to access the calculator and practice with it so that you are comfortable using the calculator on the test.

For many questions, there is more than one way to solve the problem. Don't use the calculator if you don't need to; you may waste time.

Test Specifications

Test specifications describe the knowledge and skills measured by the test. Study topics to help you prepare to answer test questions can be found on page 43.

I. Earth Science

A. Understands the structure of the Earth system (e.g., structure and properties of the solid Earth, the hydrosphere, the atmosphere)

B. Understands processes of the Earth system (e.g., processes of the solid Earth, the hydrosphere, the atmosphere)

C. Understands Earth history (e.g., origin of Earth, paleontology, the rock record)

D. Understands Earth and the universe (e.g., stars and galaxies; the solar system and planets; Earth, Sun, and Moon relationships)

E. Understands Earth patterns, cycles, and change

F. Understands science as a human endeavor, a process, and a career

G. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)

H. Understands how to use resource and research material in science

I. Understands the unifying processes of science (e.g., systems, order, organization)

II. Life Science

A. Understands the structure and function of living systems (e.g., living characteristics and cells, tissues and organs, life processes)

B. Understands reproduction and heredity (e.g., growth and development, patterns of inheritance of traits, molecular basis of heredity)

C. Understands change over time in living things (e.g., life cycles, mutations, adaptation and natural selection)

D. Understands regulation and behavior (e.g., life cycles, responses to external stimuli, controlling the internal environment)

E. Understands unity and diversity of life, adaptation, and classification

F. Understands the interdependence of organisms (e.g., ecosystems, populations, communities)

G. Knows about personal health (e.g., nutrition, communicable diseases, substance abuse)

H. Understands science as a human endeavor, a process, and a career

I. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)

J. Understands how to use resource and research material in science

K. Understands the unifying processes of science (e.g., systems, order, organization)

III. Physical Science

A. Understands the physical and chemical properties and structure of matter (e.g., changes of states, mixtures and solutions, atoms and elements)

B. Understands forces and motions (e.g., types of motion, laws of motion, forces and equilibrium)

C. Understands energy (e.g., forms of energy, transfer and conservation of energy, simple machines)

D. Understands interactions of energy and matter (e.g., electricity, magnetism, sound)

E. Understands science as a human endeavor, a process, and a career

F. Understands science as inquiry (e.g., questioning, gathering data, drawing reasonable conclusions)

G. Understands how to use resource and research material in science

H. Understands the unifying processes of science (e.g., systems, order, organization)

2. Familiarize Yourself with Test Questions

Become comfortable with the types of questions you'll find on the Praxis *tests*

The *Praxis* assessments include a variety of question types: constructed response (for which you write a response of your own); selected response, for which you select one or more answers from a list of choices or make another kind of selection (e.g., by clicking on a sentence in a text or by clicking on part of a graphic); and numeric entry, for which you enter a numeric value in an answer field. You may be familiar with these question formats from taking other standardized tests. If not, familiarize yourself with them so you don't spend time during the test figuring out how to answer them.

Understanding Computer-Delivered Questions

Questions on computer-delivered tests are interactive in the sense that you answer by selecting an option or entering text on the screen. If you see a format you are not familiar with, read the directions carefully. The directions always give clear instructions on how you are expected to respond.

For most questions, you respond by clicking an oval to select a single answer from a list of answer choices.

However, interactive question types may also ask you to respond by:

- **Clicking more than one oval** to select answers from a list of choices.
- **Typing in an entry box.** When the answer is a number, you may be asked to enter a numerical answer. Some questions may have more than one place to enter a response.
- **Clicking check boxes.** You may be asked to click check boxes instead of an oval when more than one choice within a set of answers can be selected.
- **Clicking parts of a graphic.** In some questions, you will select your answers by clicking on a location (or locations) on a graphic such as a map or chart, as opposed to choosing your answer from a list.
- **Clicking on sentences.** In questions with reading passages, you may be asked to choose your answers by clicking on a sentence (or sentences) within the reading passage.
- **Dragging and dropping answer choices into targets on the screen.** You may be asked to select answers from a list of choices and drag your answers to the appropriate location in a table, paragraph of text or graphic.
- **Selecting answer choices from a drop-down menu.** You may be asked to choose answers by selecting choices from a drop-down menu (e.g., to complete a sentence).

Remember that with every question you will get clear instructions.

Perhaps the best way to understand computer-delivered questions is to view the Computer-delivered Testing Demonstration on the Praxis web site to learn how a computer-delivered test works and see examples of some types of questions you may encounter.

Understanding Selected-Response Questions

Many selected-response questions begin with the phrase "which of the following." Take a look at this example:

Which of the following is a flavor made from beans?

(A) Strawberry

(B) Cherry

(C) Vanilla

(D) Mint

How would you answer this question?

All of the answer choices are flavors. Your job is to decide which of the flavors is the one made from beans.

Try following these steps to select the correct answer.

1) **Limit your answer to the choices given.** You may know that chocolate and coffee are also flavors made from beans, but they are not listed. Rather than thinking of other possible answers, focus only on the choices given ("which of the following").

2) **Eliminate incorrect answers.** You may know that strawberry and cherry flavors are made from fruit and that mint flavor is made from a plant. That leaves vanilla as the only possible answer.

3) **Verify your answer.** You can substitute "vanilla" for the phrase "which of the following" and turn the question into this statement: "Vanilla is a flavor made from beans." This will help you be sure that your answer is correct. If you're still uncertain, try substituting the other choices to see if they make sense. You may want to use this technique as you answer selected-response questions on the practice tests.

Try a more challenging example

The vanilla bean question is pretty straightforward, but you'll find that more challenging questions have a similar structure. For example:

Entries in outlines are generally arranged according to which of the following relationships of ideas?

(A) Literal and inferential

(B) Concrete and abstract

(C) Linear and recursive

(D) Main and subordinate

You'll notice that this example also contains the phrase "which of the following." This phrase helps you determine that your answer will be a "relationship of ideas" from the choices provided. You are supposed to find the choice that describes how entries, or ideas, in outlines are related.

Sometimes it helps to put the question in your own words. Here, you could paraphrase the question in this way: "How are outlines usually organized?" Since the ideas in outlines usually appear as main ideas and subordinate ideas, the answer is (D).

QUICK TIP: Don't be intimidated by words you may not understand. It might be easy to be thrown by words like "recursive" or "inferential." Read carefully to understand the question and look for an answer that fits. An outline is something you are probably familiar with and expect to teach to your students. So slow down, and use what you know.

Watch out for selected-response questions containing "NOT," "LEAST," and "EXCEPT"

This type of question asks you to select the choice that does not fit. You must be very careful because it is easy to forget that you are selecting the negative. This question type is used in situations in which there are several good solutions or ways to approach something, but also a clearly wrong way.

How to approach questions about graphs, tables, or reading passages

When answering questions about graphs, tables, or reading passages, provide only the information that the questions ask for. In the case of a map or graph, you might want to read the questions first, and then look at the map or graph. In the case of a long reading passage, you might want to go ahead and read the passage first, noting places you think are important, and then answer the questions. Again, the important thing is to be sure you answer the questions as they refer to the material presented. So read the questions carefully.

How to approach unfamiliar formats

New question formats are developed from time to time to find new ways of assessing knowledge. Tests may include audio and video components, such as a movie clip or animation, instead of a map or reading passage. Other tests may allow you to zoom in on details in a graphic or picture.

Tests may also include interactive questions. These questions take advantage of technology to assess knowledge and skills in ways that standard selected-response questions cannot. If you see a format you are not familiar with, **read the directions carefully**. The directions always give clear instructions on how you are expected to respond.

QUICK TIP: Don't make the questions more difficult than they are. Don't read for hidden meanings or tricks. There are no trick questions on *Praxis* tests. They are intended to be serious, straightforward tests of your knowledge.

Understanding Constructed-Response Questions

Constructed-response questions require you to demonstrate your knowledge in a subject area by creating your own response to particular topics. Essays and short-answer questions are types of constructed-response questions.

For example, an essay question might present you with a topic and ask you to discuss the extent to which you agree or disagree with the opinion stated. You must support your position with specific reasons and examples from your own experience, observations, or reading.

Take a look at a few sample essay topics:

- "Celebrities have a tremendous influence on the young, and for that reason, they have a responsibility to act as role models."
- "We are constantly bombarded by advertisements—on television and radio, in newspapers and magazines, on highway signs, and the sides of buses. They have become too pervasive. It's time to put limits on advertising."
- "Advances in computer technology have made the classroom unnecessary, since students and teachers are able to communicate with one another from computer terminals at home or at work."

Keep these things in mind when you respond to a constructed-response question

1) **Answer the question accurately.** Analyze what each part of the question is asking you to do. If the question asks you to describe or discuss, you should provide more than just a list.

2) **Answer the question completely.** If a question asks you to do three distinct things in your response, you should cover all three things for the best score. Otherwise, no matter how well you write, you will not be awarded full credit.

3) **Answer the question that is asked.** Do not change the question or challenge the basis of the question. You will receive no credit or a low score if you answer another question or if you state, for example, that there is no possible answer.

4) **Give a thorough and detailed response.** You must demonstrate that you have a thorough understanding of the subject matter. However, your response should be straightforward and not filled with unnecessary information.

5) **Reread your response.** Check that you have written what you thought you wrote. Be sure not to leave sentences unfinished or omit clarifying information.

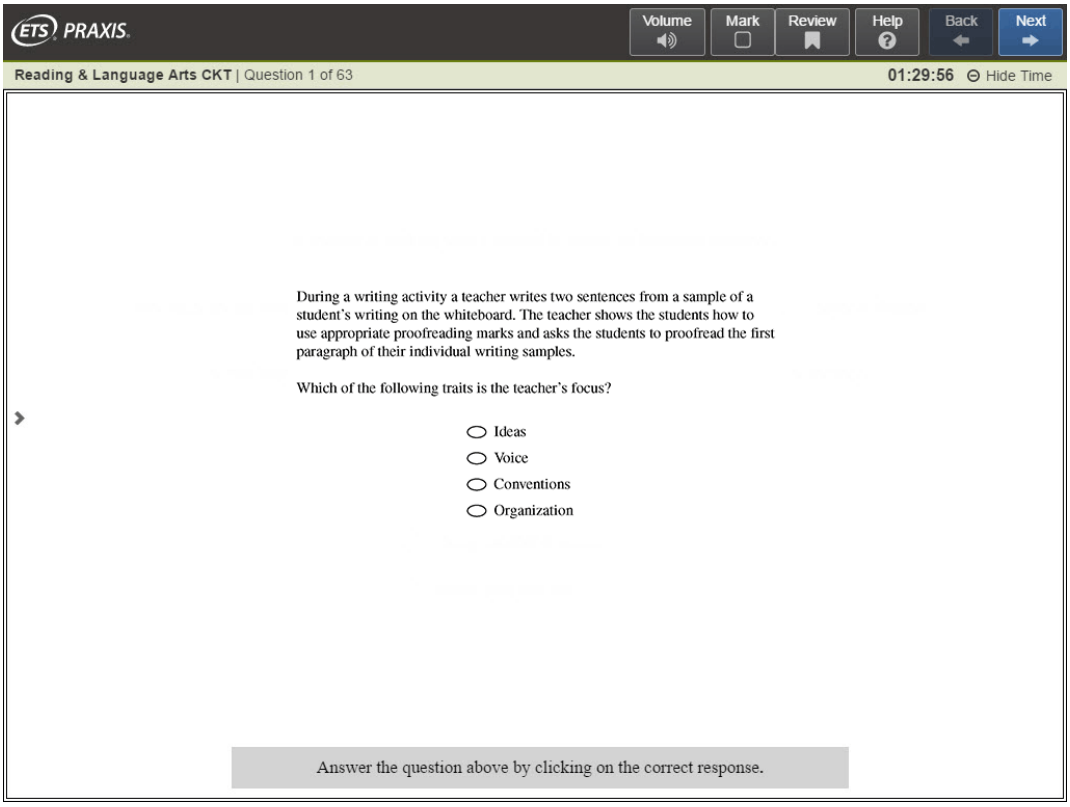
QUICK TIP: You may find that it helps to take notes on scratch paper so that you don't miss any details. Then you'll be sure to have all the information you need to answer the question.

3. Practice with Sample Test Questions

Answer practice questions and find explanations for correct answers

Computer-Delivered Test

This test is available via computer delivery. To illustrate what the computer-delivered test looks like, the following sample question shows an actual screen used in a computer-delivered test. For the purposes of this guide, sample questions are provided as they would appear in a paper-delivered test.



Reading and Language Arts Sample Test Questions

The sample questions that follow illustrate the kinds of questions on the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.

Directions: Each of the questions or incomplete statements below is followed by suggested answers or completions. Select the one that is best in each case.

1. How many phonemes are in the word "ball"?
   (A) 1
   (B) 2
   (C) 3
   (D) 4

2. An English-language learner who is capable of matching pictures with words and phrases from a story but cannot yet use those pictures to recreate the sequence of a story is functioning at which of the following language proficiency levels?
   (A) Entering
   (B) Developing
   (C) Expanding
   (D) Bridging

3. Which TWO of the following syllable types are present in the word "remarkable"?
   (A) Open
   (B) Closed
   (C) Vowel team
   (D) R-controlled

4. Which of the following is the most appropriate strategy for using easy books to increase fluency in a nonfluent student?
   (A) Providing opportunities for the nonfluent student to read self-selected easy books to a younger student
   (B) Asking a younger, more fluent reader to read an easy book aloud to the nonfluent student
   (C) Assigning an easy-to-read nonfiction book to the nonfluent student for independent reading
   (D) Encouraging other students to interrupt and correct when the nonfluent student is reading easy books aloud

5. Which of the following is most commonly used in digital text to give a reader access to additional information about a topic?
   (A) A citation
   (B) A hyperlink
   (C) An index
   (D) A glossary

6. Mike loves playing football. He is the quarterback for his team, and he knows when to call the right plays. He hates having to miss a practice, and his teammates are frustrated when he's not there. They always say, "Where is Mike? We are lost without him." The team usually has a good practice even if he is not there, but they miss out on practicing key plays.

   Which of the following best explains how the reader knows that the passage is from a third-person narrative?
   (A) The narrator is only an observer of the action in the passage.
   (B) The narrator is participating in the dialogue in the passage.
   (C) The narrator discloses only his or her thoughts and feelings in the passage.
   (D) The narrator uses the present tense to discuss the conflict in the passage.

7. Which of the following statements best describes how graphic novels promote inferencing?

   (A) Readers rely on characters' dialogue to tell the story.

   (B) Readers are given graphic organizers to facilitate understanding.

   (C) Readers can summarize the stories' beginning, middle, and end.

   (D) Readers use the pictures to interpret the text.

8. Which of the following is true of qualitative measures of text complexity?

   (A) They describe statistical measurements of a text.

   (B) They rely on computer algorithms to describe text.

   (C) They involve attributes that can be measured only by human readers.

   (D) They account for the different motivational levels readers bring to texts.

9. Which TWO of the following can be classified as expository writing?

   (A) A short story

   (B) A technical speech

   (C) A personal diary

   (D) A scientific report

   (E) An editorial commentary

1. The teacher from Nebraska displayed Native American artifacts to her class.
2. The teacher displayed Native American artifacts from Nebraska to her class.

10. The meaning of sentence 1 differs from that of sentence 2 in that the

    (A) sentences do not have the same simple predicate

    (B) adjective phrase "from Nebraska" modifies different nouns

    (C) subject of sentence 1 is "teacher," while the subject of sentence 2 is "artifacts"

    (D) first sentence ends in a prepositional phrase, while the second sentence does not

11. A student whose writing shows an awareness of spacing (though spaces between words are not even), makes sporadic use of proper capitalization, and contains some invented spelling is most likely functioning at which of the following stages of developmental writing?

    (A) Emergent

    (B) Transitional

    (C) Conventional

    (D) Proficient

12. Which of the following technology-based tools best facilitates both personal writing and written discussion about the writing?

    (A) Blogging programs

    (B) Interactive gaming

    (C) Slide-share programs

    (D) Interactive whiteboards

13. Which of the following is considered a reliable source for research?

    (A) A wiki encyclopedia entry

    (B) An online discussion forum

    (C) A famous scientist's personal blog

    (D) An educational institution's Web site

Questions 14-15 refer to the following poem:

Leave me, O love which reaches but to dust;
And thou, my mind, aspire to higher things;
Grow rich in that which never taketh rust,
Whatever fades but fading pleasure brings.

14. In line 1 "dust" serves as a metaphor for

    (A) ignorance
    (B) death
    (C) loneliness
    (D) confusion

15. The lines above comment on the speaker's desire to

    (A) seek out immediate pleasures
    (B) enrich himself
    (C) reject that which is transitory
    (D) revive the past

16. Manuel is the tallest of the two boys.

    Which of the following statements about the sentence is true?

    (A) The sentence is written correctly.
    (B) The subject and verb do not agree.
    (C) The word "boys" should be possessive.
    (D) "Tallest" modifies Manuel incorrectly.

17.

    Original Sentence

    The sailor viewed the sky to determine how the trip would go.

    Revision

    The mariner surveyed the clouds to predict the trip's success.

    The revised sentence reflects an improvement in of which of the following aspects of writing?

    (A) Conventions
    (B) Organization
    (C) Sentence fluency
    (D) Word choice

18. Two hamsters sat in the cage side by side; a furtive, timid one and a glossy, bold one watched each other warily.

    The sentence above is an example of a

    (A) simple sentence
    (B) compound sentence
    (C) complex sentence
    (D) compound-complex sentence

19. Which of the following is most typically included in the conclusion of an oral presentation?

    (A) An expansion of the thesis
    (B) A summarization of the main points
    (C) An attempt to build rapport with the audience
    (D) A move to gain the audience's attention

20. In a student discussion about whether the school cafeteria should stop selling junk food, which of the following statements best demonstrates active listening?

    (A) "In my opinion, it would be a mistake to remove junk food from the cafeteria because no one would eat there anymore."
    (B) "Raul thinks that our health should come before eating what we love, but Lacey argues that the schools should not take away our right to choose."
    (C) "How many of you would actually buy lunch if the cafeteria stopped selling junk food?"
    (D) "What if we write a formal complaint to the superintendent to voice our opinion on the food in the cafeteria?"

Reading and Language Arts Answers

1. The correct answer is (C). The word structure is /b/ /a/ /l/ . "ll" is a blend and, therefore, makes only one sound. (A) is incorrect because there is one syllable in the word "ball," not one phoneme. (B) is incorrect because "ba" makes two sounds */b/ /a/* , not one. (D) is incorrect because /ll/ makes one sound, not two.

2. The correct answer is (A). English-language learners at the (A) "entering" stage of language proficiency can process and produce the English needed to successfully engage in the reading activities mentioned but cannot yet identify main ideas or sequence pictures from oral stories. These skills come later, appearing first while the student is in the (B) "developing" level. Once they have reached the (C) "expanding" and (D) "bridging" proficiency levels, English-language learners possess even more advanced skills, such as finding details that support main ideas.

3. The correct answers are (A) and (D). (A) is correct because the syllable "re" is an open syllable. An open syllable ends in a long vowel sound produced by a single vowel. (D) is correct because the syllable "mar" is an r-controlled syllable. The "r" controls the vowel sound, causing the "a" to have a unique sound. Neither (B) nor (C) is present in the word "remarkable"; in (B), a closed syllable ends in a consonant, and in (C), a vowel team consists of two or more vowels together that make a unique sound.

4. The correct answer is (A). Fluency refers to reading smoothly, quickly, and with expression. (A) offers the nonfluent student opportunities to engage in meaningful literary experiences while gaining courage and self-esteem, and while also experiencing ownership. (B) and (D) are incorrect because a nonfluent student might feel intimidated and discouraged by either hearing a younger, more fluent reader or by having his/her classmates interrupt and correct him/her. While assigning an easy-to-read book (C) may help give the student practice, it takes away from the student's autonomy and may detract from the enjoyment.

5. The correct answer is (B). The reader can follow the link provided to easily seek more information. In (A), a citation, the reader would have to spend time looking up the correct source. (C) is incorrect because the index will only provide the reader information about the text itself and not provide additional information. (D), a glossary, will provide definitions for unknown words but is limited in its function.

6. The correct answer is (A). The narrator of the passage is an observer, not a participant, in the action and dialogue of the passage. This is characteristic of a third-person narrative. (B) and (C) are incorrect because the narrator neither participates in the dialogue nor discloses his/her thoughts and feelings. In (D), while the narrator uses present tense, this is not an indicator of point of view.

7. The correct answer is (D). The images in a graphic novel provide information not included within the text, such as character attributes. In a graphic novel, the combination of text and images is required to produce the complete story. (A) is incorrect because readers do not have to rely only on dialogue to understand the story. (B) is incorrect because the "graphic" in graphic novels refers to images, not to graphic organizers. (C) is incorrect because the ease of summarization is not unique to graphic novels.

8. The correct answer is (C). The qualitative attributes are subjective and can only be evaluated by a human reader (i.e., "predictability of text"). (A) and (B) are incorrect because they refer to quantitative attributes of text complexity, while (D) focuses on matching the reader to text and task.

9. The correct answers are (B) and (D). A technical speech and a research report both require that information be collected and synthesized. A short story (A) involves narrative writing, while a personal diary (C) and an editorial commentary (E) involve the writer's thoughts and opinions but require no facts or information.

10. The correct answer is (B). The meaning of the two sentences differs because in sentence 1 the teacher is from Nebraska, while in sentence 2 the Native American artifacts are from Nebraska. Thus, the placement of the adjective phrase "from Nebraska" after two different nouns changes the meaning of the sentences. (A) is incorrect because the simple predicate, "displayed," remains the same in both sentences. (C) is incorrect because the teacher is the subject of both sentences, and in (D), both sentences do end in the same prepositional phrase.

11. The correct answer is (B). Students at the transitional level are beginning to have a more formal sense of print conventions, letters, words, and sentences. The characteristics in the list describe a student performing at the transitional level. Students at the (A) emergent level may use letters or letter-like symbols but are not yet familiar with conventions of print or spelling. At the (C) conventional level, students are able to select types of writing to suit their purpose and have more control of structure, punctuation, and spelling, and (D) proficient writers have developed a personal style and a large vocabulary, and their writing is also cohesive and coherent.

12. The correct answer is (A). Blogging programs facilitate personal writing and typically have open forums that encourage readers to respond to the writing with written discussion. Interactive gaming (B) encourages interaction and perhaps oral discussion but does not promote writing. Slide-sharing (C) may result in written commentary, but the response is to an image, not a written piece. Interactive whiteboards (D) are a tool to help students visualize and participate in certain aspects of writing, but they do not facilitate personal writing.

13. The correct answer is (D). An educational institution's Web site is likely to be unbiased and contain accurate information. Wiki encyclopedia entries (A) are open to public edits and therefore are unreliable as the information cannot be verified. An online discussion forum (B) would consist of participants' opinions, and a famous scientist's personal blog (C), while it may contain scientific facts, may also contain personal opinions or biases.

14. The correct answer is (B). A metaphor is a type of figurative language in which one image or idea is connected with another. In literature, the word "dust" is often associated with death because life-forms decay into soil after death. The speaker indicates that love is something that will "taketh rust," and therefore, it is a comparison about age, not of (A) ignorance or (D) confusion. The speaker is not concerned about (C) loneliness, but rather about finding pleasure in what will remain constant.

15. The correct answer is (C). The word "transitory" refers to change, and the speaker mentions a desire to reject things that turn to dust, acquire dust, and start to fade. These are all types of change. (A) and (B) are incorrect because although the speaker may seek pleasure and although that pleasure may enrich him/her, he/she is more interested in things that "never taketh rust," or change. (D) is incorrect because these lines suggest the speaker is looking toward the future, rather than dwelling in the past.

16. The correct answer is (D). "Tallest" is in the superlative degree, which is used when comparing more than two things. "Taller" is the correct word to use, since it is in the comparative degree, and therefore, the sentence is not written correctly (A). Both Manuel and "is" are singular, therefore (B) is incorrect, and (C) is incorrect because "boys" is written correctly as a plural rather than a possessive.

17. The correct answer is (D). Sentence quality is enhanced by choosing words that provide specificity and clarity of meaning. The sentences both utilize the same (A) conventions and (B) organization, and while the revision sounds better, the original sentence also has (C) sentence fluency.

18. The correct answer is (B). This sentence has two independent clauses joined by a semicolon, including one independent clause with a compound subject. Without dependent clauses, the sentence cannot be characterized as either (C) complex or (D) compound-complex. A simple sentence (A) contains only one independent clause.

19. The correct answer is (B). The conclusion of an oral presentation usually contains a clear summary of the main points to reinforce the presentation's goal. An expansion of the thesis (A) should occur during the body of the presentation, and both (C) and (D) should occur at the beginning of the presentation.

20. The correct answer is (B). The statement demonstrates paraphrasing of others' statements. An active listener spends more time listening than talking, which paraphrasing demonstrates. Statement (A) neither acknowledges previous opinions nor asks for any further ones. While statement (C) asks for opinions, it does not indicate that the speaker will actively listen to the replies. Though statement (D) is worded as a question, it is a statement of an idea that may or may not have been developed through active listening.

Mathematics Sample Test Questions

The sample questions that follow illustrate the kinds of questions on the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case.

1. Which of the following is an example of the commutative property of addition?

   (A) $5 \times 3 = 3 \times 5$

   (B) $(1+7)+4 = 1+(7+4)$

   (C) $6 \times (4+2) = (6 \times 4)+(6 \times 2)$

   (D) $8+9 = 9+8$

x	y
4	−20
7	−38
12	−68
15	−86

2. Which of the following equations gives the rule for the table shown ?

   (A) $y = -8x + 4$

   (B) $y = -7x + 4$

   (C) $y = -6x + 4$

   (D) $y = -5x + 4$

3. A fourth-grade class started working on math worksheets at 1:30 P.M. and stopped working at 3:10 P.M. How long did the class work on the math worksheets?

   (A) 40 minutes

   (B) 80 minutes

   (C) 100 minutes

   (D) 120 minutes

4. A student plans to simultaneously toss a fair number cube, with faces numbered 1 through 6, and a fair coin. What is the probability that the cube will land with the face numbered 4 up and the coin will land heads up?

   (A) $\frac{1}{12}$

   (B) $\frac{1}{8}$

   (C) $\frac{1}{6}$

   (D) $\frac{2}{3}$

5. The only prime factors of a certain number are 2, 3, and 7. Which of the following could be the number?

   (A) 18×28

   (B) 20×21

   (C) 22×63

   (D) 24×35

$$5 \leq 7 - p$$

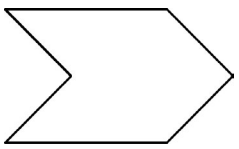
6. Which of the following is equivalent to the inequality above?

   (A) $p \leq 2$

   (B) $p \geq 2$

   (C) $p \leq -2$

   (D) $p \geq -2$



7. Which of the following best describes the polygon above?

   (A) A regular hexagon

   (B) An arrow

   (C) A convex hexagon

   (D) A concave hexagon

8. After a lesson on rounding and estimation, a teacher tells students that 157 rulers will be distributed to 4 teachers. The teacher asks the students to estimate the number of rulers each teacher will receive if the rulers are shared as equally as possible among the teachers. Which of the following students produces the best estimate for the number of rulers each teacher will receive?

   (A) Student A: about 30

   (B) Student B: about 35

   (C) Student C: about 40

   (D) Student D: about 45

9. Jack had three babysitting jobs this week. He worked the same number of hours *H* on each job. He was paid at a rate of $12 for every hour at his first job, $4 for every half hour at his second job, and $5 for every 20 minutes at his third job. Which of the following expressions could be used to find the total amount, in dollars, Jack earned?

   (A) $12 \times H + 4 \times H + 5 \times H$

   (B) $12 \times H + 8 \times H + 15 \times H$

   (C) $12 \times H + 8 \times H + 20 \times H$

   (D) $12 \times H + 4 \times \frac{1}{2} \times H + 5 \times \frac{1}{3} \times H$

10. To make fruit punch, Edie mixes two kinds of juices in the following ratio: 1 cup of blueberry to 3 cups of red raspberry. How many cups of red raspberry will Edie need to make 48 cups of fruit punch?

    (A) 12

    (B) 16

    (C) 24

    (D) 36

11. Riding on a school bus are 20 students in ninth grade, 10 students in tenth grade, 9 students in eleventh grade, and 7 students in twelfth grade. Approximately what percent of the students on the bus are in ninth grade?

    (A) 23%

    (B) 43%

    (C) 46%

    (D) 76%

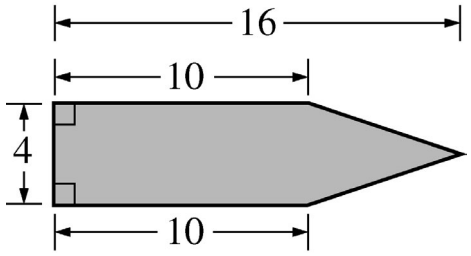
12. In the expression $4x^2 + 7$, what is the degree of $4x^2$?

    (A) 0

    (B) 1

    (C) 2

    (D) 4



13. What is the area, in square units, of the figure above?

    (A) 32

    (B) 52

    (C) 64

    (D) 104

Mathematics Answers

1. The correct answer is (D). The question requires an understanding of the properties of operations. A binary operation $(S,\triangle)$ is commutative if for any pair (a,b), where a and b are in S, $a \triangle b = b \triangle a$. In this case S is the set of real numbers and $\triangle$ is $+$.

2. The correct answer is (C). The question requires an understanding of how to identify relationships between the corresponding terms of two numerical patterns. The slope of the equation can be found by calculating the rate of change for any two pairs (x,y), e.g., $\frac{-38-(-20)}{7-4} = -6$.

3. The correct answer is (C). The question requires an understanding of how to solve problems involving the measurement of elapsed time. Between 1:30 P.M. and 3:10 P.M. there are 1 hour and 40 minutes, or 100 minutes.

4. The correct answer is (A). The question requires an understanding of how to interpret probabilities relative to likelihood of occurrence. The coin has 2 possible outcomes: heads or tails. The probability of the coin landing heads up is 1 out of 2, or $\frac{1}{2}$. The cube has 6 possible outcomes: 1, 2, 3, 4, 5, or 6. The probability of the face numbered 4 landing up is 1 out of 6, or $\frac{1}{6}$. To find the combined probability, multiply the two independent probabilities together, i.e., $12 \times 16 = \frac{1}{12}$.

5. The correct answer is (A). The question requires an understanding of how to find factors and multiples of numbers. The prime factorization of 18 is 2×32 and the prime factorization of 28 is 22×7. So the prime factorization of 18×28 is $23 \times 32 \times 7$.

6. The correct answer is (A). The question requires an understanding of how to solve multistep one-variable linear inequalities. The addition property of inequalities states that for any real numbers a, b, and c, if $a \le b$, then $a + c \le b + c$ and if $a \ge b$, then $a + c \ge b + c$. Adding -5 to both sides of the inequality yields the equivalent inequality $0 \le 2 - p$. Adding p to both sides of the new inequality yields the equivalent inequality $p \le 2$.

7. The correct answer is (D). The question requires an understanding of how to use attributes to classify or draw polygons. A polygon with six sides is called a hexagon. A concave polygon is a simple polygon, i.e., one whose sides do not intersect, with at least one interior angle greater than 180 degrees. A concave polygon has at least one diagonal with points outside the polygon.

8. The correct answer is (C). The question requires an understanding of how to use rounding strategies to solve problems and determine the reasonableness of results. To estimate the number of rulers each teacher will receive, one needs to estimate $157 \div 4$. The best estimate is produced by rounding 157 to the closest number that is easily divided by 4 in a mental calculation. Rounding 157 up to 160 yields the easy mental calculation $160 \div 4$, producing an estimate of 40.

9. The correct answer is (B). The question requires an understanding of how to translate between verbal statements and algebraic expressions or equations. Jack made 12 dollars per hour at his first job. He made 4 dollars per half hour, or $4 \times 2 = 8$ dollars per hour, at his second job. Finally, Jack made 5 dollars for each 20 minutes, or $5 \times 3 = 15$ dollars per hour, at his third job. If he worked H hours at each job, he made $12 \times H + 8 \times H + 15 \times H$.

10. The correct answer is (D). The question requires an understanding of how to use proportional relationships to solve ratio problems. With 1 cup of blueberry juice and 3 cups of red raspberry juice, Edie can make 4 cups of punch. Since $48 \div 4 = 12$, to make 48 cups of punch, Edie will need 12 cups of blueberry juice and 36 cups of red raspberry juice.

11. The correct answer is (B). The question requires an understanding of percent as a rate per 100. Percent refers to how many out of one hundred or, in decimal form, how many hundredths. To find a percent, divide the group (20) by the total (46) and round the decimal to the hundredths place (0.43). This is 43 hundredths or $\frac{43}{100}$ or 43%.

12. The correct answer is (C). The question requires an understanding of how to use mathematical terms to identify parts of expressions and describe expressions. The degree of a monomial is the sum of the exponents of the variables that appear in it. In $4x^2$ there is only one variable, x, and its exponent is 2.

13. The correct answer is (B). The question requires an understanding of how to find the area of polygons, including those with fractional side lengths. The figure is composed of a rectangle and a triangle. The rectangle has length 10 and width 4, so its area is 40. The triangle can be thought of as having a base of 4 and a height of 6. Its area is $\frac{1}{2} \times 4 \times 6$, or 12. The combined area is, therefore, $40 + 12$, or 52.

Social Studies Sample Test Questions

The sample questions that follow illustrate the kinds of questions on the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case.

1. Which of the following mountain ranges crosses through the state of Washington?
   (A) The Cascades
   (B) The Himalayas
   (C) The Appalachians
   (D) The Alps

2. Which of the following types of maps shows the boundaries of countries, states or municipalities?
   (A) Thematic
   (B) Topographic
   (C) Political
   (D) Meteorological

3. Which of the following is believed to have occurred during the last Ice Age as a result of a land bridge created between what are now Siberia and Alaska?
   (A) The invention of new technologies for sheltering humans against sustained cold
   (B) The blockage of important trade routes
   (C) The establishment of human settlements in North America
   (D) Widespread famine

4. Since the end of the United States Civil War in 1865, all of the following have been successful efforts of groups seeking civil rights for African Americans EXCEPT
   (A) passage of affirmative action legislation
   (B) desegregation of public educational facilities
   (C) creation of a major national political party
   (D) establishing antilynching campaigns

5. The legal doctrine known as "separate but equal" was overturned by the Supreme Court's ruling in which of the following cases?
   (A) *Plessy* v. *Ferguson*
   (B) *Brown* v. *Board of Education of Topeka*
   (C) *Miranda* v. *Arizona*
   (D) *Mapp* v. *Ohio*

6. In the United States, the division of power between the national and state governments demonstrates the principle of
   (A) checks and balances
   (B) federalism
   (C) separation of powers
   (D) the rule of law

7. What percent of the seats in the United States House of Representatives are up for election every two years?
   (A) 33%
   (B) 50%
   (C) 66%
   (D) 100%

8. Historically, India's society has been organized into hierarchical groups known as
   (A) tribes
   (B) castes
   (C) clans
   (D) denominations

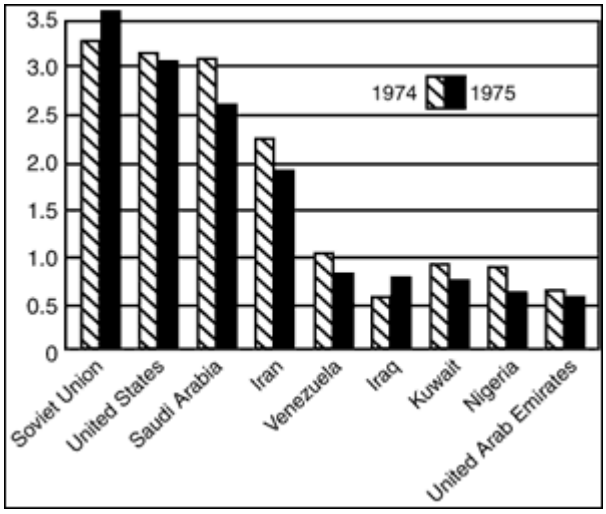
9. Which of the following major world religions is monotheistic?

   (A) Taoism

   (B) Buddhism

   (C) Islam

   (D) Shintoism



10. According to the graph above, how many of the countries shown produced more crude oil in 1975 than in 1974?

    (A) 1

    (B) 2

    (C) 3

    (D) 4

11. Jane is saving to buy a new car. Her friends are planning a weekend trip to the beach. She wants to go, but decides that saving for the car is more important. Jane's choice best demonstrates which of the following economic concepts?

    (A) Opportunity cost

    (B) Supply and demand

    (C) Scarcity of resources

    (D) Comparative advantage

Social Studies Answers

1. The correct answer is (A). The Cascade Mountains crosses through the state of Washington.

2. The correct answer is (C). A political map shows boundaries of countries, states, and municipalities. A thematic map presents specific information related to a geographic area, such as the location of natural resources. A topographic map shows the physical features of the land. A meteorological map presents information about weather and climate.

3. The correct answer is (C). During the Ice Age, the level of the water in the Pacific Ocean lowered, thereby exposing a land bridge across the Bering Strait. The cold northern climate encouraged many people to migrate to North America in search of better living conditions..

4. The correct answer is (C). Both the Republican and Democratic political parties were established prior to the Civil War and groups that have tried to create a third major political party have not been successful.

5. The correct answer is (B). In *Brown* v. *Board of Education of Topeka*, the Supreme Court ruled that segregating schools on the basis of race was inherently discriminatory. This decision overturned the precedent set by *Plessy* v. *Ferguson*, which ruled that "separate but equal" did not infringe upon the 14th Amendment.

6. The correct answer is (B), federalism. Federalism is the division of power between a central government and constituent governments, called states in the United States. Checks and balances refers to the constitutional arrangement of powers that prevents one branch of the government from becoming too powerful. Separation of powers refers to the division of power among the three branches of the United States government. The rule of law is the principle which holds that no person is above the law.

7. The correct answer is (D). Article 1, Section 2 of the Constitution of the United States reads, "The House of Representatives shall be composed of Members chosen every second Year by the People... ." All members of the House are elected at the same time every two years.

8. The correct answer is (B). In the fifteenth century AD, explorers from Portugal encountered the social system of India and called these groups "castes." As time went on, the four basic castes gradually grew more complex, with hundreds of subdivisions.

9. The correct answer is (C). Of the major world religions listed, Islam is the only one that is monotheistic. Each of the other religions listed has as a central tenet a belief in more than one deity.

10. The correct answer is (B). Since the numbers on the left side of the graph increase from bottom to top, it is a matter of determining how many shaded bars are higher than their corresponding striped bars.

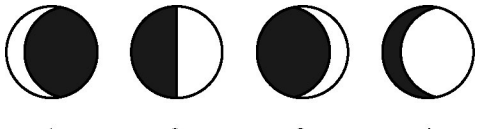
11. The correct answer is (A). Opportunity cost is the value of what is forgone when an economic choice is made. In this example, the opportunity cost of saving for the car is forgoing a weekend trip with friends.

Science Sample Test Questions

The sample questions that follow illustrate the kinds of questions on the test. They are not, however, representative of the entire scope of the test in either content or difficulty. Answers with explanations follow the questions.

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case.

1. Which of the following geological processes adds new rock to the surface of the Earth?
   (A) Volcanic activity
   (B) Glacial activity
   (C) Soil erosion
   (D) Weathering



2. When the Moon is viewed from the Northern Hemisphere at the first quarter of the lunar cycle, it appears like which of the diagrams above
   (A) 1
   (B) 2
   (C) 3
   (D) 4

3. Which THREE of the following are ways in which mammals keep themselves warm in cold weather?
   (A) Shivering
   (B) Perspiring
   (C) Fluffing out coat hair
   (D) Contracting certain blood vessels

4. If a feather and two rocks of different weights were dropped simultaneously from a height of 5 meters in a vacuum, which of the following would be true?
   (A) Both rocks would hit the ground at the same time, but before the feather.
   (B) The heavier rock would hit the ground first.
   (C) The lighter rock would hit the ground first.
   (D) The feather and the two rocks would all hit the ground at the same time.

5. Which of the following laboratory instruments would be most appropriate to use in determining the volume of a large block of wood of unknown density?
   (A) A metric ruler
   (B) A triple-beam balance
   (C) A 200 mL volumetric flask
   (D) A micrometer

6. A scientific hypothesis is a statement that
   (A) ensures an experiment will produce positive results
   (B) is accepted by most of the scientific community
   (C) is a proposal that may lead to experimental testing
   (D) is formulated by a renowned scientist

7. Which of the following is the broadest category in the biological taxonomy?
   (A) Kingdom
   (B) Order
   (C) Genus
   (D) Species

8. Some human traits are carried by genes on the Y chromosome. A man will transmit these traits to
   (A) one-half of his male offspring only
   (B) one-half of his female offspring only
   (C) all of his male offspring
   (D) all of his female offspring

9. A chlorine compound is added to swimming pools in order to
   (A) monitor the pH of the water
   (B) add color to the water
   (C) soften the water by precipitating harmful chemicals
   (D) destroy bacteria through an oxidation reaction

10. Two campers each wrap a potato in aluminum foil prior to baking them in fire. However, one camper inserts a large nail into her potato after wrapping it in the foil. After the potatoes are placed in the fire, which of the following is most likely to happen?
   (A) Both potatoes will bake at the same rate.
   (B) Neither potato will bake because the foil will reflect most of the heat.
   (C) The potato with the imbedded nail will bake faster because heat will be conducted through the nail into the potato.
   (D) The potato with the imbedded nail will bake more slowly because heat will be conducted out of the potato through the nail.

11. Alfred Wegener proposed which of the following in the early 1900s ?
   (A) The Sun, not Earth, is the center of the universe.
   (B) Earth once contained a single supercontinent.
   (C) An ocean current called the Gulf Stream flows northward along the east coast of the United States and Newfoundland.
   (D) The Himalayas were formed by plate tectonics.

12. Which of the following is a chemical element?
   (A) Sodium chloride
   (B) Platinum
   (C) Carbon dioxide
   (D) Water

13. Of the following, which best describes an example of the Doppler effect?
   (A) As light passes through a prism, the light separates into a rainbow.
   (B) As a light beam passes from air into water, the beam changes direction.
   (C) As an emergency vehicle approaches an observer standing by the road, the pitch of its siren increases.
   (D) As a sound wave hits a wall, it is reflected and creates an echo.

Science Answers

1. The correct answer is (A). Volcanic activity is the only process by which material from inside Earth is brought to the surface. The other processes are means of wearing down Earth's surface.

2. The correct answer is (B). At the first lunar quarter, the Sun, Earth, and Moon form a right triangle, with Earth at the right angle, so that the half of the Moon facing Earth appears both half-illuminated and half-dark. When viewed from the Northern Hemisphere, the right half will appear illuminated.

3. The correct answers are (A), (C), and (D). Shivering produces heat. Fluffing out coat hair provides insulation and helps to retain body heat. Contracting certain blood vessels reduces blood flow to extremities and thus reduces heat loss. However, perspiring does not help because the skin is cooled as energy is absorbed by the sweat as it evaporates.

4. The correct answer is (D). In a vacuum, the only external force acting on each of the objects would be the gravitational force of Earth. This gravitational force is equal to $M \times g$, where M is the object's mass and g is the constant acceleration of gravity (9.8 meters per second squared). According to Newton's second law, the acceleration, a, of an object times its mass is equal to the external force acting on it. For this situation, Newton's second law gives $M \times a = M \times g$, or $a = g$. Thus, in a vacuum, all objects fall freely with the same constant acceleration g regardless of their mass.

5. The correct answer is (A). To find the volume of a large rectangular block of wood, first use the metric ruler to find the length, width, and height of the block. Then use the formula for the volume of a rectangular solid—length $\times$ width $\times$ height —to determine the volume.

6. The correct answer is (C). A hypothesis is a proposed explanation of a scientific problem. After the hypothesis is proposed, scientific experimentation may be conducted that produces data that can either support or fail to support the hypothesis.

7. The correct answer is (A). When putting living things into a biological classification scheme, the broadest category is kingdom, followed by phylum, class, order, family, genus, and species.

8. The correct answer is (C). Human males generally have one X and one Y chromosome. Male offspring will only receive a Y chromosome from their father, while female offspring will only receive an X chromosome from their father. Therefore, genes on the Y chromosome are passed only to male offspring.

9. The correct answer is (D). Chlorine and certain chlorine-containing compounds are highly reactive oxidizing agents that are used as chemical disinfectants in a variety of situations, including swimming pools.

10. The correct answer is (C). Although the aluminum foil will reflect some radiant energy, it will not significantly reduce the flow of energy by conduction. Because a nail is a good thermal conductor, heat will flow into the potato through the nail and bake the potato from the inside as well as from the outside. Thus, the potato with the imbedded nail will bake faster.

11. The correct answer is (B). In the early 1900s , Alfred Wegener proposed a theory that Earth once contained a single large landmass called Pangaea.

12. The correct answer is (B). Platinum is a chemical element found on the periodic table of elements. Its chemical symbol is Pt. Sodium chloride, carbon dioxide, and water are compounds that are each composed of combinations of two different elements.

13. The correct answer is (C). According to the Doppler effect, as the source of a sound moves toward an observer at a fixed position, the successive sound waves arrive faster and faster at the observer's position, resulting in an increase in the frequency of the sound waves arriving at the observer's position. Since the pitch of a sound is proportional to the frequency, the perceived pitch of the sound increases as the vehicle approaches the observer.

4. Determine Your Strategy for Success

Set clear goals and deadlines so your test preparation is focused and efficient

Effective *Praxis* test preparation doesn't just happen. You'll want to set clear goals and deadlines for yourself along the way. Otherwise, you may not feel ready and confident on test day.

1) Learn what the test covers.

You may have heard that there are several different versions of the same test. It's true. You may take one version of the test and your friend may take a different version a few months later. Each test has different questions covering the same subject area, but both versions of the test measure the same skills and content knowledge.

You'll find specific information on the test you're taking on page 43, which outlines the content categories that the test measures and what percentage of the test covers each topic. Visit www.ets.org/praxis/testprep for information on other *Praxis* tests.

2) Assess how well you know the content.

Research shows that test takers tend to overestimate their preparedness—this is why some test takers assume they did well and then find out they did not pass.

The *Praxis* tests are demanding enough to require serious review of likely content, and the longer you've been away from the content, the more preparation you will most likely need. If it has been longer than a few months since you've studied your content area, make a concerted effort to prepare.

3) Collect study materials.

Gathering and organizing your materials for review are critical steps in preparing for the *Praxis* tests. Consider the following reference sources as you plan your study:

- Did you take a course in which the content area was covered? If yes, do you still have your books or your notes?
- Does your local library have a high school-level textbook in this area? Does your college library have a good introductory college-level textbook in this area?

Practice materials are available for purchase for many *Praxis* tests at www.ets.org/praxis/testprep. Test preparation materials include sample questions and answers with explanations.

4) Plan and organize your time.

You can begin to plan and organize your time while you are still collecting materials. Allow yourself plenty of review time to avoid cramming new material at the end. Here are a few tips:

- Choose a test date far enough in the future to leave you plenty of preparation time. Test dates can be found at www.ets.org/praxis/register/dates_centers.
- Work backward from that date to figure out how much time you will need for review.
- Set a realistic schedule—and stick to it.

5) Practice explaining the key concepts.

Praxis tests with constructed-response questions assess your ability to explain material effectively. As a teacher, you'll need to be able to explain concepts and processes to students in a clear, understandable way. What are the major concepts you will be required to teach? Can you explain them in your own words accurately, completely, and clearly? Practice explaining these concepts to test your ability to effectively explain what you know.

6) Understand how questions will be scored.

Scoring information can be found on page 80.

7) Develop a study plan.

A study plan provides a road map to prepare for the *Praxis* tests. It can help you understand what skills and knowledge are covered on the test and where to focus your attention. Use the study plan template on page 41 to organize your efforts.

And most important—get started!

Would a Study Group Work for You?

Using this guide as part of a study group

People who have a lot of studying to do sometimes find it helpful to form a study group with others who are working toward the same goal. Study groups give members opportunities to ask questions and get detailed answers. In a group, some members usually have a better understanding of certain topics, while others in the group may be better at other topics. As members take turns explaining concepts to one another, everyone builds self-confidence.

If the group encounters a question that none of the members can answer well, the group can go to a teacher or other expert and get answers efficiently. Because study groups schedule regular meetings, members study in a more disciplined fashion. They also gain emotional support. The group should be large enough so that multiple people can contribute different kinds of knowledge, but small enough so that it stays focused. Often, three to six members is a good size.

Here are some ways to use this guide as part of a study group:

- **Plan the group's study program.** Parts of the study plan template, beginning on page 41 can help to structure your group's study program. By filling out the first five columns and sharing the worksheets, everyone will learn more about your group's mix of abilities and about the resources, such as textbooks, that members can share with the group. In the sixth column ("Dates I will study the content"), you can create an overall schedule for your group's study program.
- **Plan individual group sessions.** At the end of each session, the group should decide what specific topics will be covered at the next meeting and who will present each topic. Use the topic headings and subheadings in the Test at a Glance table on page 5 to select topics, and then select practice questions, beginning on page 22.
- **Prepare your presentation for the group.** When it's your turn to present, prepare something that is more than a lecture. Write two or three original questions to pose to the group. Practicing writing actual questions can help you better understand the topics covered on the test as well as the types of questions you will encounter on the test. It will also give other members of the group extra practice at answering questions.
- **Take a practice test together.** The idea of a practice test is to simulate an actual administration of the test, so scheduling a test session with the group will add to the realism and may also help boost

everyone's confidence. Remember, complete the practice test using only the time that will be allotted for that test on your administration day.

- **Learn from the results of the practice test.** Review the results of the practice test, including the number of questions answered correctly in each content category. For tests that contain constructed-response questions, look at the Sample Test Questions section, which also contain sample responses to those questions and shows how they were scored. Then try to follow the same guidelines that the test scorers use.
- **Be as critical as you can.** You're not doing your study partner(s) any favors by letting them get away with an answer that does not cover all parts of the question adequately.
- **Be specific.** Write comments that are as detailed as the comments about the sample responses. Indicate where and how your study partner(s) are doing an inadequate job of answering the question. Writing notes in the margins of the answer sheet may also help.
- **Be supportive.** Include comments that point out what your study partner(s) got right.

Then plan one or more study sessions based on aspects of the questions on which group members performed poorly. For example, each group member might be responsible for rewriting one paragraph of a response in which someone else did an inadequate job.

Whether you decide to study alone or with a group, remember that the best way to prepare is to have an organized plan. The plan should set goals based on specific topics and skills that you need to learn, and it should commit you to a realistic set of deadlines for meeting those goals. Then you need to discipline yourself to stick with your plan and accomplish your goals on schedule.

5. Develop Your Study Plan

Develop a personalized study plan and schedule

Planning your study time is important because it will help ensure that you review all content areas covered on the test. Use the sample study plan below as a guide. It shows a plan for the *Core Academic Skills for Educators: Reading* test. Following that is a study plan template that you can fill out to create your own plan. Use the "Learn about Your Test" and "Test Specifications" information beginning on page 5 to help complete it.

Use this worksheet to:
1. **Define Content Areas:** List the most important content areas for your test as defined in chapter 1.
2. **Determine Strengths and Weaknesses:** Identify your strengths and weaknesses in each content area.
3. **Identify Resources:** Identify the books, courses, and other resources you plan to use for each content area.
4. **Study:** Create and commit to a schedule that provides for regular study periods.

Praxis Test Name (Test Code): Core Academic Skills for Educators: Reading (5712)
Test Date: 9/15/15

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed
Key Ideas and Details						
Close reading	Draw inferences and implications from the directly stated content of a reading selection	3	Middle school English textbook	College library, middle school teacher	7/15/15	7/15/15
Determining Ideas	Identify summaries or paraphrases of the main idea or primary purpose of a reading selection	3	Middle school English textbook	College library, middle school teacher	7/17/15	7/17/15
Determining Ideas	Identify summaries or paraphrases of the supporting ideas and specific details in a reading selection	3	Middle and high school English textbook	College library, middle and high school teachers	7/20/15	7/21/15
Craft, Structure, and Language Skills						
Interpreting tone	Determine the author's attitude toward material discussed in a reading selection	4	Middle and high school English textbook	College library, middle and high school teachers	7/25/15	7/26/15
Analysis of structure	Identify key transition words and phrases in a reading selection and how they are used	3	Middle and high school English textbook, dictionary	College library, middle and high school teachers	7/25/15	7/27/15
Analysis of structure	Identify how a reading selection is organized in terms of cause/effect, compare/contrast, problem/solution, etc.	5	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/1/15	8/1/15
Author's purpose	Determine the role that an idea, reference, or piece of information plays in an author's discussion or argument	5	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/1/15	8/1/15

(continued on next page)

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed
Language in different contexts	Determine whether information presented in a reading selection is presented as fact or opinion	4	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/1/15	8/1/15
Contextual meaning	Identify the meanings of words as they are used in the context of a reading selection	2	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/1/15	8/1/15
Figurative Language	Understand figurative language and nuances in word meanings	2	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/8/15	8/8/15
Vocabulary range	Understand a range of words and phrases sufficient for reading at the college and career readiness level	2	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/15/15	8/17/15
Integration of Knowledge and Ideas						
Diverse media and formats	Analyze content presented in diverse media and formats, including visually and quantitatively, as well as in words	2	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/22/15	8/24/15
Evaluation of arguments	Identify the relationship among ideas presented in a reading selection	4	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/24/15	8/24/15
Evaluation of arguments	Determine whether evidence strengthens, weakens, or is relevant to the arguments in a reading selection	3	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/27/15	8/27/15
Evaluation of arguments	Determine the logical assumptions upon which an argument or conclusion is based	5	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/28/15	8/30/15
Evaluation of arguments	Draw conclusions from material presented in a reading selection	5	High school textbook, college course notes	College library, course notes, high school teacher, college professor	8/30/15	8/31/15
Comparison of texts	Recognize or predict ideas or situations that are extensions of or similar to what has been presented in a reading selection	4	High school textbook, college course notes	College library, course notes, high school teacher, college professor	9/3/15	9/4/15
Comparison of texts	Apply ideas presented in a reading selection to other situations	2	High school textbook, college course notes	College library, course notes, high school teacher, college professor	9/5/15	9/6/15

My Study Plan

Use this worksheet to:

1. **Define Content Areas:** List the most important content areas for your test as defined in chapter 1.
2. **Determine Strengths and Weaknesses:** Identify your strengths and weaknesses in each content area.
3. **Identify Resources:** Identify the books, courses, and other resources you plan to use for each content area.
4. **Study:** Create and commit to a schedule that provides for regular study periods.

Praxis Test Name (Test Code): _____

Test Date: _____

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for this content?	Where can I find the resources I need?	Dates I will study this content	Date completed

(continued on next page)

Content covered	Description of content	How well do I know the content? (scale 1–5)	What resources do I have/need for the content?	Where can I find the resources I need?	Dates I will study the content	Date completed

6. Study Topics

Detailed study topics with questions for discussion

Using the Study Topics That Follow

The Elementary Education: Multiple Subjects test is designed to measure the knowledge and skills necessary for a beginning teacher.

This chapter is intended to help you organize your preparation for the test and to give you a clear indication of the depth and breadth of the knowledge required for success on the test.

Virtually all accredited programs address the topics covered by the test; however, you are not expected to be an expert on all aspects of the topics that follow.

You are likely to find that the topics that follow are covered by most introductory textbooks. Consult materials and resources, including lecture and laboratory notes, from all your coursework. You should be able to match up specific topics and subtopics with what you have covered in your courses.

Try not to be overwhelmed by the volume and scope of content knowledge in this guide. Although a specific term may not seem familiar as you see it here, you might find you can understand it when applied to a real-life situation. Many of the items on the actual test will provide you with a context to apply to these topics or terms.

Discussion Areas

Interspersed throughout the study topics are discussion areas, presented as open-ended questions or statements. These discussion areas are intended to help test your knowledge of fundamental concepts and your ability to apply those concepts to situations in the classroom or the real world. Most of the areas require you to combine several pieces of knowledge to formulate an integrated understanding and response. If you spend time on these areas, you will gain increased understanding and facility with the subject matter covered on the test. You may want to discuss these areas and your answers with a teacher or mentor.

Note that this study companion *does **not** provide answers for the discussion area questions*, but thinking about the answers to them will help improve your understanding of fundamental concepts and will probably help you answer a broad range of questions on the test.

Reading and Language Arts Overview

This part of the chapter is intended to help you organize your preparation for the multiple-choice questions in each subject and to give you a clear indication about the depth and breadth of the knowledge required for success on the test.

Here is an overview of the areas covered on the test, along with their subareas:

Reading and Language Arts Study Topics

The Reading and Language Arts component of the Elementary Education: Multiple Subjects test covers understanding of literature, text structures and organization, components of language in writing, literacy acquisition, reading instruction, and communication skills.

The Reading and Language Arts section of the test was designed to align with Standard 2.1 of the Program Standards for Elementary Teacher Preparation published by NCATE (National Council for Accreditation of Teacher Education):

> *Candidates demonstrate a high level of competence in use of English language arts and they know, understand, and use concepts from reading, language and child development, to teach reading, writing, speaking, viewing, listening, and thinking skills and to help students successfully apply their developing skills to many different situations, materials, and ideas.*

The main content areas are "Foundational Skills," "Literature and Informational Texts," "Language," "Writing," and "Communication." Each area covers a content-knowledge base that is a foundation for good teaching. Many teaching activities depend on this knowledge base (for example, choosing literature for the classroom, helping students understand what they are reading, helping students improve their writing, etc.).

I. Reading

A. Foundational Skills

1. Major elements of emergent literacy theory and major conclusions of recent research
2. Factors influencing the development of emergent reading
   a. concepts about print
   b. sight vocabulary
   c. phonemic awareness
   d. decoding
   e. letter-sound correspondence
   f. syllabication
   g. rhyming
   h. segmenting and blending
   i. alphabetic principle
   j. social interaction (support by adults and peers)
   k. language acquisition
   l. support of second-language learners
   m. frequent experiences with print
   n. prior knowledge (schema)
   o. motivation
   p. fluency (rate, accuracy, prosody)
   q. reader's theater
   r. repeated readings
3. Experiences that support emergent readers
   a. direct instruction
   b. social interaction
   c. shared reading
   d. repeated readings
   e. reader response
   f. word walls
   g. text innovation (rewrites)
   h. shared writing
4. Stages of early orthographic development
   a. drawing pictures
   b. scribble writing
   c. letter-sound correspondence in word writing

B. Literature and Informational Texts

1. Address the role of comprehension in reading development.
   a. use of prior knowledge
   b. retelling
   c. guided reading
   d. fluency
   e. reader response
   f. comprehension as a strategic process
      - solving words
      - adjusting reading according to purpose and context
      - metacognition
      - maintaining fluency
      - making connections (personal, world, text)
      - drawing inferences and conclusions
2. Understand the basic elements of literature and informational texts.
   a. elements of a story
      - plot elements
        rising action
        internal and external conflict
        complication
        suspense
        crisis
        climax or turning point
      - characterization (through a character's words, thoughts, actions, appearance, etc.)
      - setting (established through description of scenes, colors, smells, etc.)
      - tone
      - theme
      - point of view (first person, thirdperson objective, third-person omniscient)
      - perspective (attitude of the narrator of the story)

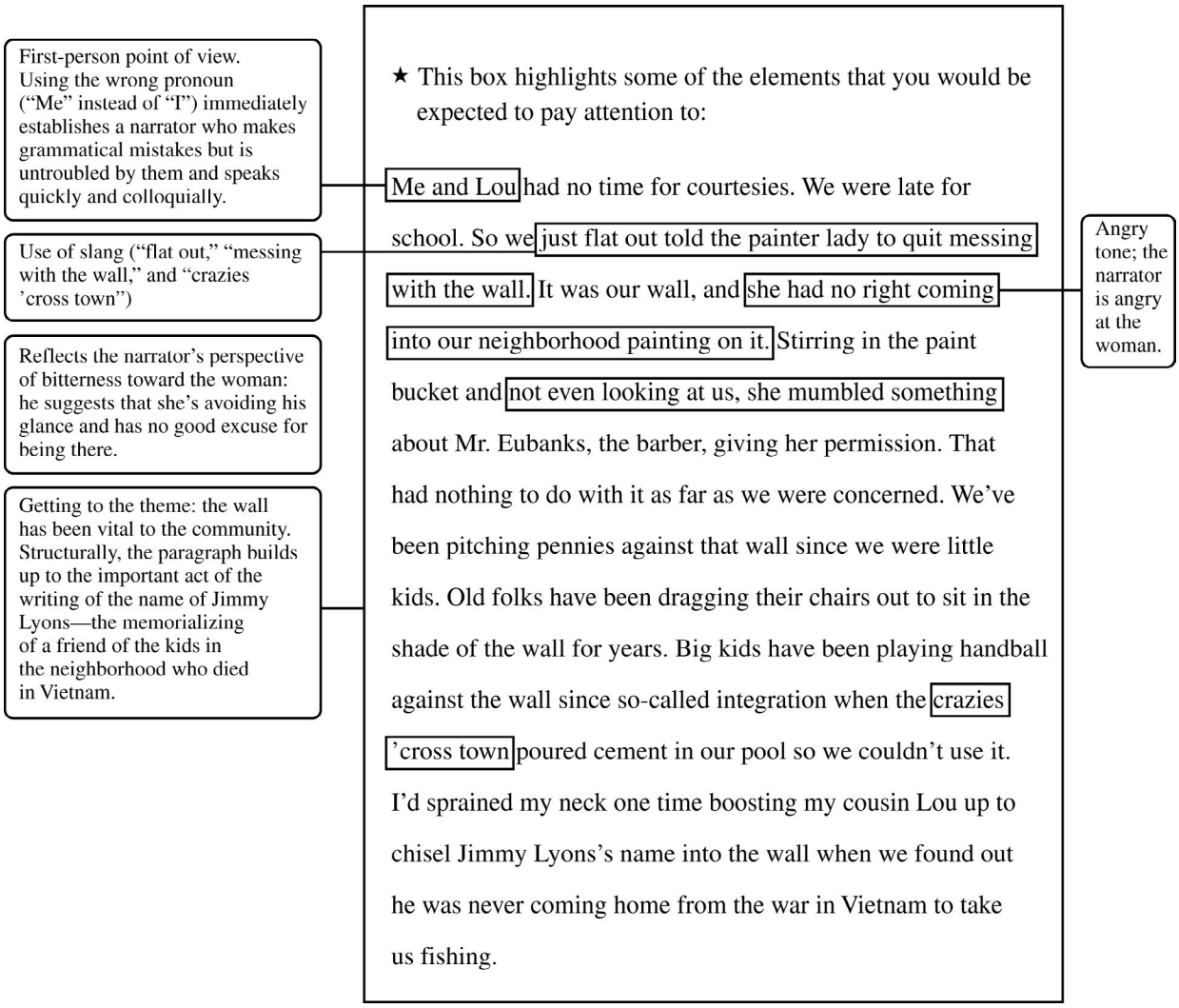
   b. comprehension of nonfiction
      - identify the main idea, primary hypothesis, or primary purpose (e.g., to persuade, to inform, to analyze, or to evaluate)
      - evaluate the clarity of the information
      - identify the author's point of view or perspective
      - make valid inferences or conclusions based on the selection
      - identify, where appropriate, an author's appeal to reason, appeal to emotion, or appeal to authority
      - Evaluate the relationship between stated generalizations and actual evidence given
      - Evaluate the organization of a selection
      - For informational texts, evaluate the effectiveness of their organizational and graphic aids

Discussion areas: Reading

- A class is reading a book that has chapter numbers but no chapter titles. The teacher asks the students to think of an appropriate title for each chapter. What is the main purpose in choosing this activity? Why is it a useful activity

★ Read the following fiction selection, from Toni Cade Bambara's "The War of the Wall." What is the most important perspective? How is it communicated? What is the theme? What stylistic elements do you recognize?

Me and Lou had no time for courtesies. We were late for school. So we just flat out told the painter lady to quit messing with the wall. It was our wall, and she had no right coming into our neighborhood painting on it. Stirring in the paint bucket and not even looking at us, she mumbled something about Mr. Eubanks, the barber, giving her permission. That had nothing to do with it as far as we were concerned. We've been pitching pennies against that wall since we were little kids. Old folks have been dragging their chairs out to sit in the shade of the wall for years. Big kids have been playing handball against the wall since so-called integration when the crazies 'cross town poured cement in our pool so we couldn't use it. I'd sprained my neck one time boosting my cousin Lou up to chisel Jimmy Lyons's name into the wall when we found out he was never coming home from the war in Vietnam to take us fishing.


First-person point of view. Using the wrong pronoun ("Me" instead of "I") immediately establishes a narrator who makes grammatical mistakes but is untroubled by them and speaks quickly and colloquially.
Use of slang ("flat out," "messing with the wall," and "crazies 'cross town")
Reflects the narrator's perspective of bitterness toward the woman: he suggests that she's avoiding his glance and has no good excuse for being there.
Getting to the theme: the wall has been vital to the community. Structurally, the paragraph builds up to the important act of the writing of the name of Jimmy Lyons—the memorializing of a friend of the kids in the neighborhood who died in Vietnam.
★ This box highlights some of the elements that you would be expected to pay attention to:
Me and Lou had no time for courtesies. We were late for school. So we just flat out told the painter lady to quit messing with the wall. It was our wall, and she had no right coming into our neighborhood painting on it. Stirring in the paint bucket and not even looking at us, she mumbled something about Mr. Eubanks, the barber, giving her permission. That had nothing to do with it as far as we were concerned. We've been pitching pennies against that wall since we were little kids. Old folks have been dragging their chairs out to sit in the shade of the wall for years. Big kids have been playing handball against the wall since so-called integration when the crazies 'cross town poured cement in our pool so we couldn't use it. I'd sprained my neck one time boosting my cousin Lou up to chisel Jimmy Lyons's name into the wall when we found out he was never coming home from the war in Vietnam to take us fishing.
Angry tone; the narrator is angry at the woman.

3. Address the basic elements of poetry (e.g., verse, rhythm, meter) and drama (e.g., puppetry, story theatre).
   a. construction of meaning in poetry
      - main idea or theme
      - symbolism
      - tone, emotion
   b. poetic elements
      - verse
        - meter
        - stanza
        - line length
        - punctuation
      - rhyme and sound patterns
        - rhyme scheme
        - onomatopoeia
        - repetition of words
        - alliteration
        - assonance
      - imagery and figures of speech
        - image
        - personification
        - metaphor
        - simile
        - hyperbole
        - poetic types and forms
      - lyrical
      - concrete
      - free verse
      - narrative
      - couplet
      - elegy
      - sonnet
      - limerick
      - haiku

Discussion areas: Reading

- Read the following selection from Alfred Noyes' poem "The Highwayman." What rhyme and meter patterns are present? How is it organized? Is it a narrative poem? What kinds of sounds and imagery appear in the poem? What is the tone or emotion? What is the poem's main focus?

  The wind was a torrent of darkness
  among the gusty trees,

  The moon was a ghostly galleon tossed
  upon cloudy seas,

  The road was a ribbon of moonlight over
  the purple moor,

  And the highwayman came riding-
  Riding-riding-

  The highwayman came riding, up to the
  old inn door.

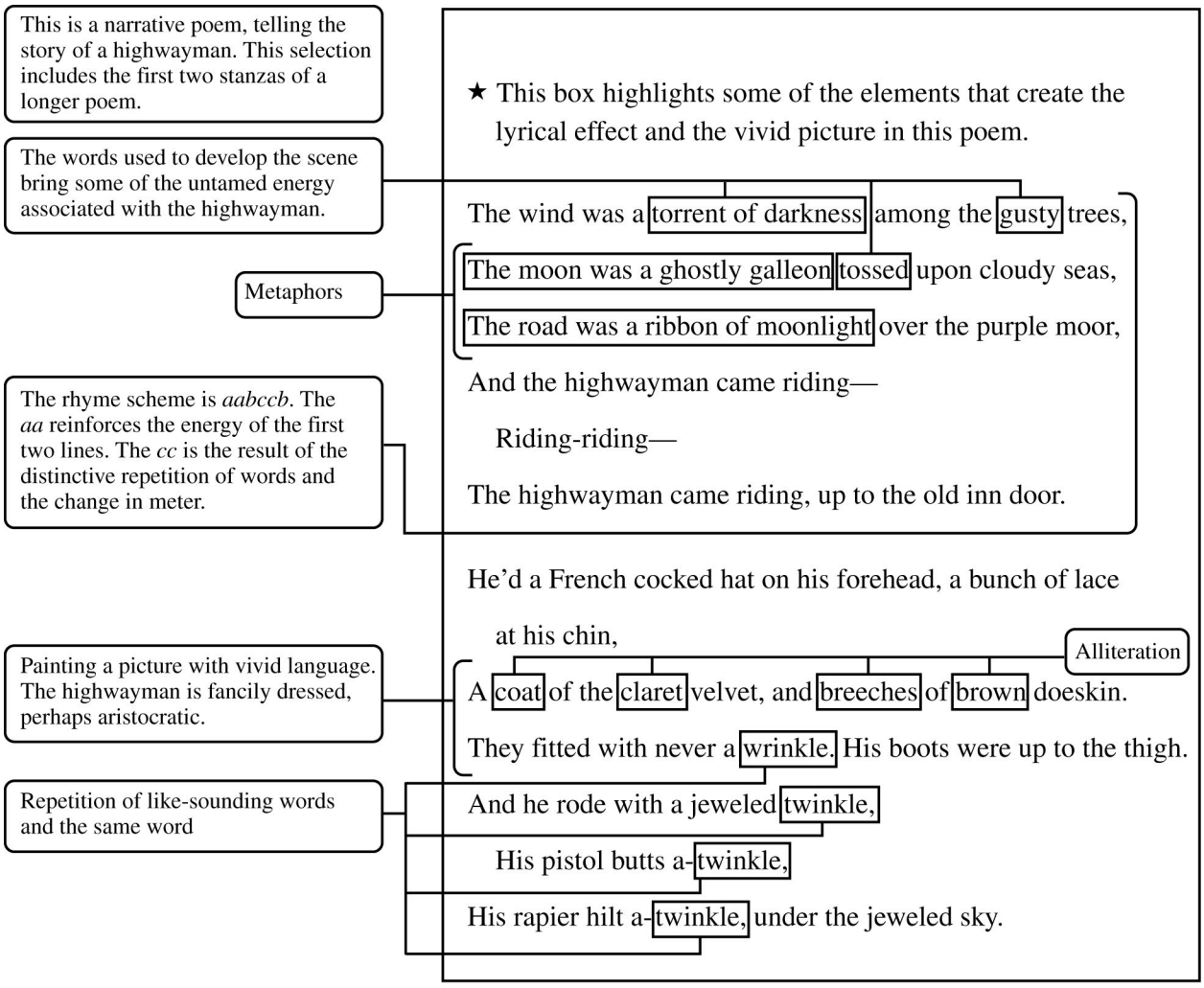
  He'd a French cocked hat on his
  forehead, a bunch of lace at his chin,

  A coat of the claret velvet, and breeches
  of brown doeskin.

  They fitted with never a wrinkle. His
  boots were up to the thigh.

  And he rode with a jeweled twinkle.
  His pistol butts a-twinkle.

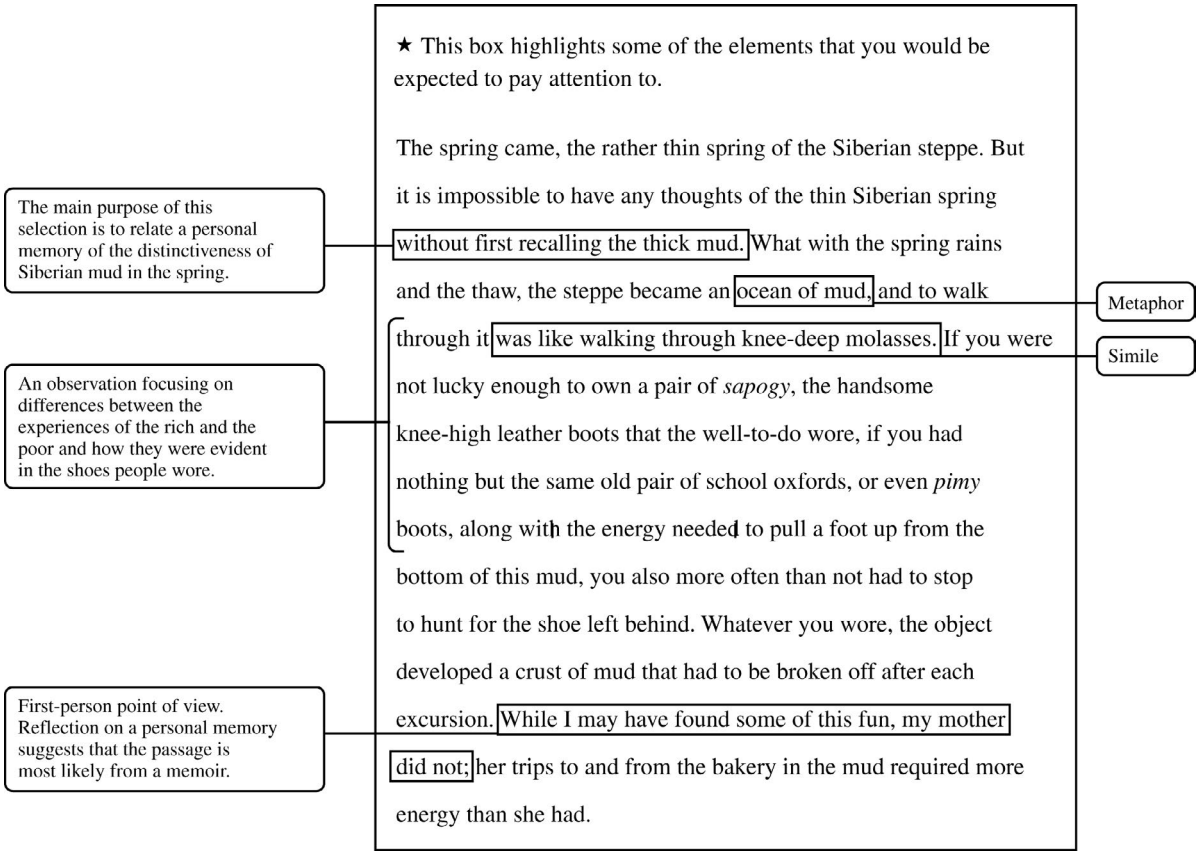
  His rapier hilt a-twinkle, under the
  jeweled sky.


This is a narrative poem, telling the story of a highwayman. This selection includes the first two stanzas of a longer poem.
The words used to develop the scene bring some of the untamed energy associated with the highwayman.
Metaphors
The rhyme scheme is aabccb. The aa reinforces the energy of the first two lines. The cc is the result of the distinctive repetition of words and the change in meter.
Painting a picture with vivid language. The highwayman is fancily dressed, perhaps aristocratic.
Repetition of like-sounding words and the same word
★ This box highlights some of the elements that create the lyrical effect and the vivid picture in this poem.
The wind was a torrent of darkness among the gusty trees,
The moon was a ghostly galleon tossed upon cloudy seas,
The road was a ribbon of moonlight over the purple moor,
And the highwayman came riding—
Riding-riding—
The highwayman came riding, up to the old inn door.
He'd a French cocked hat on his forehead, a bunch of lace
at his chin,
Alliteration
A coat of the claret velvet, and breeches of brown doeskin.
They fitted with never a wrinkle. His boots were up to the thigh.
And he rode with a jeweled twinkle,
His pistol butts a-twinkle,
His rapier hilt a-twinkle, under the jeweled sky.

4. Understand how to determine the meanings of words and phrases as used in texts, including figurative language. Be ready to define these terms and/or identify examples of them.
   a. metaphor
   b. simile
   c. hyperbole
   d. personification
   e. alliteration
   f. onomatopoeia
   g. oxymoron
   h. symbol
   i. Imagery

★ Read the following nonfiction selection, from Esther Rudomin Hautzig's *The Endless Steppe: Growing Up in Siberia*. What genre is it from? What is its overall purpose? Are there any figures of speech that help to illustrate the key points? How does the author make a comment on economic differences in her society?

The spring came, the rather thin spring of the Siberian steppe. But it is impossible to have any thoughts of the thin Siberian spring without first recalling the thick mud. What with the spring rains and the thaw, the steppe became an ocean of mud, and to walk through it was like walking through knee-deep molasses. If you were not lucky enough to own a pair of *sapogy*, the handsome knee-high leather boots that the well-to-do wore, if you had nothing but the same old pair of school oxfords, or even *pimy* boots, along with the energy needed to pull a foot up from the bottom of this mud, you also more often than not had to stop to hunt for the shoe left behind. Whatever you wore, the object developed a crust of mud that had to be broken off after each excursion. While I may have found some of this fun, my mother did not; her trips to and from the bakery in the mud required more energy than she had.


★ This box highlights some of the elements that you would be expected to pay attention to.
The spring came, the rather thin spring of the Siberian steppe. But it is impossible to have any thoughts of the thin Siberian spring without first recalling the thick mud. What with the spring rains and the thaw, the steppe became an ocean of mud, and to walk through it was like walking through knee-deep molasses. If you were not lucky enough to own a pair of *sapogy*, the handsome knee-high leather boots that the well-to-do wore, if you had nothing but the same old pair of school oxfords, or even *pimy* boots, along with the energy needed to pull a foot up from the bottom of this mud, you also more often than not had to stop to hunt for the shoe left behind. Whatever you wore, the object developed a crust of mud that had to be broken off after each excursion. While I may have found some of this fun, my mother did not; her trips to and from the bakery in the mud required more energy than she had.
The main purpose of this selection is to relate a personal memory of the distinctiveness of Siberian mud in the spring.
An observation focusing on differences between the experiences of the rich and the poor and how they were evident in the shoes people wore.
First-person point of view. Reflection on a personal memory suggests that the passage is most likely from a memoir.
Metaphor
Simile

Writing, Speaking, and Listening

I. Language

A. Address the components of written language (e.g., elements of grammar, usage, syntax).

1. Parts of speech
   a. noun: proper, common, collective
   b. pronoun
   c. verb
   d. adjective
   e. adverb
   f. preposition
   g. conjunction
   h. phrase
      – participial phrase
      – prepositional phrase
      – appositive phrase
   i. clause
      – independent clause
      – dependent clause
2. Syntactical systems
   a. subject-verb agreement
   b. verb tenses: present, past, present perfect, past perfect, future, and future perfect
   c. voice of verb: active or passive
   d. pronoun-antecedent agreement and weak reference
   e. correct use of infinitive and participle

B. Address sentence types (e.g., declarative, imperative) and sentence structures (e.g., simple, compound, complex).

1. Sentence types
   a. declarative
   b. interrogative
   c. exclamatory
   d. imperative
2. Sentence structure
   a. simple
   b. compound
   c. complex
   d. compound-complex
   e. sentence fragment

C. Address the basic components of vocabulary (e.g., affixes, root words, context clues).

1. Cues and how students use them
   a. context: semantic and syntactic systems
   b. phonological system and visual information
      – relationship to print
      – recognizing whole words
      – word patterns
      – syllables
      – letters in sequence
      – affixes: prefix, suffix
      – roots

II. Writing

A. Address types (e.g., narrative, persuasive, journaling) and traits (e.g., tone, purpose, audience) of writing.

1. Types of Writing
   a. narrative
   b. persuasive
   c. journaling
   d. instructional
   e. comparative
   f. reflective
   g. expository
   h. descriptive
2. Traits of Writing
   a. tone
   b. purpose
   c. audience

B. Address the stages of the writing process (e.g., draft, edit, publish).

1. Recursive nature of this process
   a. explore/prewrite
   b. draft
   c. edit
   d. publish

C. Address stages of writing development.

1. Phases
   a. picture writing
   b. scribble writing
   c. random letter
   d. invented spelling
   e. conventional writing
2. Concurrent development with reading

D. Address structures (e.g., description, definition, examples) and organization (e.g., descriptive, comparison/contrast, persuasive) of writing.

1. Structures of Writing
   a. description
   b. definition
   c. examples
2. Organization of Writing
   a. compare and contrast
   b. chronological sequence
   c. spatial sequence
   d. cause and effect
   e. problem and solution

E. Address how to use resource material (e.g., types of resources, graphic organizers) in reading and language arts.

1. Reference works
   a. dictionary
   b. encyclopedia
   c. thesaurus
   d. atlas
   e. almanac
2. Internet
   a. keyword search
   b. databases
   c. bulletin board
3. Other sources
   a. books
   b. newspapers and magazines
   c. professional journals
   d. *Reader's Guide to Periodical Literature*
   e. primary sources, including reproductions of original documents
4. Using resources and reference materials
   a. appropriateness of various sources to the project
   b. quotations and paraphrases of experts
   c. footnotes
   d. bibliography

Discussion areas: Writing

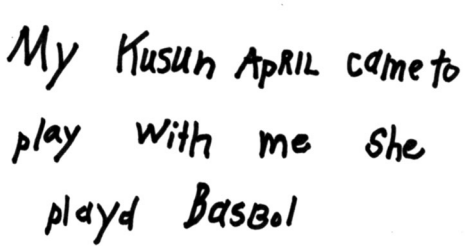
- What is the primary purpose of the passage below?

  The only real innovation during the Renaissance period in terms of transport was seen in the Americas. By the fifteenth century, the Incas had constructed a network of fine roads for couriers. Rivers were crossed by monkey bridges of cables of plaited agave fibre, or floating bridges, or pontoons of reeds. In addition, the Incas used caravans of llamas, bred as beasts of burden even though they could only carry a hundredweight, and could only travel fifteen miles a day. These were the only important domestic animals of the Americas before 1492, and they were quite inadequate.

- Here are three examples of student writing. Into which of the phases listed above would you put each one, and why?

Example 1

Example 2



Example 3

- What are some effective ways to use graphic organizers if students understand most of the details in a unit, but not the central idea of the unit?
- For a project about the painting techniques of Vincent van Gogh for upper elementary students, what are the top three kinds of resources you would recommend to the students and why?

III. Communication

A. Understand different aspects of speaking.

1. Purpose
2. Audience
3. Inclusion of visuals
4. Tone
5. Opening and closing
6. Details and anecdotes
7. Volume, pitch, pace, gestures
8. Eye contact
9. Voice modulation
10. Focus, organization, structure, point of view

B. Understand different aspects of listening (e.g., following directions, responding to questions appropriately, focusing on the speaker).

1. Listening to and following directions
2. Responding to questions
3. Responding to literature read aloud
4. Agreeing or disagreeing with the ideas in a speech
5. Asking for clarification
6. Expanding on an idea
7. Repeating or paraphrasing to verify one's understanding
8. Calling for evidence
9. Summarizing major ideas and supporting evidence
10. Interpreting volume, pitch, pace, gestures
11. Evaluating mood or tone

C. Understand different aspects of viewing (e.g., interpreting images, evaluating media techniques, understanding the message).

1. Understanding the message
2. Interpreting images
3. Evaluating media techniques
4. Propaganda
   a. assertion
   b. bandwagon
   c. card-stacking
   d. glittering generalities
   e. lesser of two evils
   f. name-calling
   g. pinpointing the enemy
   h. plain folks
   i. stereotyping
   j. testimonials
   k. transfer
5. Bias

D. Understand the role that speaking, listening, and viewing play in language acquisition for second-language learners.

1. Role playing
2. Realia
3. Modeling
4. Choral speaking and reading
5. Dictation

Mathematics Study Topics Overview

The Mathematics component of the Elementary Education: Multiple Subjects: Content Knowledge test covers understanding of basic mathematical concepts and operations, the ability to solve problems using basic algebra, geometry, probability, and statistics, and the ability to read and interpret data presented in various kinds of charts and graphs. Mathematical reasoning and problem-solving skills underlie many of the questions in this section of the test.

The Mathematics section of the test was designed to align with Standard 2.3 of the *Elementary Education Standards and Supporting Explanation* published by CAEP (Council for the Accreditation of Educator Preparation):

> *Candidates know, understand, and use the major concepts and procedures that define number and operations, algebra, geometry, measurement, and data analysis and probability. In doing so they consistently engage problem solving, reasoning and proof, communication, connections, and representation.*

The emphasis in this section of the test is on understanding fundamental concepts, the ability to reason logically, and the ability to use mathematical techniques in problem-solving. The emphasis is *not* on calculating numbers in your head or on paper—in fact, you are allowed to use a scientific calculator in the test center, and it is recommended that you use a calculator when you work through the practice questions.

You are not expected to be an expert on all the topics that follow, but you should be able to understand and apply the topics.

Mathematics Study Topics

I. Numbers and Operations

A. Prenumeration concepts

Be able to recognize examples of prenumeration activities in which children classify objects, look for patterns among objects, or put objects into sets.

1. Be able to answer questions about or apply these concepts.
   a. cardinal numbers (e.g., 5 people)
   b. ordinal numbers (e.g., the 5th person in line)

B. Basic number systems

Be able to answer questions about or apply these concepts.

1. "Base 10" and what a "base" system is
2. Equivalent forms of numbers; i.e., a number can be represented in more than one way (e.g., 0.5 is equivalent to $\frac{1}{2}$ and 50%)
3. Order (e.g., least and greatest) among whole numbers, fractions, and decimals (e.g., recognize that $-3 < -2$, or that $\frac{1}{2}$ is between $\frac{1}{3}$ and $\frac{2}{3}$, or that 1.9 is closer to 2 than to 1).

Be able to answer questions about or apply these concepts.

4. How numbers are named, place value, and order of magnitude of numbers (e.g., recognize that 100 is 1,000 times 0.1, or that 0.002 is $\frac{2}{1000}$).
5. Scientific notation: using powers of 10 (e.g., 10^4) to express large numbers (e.g., 43,700 is written in scientific notation as 4.37×10^4)

C. Four basic operations

Be able to answer questions about or apply these concepts.

1. Order of operations—the basic rules about what operation is done before others in expressions such as $3 \times 6 + 7$, $5(3+12) + 42(23-4)$, and $\frac{4(12-3)}{6-3}$.
2. Modeling operations—using a grid or number line or groups of objects to show how to add or multiply numbers

3. Be able to recognize the various methods for computing with numbers (calculator, paper and pencil, mental computation, rounding up or down, estimating) and be able to choose the most appropriate strategy for a given situation (e.g., using a calculator is best for multiplying three or more large numbers, mental computation is best for quickly adding pairs of small numbers).

D. Additive and multiplicative inverses

Be able to answer questions about or apply these concepts.

1. The opposite of a number (e.g., the opposite of 3 is −3)
2. The sum of a number and its opposite
3. The reciprocal of a number (e.g., the reciprocal of 3 is $\frac{1}{3}$)
4. The product of a number and its reciprocal

E. Special properties of 0 and 1

Be able to answer questions about or apply these concepts.

1. The product of any number and 0 or 1
2. 0 or 1 divided by any number
3. Any number divided by 1, or 0 divided by any number

F. Basic concepts of number theory

Number Terminology: Be able to answer questions about or apply these concepts.

1. Prime numbers
2. Composite numbers
3. Greatest common factors
4. Least common multiples
5. Even numbers
6. Odd numbers
7. Remainders (e.g., 27 divided by 12 equals 2 with a remainder of 3)
8. Factor trees; i.e., showing the prime factors of a number in a simple diagram

G. Solving problems and assessing results

Be able to answer questions about or apply these concepts.

1. Real-world problems with whole numbers, fractions, decimals, integers, percents, ratios, rates, and scales.
2. Be able to estimate the result of a calculation and determine the reasonableness of an estimate (e.g., recognize that 34×987 is close to $34 \times 1{,}000$).
3. Be able to recognize the various strategies for solving mathematical problems (e.g., drawing a picture, working backwards, finding a pattern, adding lines to a geometric figure) and be able to choose the most appropriate strategy for a given problem.

II. Algebraic Thinking

A. Patterns and mathematical investigations

Be able to answer questions about or apply the concept of patterns, including patterns that can be found in

1. An array of integers
2. An algorithm
3. Pascal's triangle
4. A sequence of numbers
5. Geometric figures

B. Basic algebraic methods and representations

Be able to answer questions about or apply these concepts.

1. Variables: Be able to translate a verbal expression into an algebraic one.
2. Expressions
3. Algebraic equations: Be able to write and solve algebraic equations.
4. The *xy*-coordinate system and why it is important

C. Associative, commutative, and distributive properties

1. Be able to apply and recognize the associative, commutative, and distributive properties algebraically.

D. Special properties of 0 and 1

Be able to answer questions about or apply these concepts.

1. The meaning of x to the power of zero or 1

E. Equalities and inequalities

Be able to answer questions about or apply the symbols <, >, and = and explain what they mean.

F. Application of formulas

Be able to answer questions about or apply these concepts.

1. Substituting different values into a formula
2. Interpreting a formula graphically
3. Transforming a formula (e.g., solve $C = \frac{5}{9}(F - 32)$ for F)

Discussion areas: Numbers and Operations

- Why is it that 3 is greater than 2, but $\frac{1}{3}$ is less than $\frac{1}{2}$?
- Why do we put an arrow on the end of a number line?
- Is the square of a number always greater than the number? Consider numbers such as 3, –2, $\frac{1}{4}$, and 0.
- Why is $\frac{0}{1}$ equal to 0, but $\frac{1}{0}$ is not even defined? Consider using $\frac{20}{5} \times 4$ and relating it to $20 = 5 \times 4$ to explain this difference.
- Create two or three different ways of visually representing the product of 2 and 4. Think of objects that elementary students would relate to.
- Are 1 and 2 prime numbers? Why or why not?
- Is zero an even number or an odd number?
- Is the sum of two even numbers always even? What about the sum of two odd numbers?
- Make a factor tree for 60.
- If a movie ticket was $5 last week and this week is $6, what was the percent increase?
- If the scale used on a blueprint is 1 inch to 4 feet and the drawing of a room is 4.5 inches wide, how wide is the room?
- Write a problem that uses the "working backwards" method. Be sure to give the end result from which to work.

Discussion areas: Algebraic Thinking

- How would you translate the following statement into a mathematical expression that includes variables?

  "The number of red chips is 3 more than the number of blue chips."
- In the previous example, if there are 41 blue chips and red chips altogether, how many are red?
- What is the difference between an expression and an equation?
- How can the solution to $-3 \leq x < 10$ be represented visually?

III. Geometry and Measurement, Data, Statistics, and Probability

A. Properties, attributes, and hierarchical classification of two- or three-dimensional figures

Be able to answer questions about or apply these concepts.

1. The area of a rectangle or a triangle
2. The area of a circle
3. The circumference of a circle
4. Volume (or capacity)
5. Perimeter
6. Parallelism and what it means when we say two lines are parallel
7. Perpendicularity and what it means when we say two lines are perpendicular
8. The basic properties of all squares
9. The basic properties of all circles
10. The basic properties of all cubes
11. The basic properties of all spheres
12. The basic properties of all rectangles
13. A number of the questions on the test will require knowledge of these properties and relationships to solve measurement and spatial word problems:
    a. finding the area measurement of odd shapes.
    b. finding the volume of cylinders and other three-dimensional shapes.
14. Recognizing symmetrical designs and using the recognition to answer questions about area or volume.
15. Some problems will require you to recognize relationships of figures and shapes (e.g., a triangle made up of two smaller triangles) and use the recognition to answer relationships about perimeter, area, and angles.

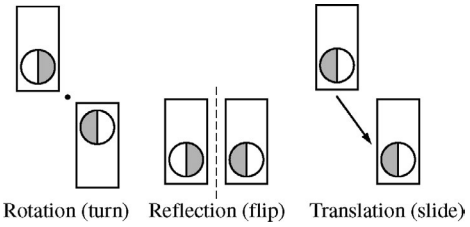
Be able to answer questions about or apply these concepts.

16. How angles are measured
17. Right angle
18. The relationship between the three angles in a triangle
19. Isosceles triangle
20. Right triangle
21. Hypotenuse
22. The use of the Pythagorean theorem

B. Transformations, geometric models, and nets

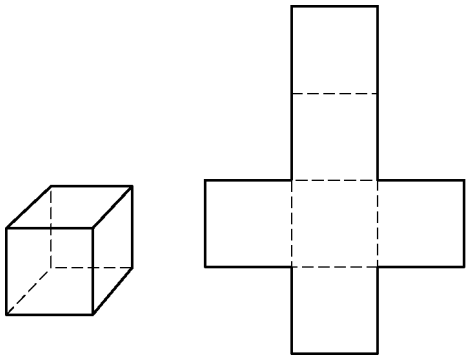
Be able to answer questions about or apply these concepts.

1. The major kinds of transformation shown below.

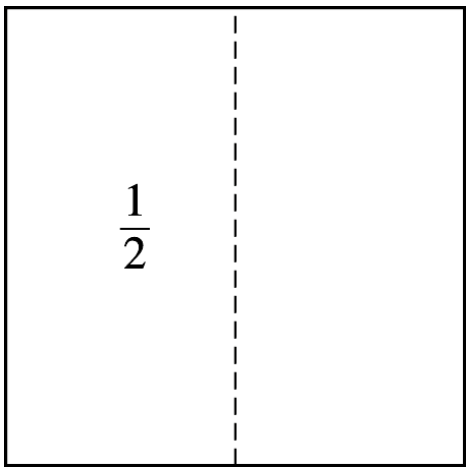


These skills may help you solve problems on the test. These are more advanced than most of the other topics, so you may need to get help.

2. Making a geometric model of an arithmetic operation
3. Making a geometric model of an algebraic factorization
4. Making a geometric model of the sum of a series
5. Reorganizing a three-dimensional shape into a two-dimensional shape, e.g., the "net" of the three-dimensional cube below is the two-dimensional shape to its right.



- $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots$ is an infinite series. Use a square to show that the sum of the series is 1. Hint—start this way:



- How could you estimate the surface area of a soup can using a net of the can made from graph paper?

C. Basic components of the coordinate plane

Be able to answer questions about or apply these concepts.

1. Identifying the axes, the origin, and the quadrants
2. Plotting points
3. Drawing polygons to find one or more attributes

D. Nonstandard, customary, and metric units of measurement

Be able to answer questions about or apply these concepts.

1. Time measurements and calculations in hours and minutes
2. US customary system (inches, feet, yards, miles, pints, quarts, gallons, ounces, pounds, tons, degrees [Fahrenheit])
3. Metric system (meters, liters, grams, degrees [Celsius]) (prefixes *milli-*, *centi-*, *kilo-*)
4. Converting from one unit to another in the same system
5. Reading scales with various gradations
6. Solving real-world problems using these units of measurement

E. Visual displays of quantitative information

One or more questions on the test will require you to read and interpret data in one or more of the following formats.

1. Bar graph
2. Line graph
3. Circle graph
4. Pictograph
5. Table
6. Stem-and-leaf plot
7. Scatterplot
8. Frequency table
9. Histogram
10. Venn diagram

One or more questions on the test will require you to recognize relationships in data in visual displays and perform one or more of the following.

11. Determine an average
12. Determine a weighted average
13. Determine a range
14. Find the median
15. Find the mode

One or more questions on the test will require you to recognize trends and patterns in a visual display and perform one or more of the following.

16. Observe groupings
17. Make comparisons
18. Make predictions or extrapolations
19. Recognize direct or inverse relationships

F. Simple probability and concepts of chance

Be able to answer questions about or apply these concepts.

1. Probability
2. How simple probability is calculated
3. Models that can be used to illustrate probability concepts (e.g., spinners, number cubes, balls in a jar)
4. Set properties (e.g., elements in a set, union, intersection, complement)

G. Fundamental counting techniques

Be able to answer questions about or apply these concepts.

1. The number of possible outcomes for an event (e.g., when a coin is flipped, there are two possible outcomes for which side of the coin faces up; when a number cube is rolled there are 6 possible outcomes for what number lands facing up; when two number cubes are rolled, there are $6 \times 6 = 36$ possible outcomes for the pair of numbers that land facing up.)
2. Sample spaces and counting techniques: defining and counting all possible outcomes

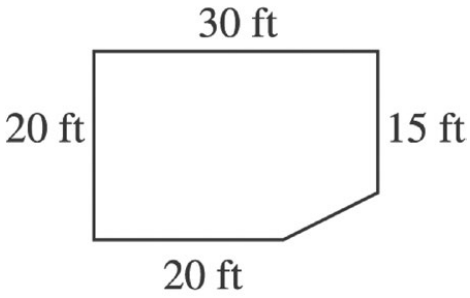
H. Basic descriptive statistics

Be able to answer questions about or apply these concepts.

1. Average (arithmetic mean) and how it is calculated
2. Median and how is it identified
3. Mode and how is it identified
4. Range

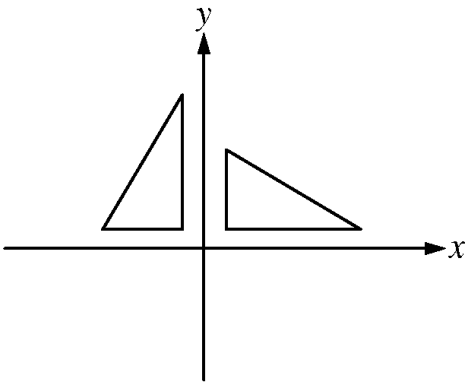
Discussion areas: Geometry and Measurement, Data, Statistics, and Probability

- Do rectangles that have the same perimeter always have the same area?
- For a given perimeter, what is the shape with the greatest area?
- If a figure is a rectangle, is it also a square?
- If a figure is a square, is it also a rectangle?
- What is the area of the following shape?

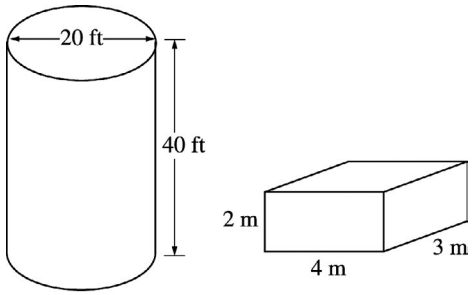


- What stays the same when a transformation is applied?
- What changes when a transformation is applied?

- Describe the transformation shown below What stays the same and what changes?



- On a number line, draw arrows to model this calculation: $13 - 8 + 4 - 2$
- On a grid, model 24 as a product of integers in four different ways.
- On a grid, model 24 as the product of mixed numbers or decimals.
- On a grid, model 24 as the product of numbers that contain square roots.
- What natural phenomena are the bases for many of our time measurements?
- Is 60 kilograms a reasonable weight for a 6-year-old child? Explain by using a benchmark for a kilogram (i.e., an easy-to-manipulate translation to pounds)
- Can a circle graph and a line graph display the same information? Why or why not?
- How is a stem-and-leaf plot like a bar graph? How is it different?
- Describe a real-life use of a mode.
- Describe a real-life situation that illustrates a direct relationship.
- Describe a real-life situation that illustrates an inverse relationship.
- What are the volumes of the following shapes?



Note: Figures not drawn to scale.

- Draw a trapezoid that can be subdivided into four congruent right triangles.
- Draw a trapezoid that can be subdivided into three equilateral triangles.
- Can a right triangle be isosceles?
- Make a sample space for the possible outcomes of the toss of three fair coins and explain why the computation 2 x 2 x 2 gives the number of outcomes in the sample space.
- Tree diagrams: illustrating all ways for an event to happen
- Combinations: counting when order does not matter
- Permutations: counting when order does matter
- Is the average of two different numbers ever greater than one of them?
- Can I find the average of 10 numbers if I know the sum of them but not the numbers themselves?
- Can I find the median of 10 numbers if I know the sum of them but not the numbers themselves?

Social Studies Study Topics

The "Social Studies" component of the Elementary Education: Multiple Subjects test covers United States History, Government and Citizenship, Geography, Anthropology, Sociology, World History and Economics.

The "Social Studies" section of the test was designed to align with Standard 2e of the Program Standards for Elementary Teacher Preparation published by NCATE (National Council for Accreditation of Teacher Education):

> *Candidates know, understand, and use the major concepts and modes of inquiry from the social studies—the integrated study of history, geography, the social sciences, and other related areas—to promote elementary students' abilities to make informed decisions as citizens of a culturally diverse democratic society and interdependent world.*

The "Social Studies" component of the test focuses on understanding important social, economic, cultural, and political concepts; geographical thinking; the workings of governmental systems; important historical events; and contributions of notable individuals within their historical and cultural context. The areas within social studies are mutually enriching and interdependent, and many of the questions on the test will require knowledge and integration of two or more areas.

Note that most states' standards for kindergarten through grade 12 learning include standards that address individual state histories. Since this test, like almost all of the *Praxis* Subject Assessments is used in a number of states, there are no specific state history questions.

I. United States History, Government and Citizenship

Make your own timeline of United States history, with the centuries beginning with 1400, 1500, 1600, and so on (recognizing, of course, that Native Americans were here for thousands of years before that). Put each of the events listed below on your timeline in the correct century, then describe important trends in political, diplomatic, social, religious, artistic, and economic history.

United States History

A. European exploration and colonization

Be able to recognize characteristics of these events, people, and trends; make connections and comparisons among them; and interpret visual or written selections relating to them.

1. The numerous unique and well-developed Native American cultures in North America
2. Causes, purposes, and results of exploration and colonization of North America by Spain, France, and England
3. Interactions between the Native Americans and the Europeans
4. Colonial culture, society, religion, economy, and political institutions from the perspective of various inhabitants: large landowners, farmers, artisans, women, slaves, and colonial leaders

B. The American Revolution and the founding of the nation

Be able to recognize characteristics of these events, people, and trends; make connections and comparisons among them; and interpret visual or written selections relating to them.

1. Causes of the American Revolution
2. Major ideas in the Declaration of Independence and their impact
3. Major ideas in the Articles of Confederation
4. Key individuals and their roles and major beliefs: King George, John Adams, George Washington, Thomas Jefferson, Benjamin Franklin, Thomas Paine
5. The Constitution, how and when it came into being, including major compromises, and the addition of the Bill of Rights
6. The origin of political parties in the United States

C. Growth and expansion of the republic

Be able to recognize characteristics of these events, people, and trends; make connections and comparisons among them; and interpret visual or written selections relating to them.

1. Origins of slavery in the United States, how it is addressed in the United States Constitution, and slavery's effects on political, social, religious, economic, and cultural developments among African Americans and in American society generally

2. Westward expansion: Louisiana Purchase, Lewis and Clark expedition, and the acquisition of Florida, Texas, Oregon, and California
3. Relationships with Mexico (Mexican War and Cession), Canada (War of 1812), and Europe (Monroe Doctrine)
4. The story of the "Trail of Tears," including the Removal Act (broken treaties, massacres, conflicts, and displacement of Native Americans)
5. Impact of technological and agricultural innovations before the Civil War— Whitney's cotton gin, McCormick's reaper, Fulton's steamboat, and the steam locomotive
6. Reasons for and consequences of waves of immigration from Europe in the nineteenth century
7. Civil War and Reconstruction
   a. the economic and cultural differences between North and South
   b. the abolitionist movement
   c. the women's movement
   d. the Fugitive Slave Act and the Dred Scott case
   e. key roles and actions of Abraham Lincoln, Jefferson Davis, Frederick Douglass, William Lloyd Garrison, Harriet Tubman, Harriet Beecher Stowe, and John Brown
   f. key events leading to declaration of secession and war
   g. major points in the Gettysburg Address, Emancipation Proclamation, and the basic provisions and impact of the 13th, 14th, and 15th Amendments to the United States Constitution
   h. impact of Reconstruction policies on the South then and now
   i. segregation after the Civil War, including the Supreme Court decision in *Plessy* v. *Ferguson*
8. Business and labor after the Civil War
   a. bankers and entrepreneurs Andrew Carnegie, John D. Rockefeller, and J.P. Morgan: their industries and the changes in American business that they represented
   b. urban conditions (living conditions, child labor, social stratification)
   c. waves of immigrants after the Civil War
9. The progressive movement's responses to the problems of industrial society (e.g., church and humanitarian groups' actions)
10. The rise of the labor movement
11. America's imperialism at the turn of the century as evidenced in the Spanish-American War, the building of the Panama Canal, and Theodore Roosevelt's "Big Stick Diplomacy"
12. Women's rights movement and its leaders

D. Twentieth-century developments and transformations

Be able to recognize characteristics of these events, people, and trends; make connections and comparisons among them; and interpret visual or written selections relating to them.

1. America's role in the First World War and postwar isolationism
2. Important developments in the 1920s
   a. the Harlem Renaissance (Zora Neale Hurston, Langston Hughes)
   b. Prohibition
   c. the rise of mass-production techniques and new technologies with far-reaching effects (e.g., the automobile and electricity)
3. Women's suffrage (the movement and the amendment)
4. The Great Depression and the New Deal—causes of the Depression; impact on various groups in the United States; Franklin D. Roosevelt and the New Deal (Works Progress Administration; Social Security; National Labor Relations Board)
5. America's role in the Second World War and consequences at home and abroad
   a. internment of Japanese Americans
   b. decision to drop atomic bombs on Hiroshima and Nagasaki and the consequences
   c. postwar consequences (e.g., the baby boom)
6. American society in the second half of the twentieth century
   a. America's role in the Cold War
   b. Korean War—major causes and outcomes
   c. McCarthyism
   d. desegregation in schools
7. Vietnam War—major causes and outcomes
8. Civil rights movement, women's movement, peace movement
9. Environmentalism
10. Rise of the consumer society
11. Changing demographics—ethnic and cultural identities and associations and how they are expressed and play a role in society

12. Development of computers and information systems and the impact on the economy and jobs

Discussion areas: United States History

- What were the weaknesses in the Articles of Confederation that eventually led to its replacement by the Constitution? Why were the Articles written in this way in the first place?
- Name some ways the Constitution affects our lives today.
- What was the Supreme Court's decision in *Marbury* v. *Madison* and what did it establish?
- What was "Manifest Destiny" and how did it influence the expansion of United States territory?
- Make your own "immigration timeline" of the nineteenth century, noting the decades during which immigrants from various countries or regions came to the United States in large numbers.
- Post-Civil War immigration can be viewed in terms of the "melting pot" analogy or in terms of "pluralism" or "multiculturalism." What does this distinction mean, and why is it important?
- What was the Supreme Court's decision in *Brown* v. *Board of Education of Topeka*?
- How was the later decision in *University of California* v. *Bakke* related to another important educational issue in the twentieth century?

Government and Citizenship

E. Nature and purpose of government

Descriptions or excerpts will be given, accompanied by questions asking about these issues.

1. Definition of "government"
2. Purposes of government (conflict resolution, collective decision-making, etc.)
3. Intended and unintended consequences of the ideals and philosophies of various forms of government (e.g., in terms of social welfare and human rights)

F. Forms of government

Be able to identify major characteristics of these forms of government and differentiate among them.

1. Parliamentary systems
2. Federalism
3. Constitutional structures
4. Unitary structures

G. United States Constitution

Questions involving excerpts from the Declaration of Independence or Constitution or questions about major ideas in these documents may be asked, in addition to specific roles and responsibilities in the federal government.

1. The major values, beliefs, principles expressed in the Declaration of Independence, Constitution, and the Bill of Rights
2. The "separation of powers" among the three branches of the federal government and the major responsibilities of each branch

H. Rights and responsibilities of citizens

Descriptions or excerpts will be given, accompanied by questions asking about these topics.

1. The meaning and importance of the following rights of democratic citizens: freedom of speech, religion, press, assembly, petition, and privacy
2. The importance of the following economic rights: property rights, the right to choose one's work, the right to join or not join a labor union, and the right to apply for copyrights and patents
3. Balancing citizens' rights with the common good

4. Citizens' legal obligations (to obey the law, serve as juror, and pay taxes) and civic-minded obligations (becoming informed about issues and candidates, voting, volunteering, and serving in the military or alternative service)
5. Understand the naturalization process by which immigrants become citizens of the United States (literacy, language, and other requirements)

I. State and local government

Questions comparing various levels of government and their responsibilities will be asked.

1. Major responsibilities of state governments
2. Relationship between state governments and the federal government
3. Major responsibilities of local governments
4. Basic principles of tribal sovereignty

Discussion areas: Government and Citizenship

- Compare the major features of a democratic government with those of other forms of government.
- Why were the Mayflower Compact, the Declaration of Independence, and Magna Carta such milestone documents in the political history of the world?
- What is the purpose of the system of checks and balances the United States government?
- What are some examples of checks and balances?
- How has the United States Constitution impacted the relationship between the federal government and the states (e.g., the 10th Amendment, the Commerce Clause)?

II. Geography, Anthropology and Sociology

Geography

A. The world in spatial terms

1. Be able to read and interpret different kinds of maps and images (physical, topographical, political, and weather maps; aerial photographs and satellite images).
2. Be familiar with longitude and latitude and their purposes.
3. Be able to locate the equator and the International Dateline.
4. Be able to use map legends to estimate distances, calculate scale, identify patterns represented in maps, and compute population density.
5. Know the kinds of geographic features that make up the Earth (continents, oceans, seas, rivers, bays, mountain ranges, plateaus, valleys, plains, ice caps, tundra, forest, grassland, desert, island).
6. Be able to locate on a map all seven continents, the four oceans, major seas and rivers, and major mountain ranges.

B. Places and regions

1. Be able to locate on a map major regions, countries, and cities of the world.
2. Be familiar with the ways in which regions are categorized (e.g., political, physical, cultural).

C. Physical systems

Be able to answer definitional questions or questions that require making connections involving these systems and other social studies areas.

1. The fundamental forces at work in cyclical systems like seasons, weather, and climate. (See more about these topics in the "Science" chapter.)
2. The basic mechanisms and consequences of physical changes that have shortterm effects on Earth, including floods, droughts, and snowstorms.
3. The basic mechanisms and consequences of physical changes that have long-term effects on Earth, including earthquakes (plate tectonics) and natural erosion.

D. Human systems

Be able to answer definitional questions or questions that require making connections involving these phenomena and other social studies areas.

1. Factors affecting settlement patterns—why some places are densely populated and others sparsely populated
2. Major population trends in the United States in the nineteenth and twentieth centuries:
   a. immigration patterns and their causes and effects
   b. parts of the country that grew faster than others in the twentieth century
   c. trends in the ethnic composition of the United States population
3. Distinctions between developing and developed (industrialized) nations; the relative wealth of the largest nations
4. Major trade relationships, especially those between the United States and other nations in the late twentieth and early twenty-first centuries

E. Environment and society

Be able to answer definitional questions or questions that require making connections between these relationships and other social studies areas.

1. The impact of the environment on human systems such as
   a. essentials like food, clothing, and shelter
   b. transportation and recreation
   c. economic and industrial systems
2. Effects of human-initiated changes on the environment
   a. construction of houses, roads, and cities
   b. human-initiated fire
   c. water and air pollution
   d. waste disposal
   e. logging, deforestation, erosion, and desertification
   f. global warming
   g. ozone-layer depletion
3. Natural resources—what they are and why they matter
4. Renewable and nonrenewable resources
   a. energy, mineral, food, and land resources
5. Ecosystems and why understanding ecosystems is important

F. Uses of geography

1. Think about how geography can be a helpful component when interpreting past or present events or phenomena such as
   a. the origins of the Industrial Revolution
   b. the current conflicts in the Middle East
   c. the political situations in Korea in the 1940s and 1950s and Vietnam in the 1960s and 1970s
2. Decisions made by the United States government in the nineteenth century concerning Native Americans

Discussion areas: Geography

- What is "map projection" and what kinds of decisions does it force mapmakers to make?
- What is the primary categorization of each of these regions, and why? Arab world, North Africa, Sub-Saharan Africa, Latin America, the Caribbean, North America, Western Europe, Eastern Europe, East Asia, South Central Asia, Southeast Asia, and Oceania
- What is the difference between weather and climate?
- How do earthquakes create mountain ranges?
- What kinds of physical systems led to the creation of the Grand Canyon? What about Yosemite Valley?

Anthropology

Questions about major goals and methods may be asked. Visual or written selections may be given, accompanied by questions about anthropological interpretations.

1. Basic goals of anthropology and archaeology
2. The two branches of anthropology: physical and cultural
3. How kinship (family) patterns address basic human needs and concerns and how they interact with social institutions
4. Social institutions (political structures, faith communities, clubs, ethnic communities, sports organizations) and their visible outgrowths (customs, symbols, celebrations)
5. Social stratification of individuals, groups, and institutions (status, social class, social mobility, class conflict)
6. Human experience and cultural expression (language, stories, music, dance, artifacts, traditions, beliefs, spirituality, values, behavior) and how they contribute to the development and transmission of culture

Sociology

Questions about major goals and methods may be asked. Visual or written selections may be given, accompanied by questions about sociological interpretations.

1. Basic concepts in sociology—networks; primary and secondary groups; social solidarity and conflict; role; status; norms; minority; ethnicity; group; institution
2. Socialization and acculturation— understand the role of socialization in society and the roles of positive and negative sanctions in the socialization process
3. Social stratification and social mobility
4. Ethnic groups and societal change—understand the study of populations, including the impact on society of population growth, distribution, migration, and immigration
5. Stereotypes, biases, values, ideals—understand the concepts of ethnocentrism, cultural relativity, prejudice, discrimination, stereotyping, pluralism, multicultural diversity

III. World History and Economics

World History

A. Classical civilizations (Egypt, Greece, Rome)

Be able to recognize major characteristics and contributions of these civilizations, make connections and comparisons among them, and interpret visual or written selections relating to them.

1. Ancient Egypt (c. 2700–c. 1090 BCE)
   a. influence of geography on the civilization
   b. hieroglyphics and the Rosetta Stone
   c. religious rulership
   d. Pyramids and the Valley of Kings
2. Greece (c. 2000–c. 300 BCE)
   a. influence of geography on the civilization
   b. mythology
   c. social structure and the concepts of citizenship and democracy
3. Commerce, the city-state, and colonies
4. Alexander the Great and the spread of Greek ideas
   a. contrasting views of society: Athens and Sparta
5. Rome (c. 700 BCE – 500 CE)
   a. influence of geography on the civilization
   b. mythology
   c. military domination and its impact on the economy and society
6. Government of Rome: republic to empire
7. The establishment of "rule by law" and the concept of citizenship
8. Origin and spread of Christianity, and Constantinople's role
9. Important contributions in the areas of architecture, technology, science, literature, history, law, military science, and the importance of infrastructure (especially roads and aqueducts) to the empire
10. Major causes for the decline and fall of the empire

B. Twentieth-century developments and transformations

Be able to recognize major characteristics of these events, people, and trends; make connections and comparisons among them; and interpret visual or written selections relating to them.

1. Causes and consequences of the First World War
2. Revolutions: Russian, Mexican, and Chinese Revolutions
3. Worldwide economic depression in the 1930s and the political, social, and economic impact
4. Rise of communism in the Soviet Union and fascism in Germany, Italy, and Japan
5. Causes and consequences of the Second World War; the Holocaust
6. Economic and military power shifts since 1945, including reasons for the rise of Germany and Japan
7. Origin and meaning of the Cold War; collapse of the Soviet Union
8. Post–Second World War decolonization in Africa and Asia and increased democracy in Europe, including
   a. India and Pakistan in 1947
   b. Sub-Saharan nations in 1960
   c. Kenya, Angola, and Mozambique in the 1960s and 1970s
   d. nations in Eastern Europe, the Balkans, and the former Soviet Union in the 1980s and 1990s
9. Rise of a global culture
10. Rise of a global economy
11. Major scientific advances: atomic power, atomic bomb, space travel, satellite technology, computers, genetic manipulation, Internet, e-commerce

Discussion areas: World History

- List as many ways as you can that the pyramids and burial customs of Egypt reflected aspects of Egyptian political, social, cultural, religious, bureaucratic (record keeping and writing), and artistic systems, elements, and values.
- How were the concepts of citizenship and democracy in ancient Greece similar and different from contemporary United States concepts of citizenship and democracy?
- How does a comparison of life in Athens and Sparta illuminate differences among nations in the world today?
- List Greece's important contributions (in drama, sculpture, sports, architecture, mathematics, and science) and the emphasis on human achievement
- How big did the Roman Empire get, with what borders, at its largest? In comparison, how small was it when it fell? What were the main reasons for the success at its largest point and its gradual shrinking?
- What are the main reasons that a global culture emerged in the twentieth century? What are the consequences of this global culture?

Economics

Questions about major concepts and definitions may be asked. Visual or written selections may be given, accompanied by questions about these concepts.

1. Scarcity
2. Needs and wants
3. Resources
4. Cost
5. Opportunity cost
6. Property
7. Capital
8. Goods
9. Markets
10. Price
11. Competition
12. Supply and demand
13. Production and consumption
14. Inflation, deflation, recession, depression
15. Trade and barter
16. Know the basic roles of the following institutions:
    a. corporations
    b. labor unions
    c. banks
    d. nonprofit institutions
    e. credit companies
    f. insurance companies
    g. stock markets
17. Private versus public goods
18. Private versus public services

C. Individuals and the market

Questions about major concepts and definitions may be asked. Visual or written selections may be given, accompanied by questions about these concepts.

1. Employment and unemployment: official United States government definitions of employment, unemployment, and "labor force"
2. Labor
    a. minimum wage
    b. cost-of-living raise
    c. current types of skills that workers need
    d. effects of rapid technological change and international competition on labor in general and individuals
3. Distribution of wealth
    a. be able to interpret tables and graphs having to do with distribution of wealth.

D. Economics' effect on population and resources

Questions about major concepts and definitions may be asked. Visual or written selections may be given, accompanied by questions about these concepts.

1. Private ownership, private enterprise, profits
2. Division of labor and specialization
3. Natural, capital, and human resources

E. Government's role in economics and economics' impact on government

Questions about major concepts and definitions may be asked. Visual or written selections may be given, accompanied by questions about these concepts.

1. Reasons governments levy taxes
2. Government's role in maintaining the country's currency
3. National debt
4. Federal Reserve System
5. Consumer Price Index
6. Federal government's budget ("balanced," "deficit," "surplus")
7. Gross National Product

F. Economic systems

Questions about major concepts and definitions may be asked. Visual or written selections may be given, accompanied by questions about these concepts.

1. Major characteristics of
    a. traditional economies
    b. command economies
    c. free-market economies
    d. communism
    e. socialism
    f. capitalism

G. Impact of technological developments on economy

1. What has been the impact of satellite systems (wireless technology), the Internet, and robotics (in assembly lines and warehouses) on the United States and world economies? How is e-commerce changing the United States and world economies?

H. International economics

1. Basic definitions of
   a. imports and exports
   b. tariffs and quotas
   c. economic sanctions
2. Arguments for and against "free trade"
3. Currencies and exchange rates: the effects when the dollar gains or loses value relative to other currencies

Discussion Areas: Economics

- Why is it claimed that the concept of "scarcity" is the basis for the discipline of economics?

Science Study Topics

The Science component of the Elementary Education: Content Knowledge test covers Earth science, life science, physical science, science as inquiry, science processes, and science in personal and social perspectives.

The Science component of the test focuses on fundamental scientific concepts, principles, and interrelationships within the context of real-world, meaningful scientific phenomena, problems, and issues. Basic understanding of Earth, life processes, and physical matter and energy is crucial, as is an understanding of the nature of science as a complex human enterprise with a distinct philosophy and methodology and a place and role in society.

I. Earth Science

A. Understands the structure of Earth

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Structure and properties of solid Earth
   a. the major layers of Earth
   b. plate tectonics
   c. the three major types of rocks that make up Earth and how they are formed
   d. how soil is formed
   e. minerals
2. Structure and properties of the hydrosphere (oceans)
   a. bodies of water and their differences
   b. the kinds of minerals contained in salt water
   c. the four major oceans
   d. the physical features along the shore
   e. the physical features beneath the surface of the oceans
3. Structure and properties of the atmosphere
   a. the various gases that make up the atmosphere
   b. how the atmosphere is structured in layers

B. Understands processes of Earth

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Processes of solid Earth
   a. weathering
   b. erosion
   c. volcanoes
   d. earthquakes
2. Processes of the hydrosphere (oceans)
   a. currents
   b. waves
   c. tides
3. Processes of the atmosphere
   a. the water cycle
   b. what clouds are made of and how they form and change
   c. the major types of clouds
   d. different types of precipitation
   e. climate and weather:
      – wind belts and pressure zones
      – interaction of air masses and fronts
      – changes in weather from season to season
      – weather maps: isobar and isotherm

C. Understands Earth history

Note: the questions asked will draw on your understanding of the major elements of the topics.

1. Origin of Earth
2. Paleontology
3. The rock record

D. Understands Earth and the universe

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Stars and galaxies
2. The solar system and planets
3. Earth, Sun, and Moon relationships (orbits, rotations, tilt, cycles)
4. Motion of the heavens
5. Comets and meteors

E. Understands Earth patterns, cycles, and changes

Note: the questions asked will draw on your understanding of the major elements of the topics.

1. Patterns, cycles, and changes in Earth and space science

Discussion areas: Earth Science

- What is the inside of Earth like?
- What is the difference between rocks and minerals?
- What substances are found in concrete?
- What are fossils and how are they formed?
- In which layer of the atmosphere is the aurora borealis displayed? What is the cause of this natural light show?
- What is air pressure and how is it measured?
- Why do monuments in Egypt last for thousands of years, while similar monuments in northern climates deteriorate very quickly?
- What is the "Ring of Fire"?
- What causes a volcano to erupt?
- What causes earthquakes?
- What causes tides? What do "low tide" and "high tide" mean?
- The greatest difference in water level between a low tide and a high tide occurs because of what alignment of the Moon, Sun, and Earth?
- How do storms form? How do oceans affect climate?
- Why do the planets circle the Sun?
- How does a solar eclipse occur?
- How are the inner planets of the solar system different from the outer planets?
- What causes the seasons on Earth? What is the positional relationship of the Sun and Earth at each season?
- Why do the stars appear to move across the sky each night while the pattern of stars stays the same?
- Why do different stars appear during different seasons?
- Why does the position of a planet as seen from Earth change in relation to the background of stars?
- Why do stars twinkle while planets do not?

II. Life Science

A. Understands the structure and function of living systems

1. Questions drawing on your understanding of the major elements of these topics will be asked.
   a. living characteristics and cells
   b. tissues and organs
2. Life processes
   a. photosynthesis
   b. respiration
   c. transpiration
   d. transport of water and solutes

B. Understands reproduction and heredity

Questions drawing on your understanding of the major elements of these topics will be asked.

1. Growth and development
2. Patterns of inheritance of traits (genetics)
3. Molecular basis of heredity (DNA, genes, chromosomes)

C. Understands change over time in living things

Questions drawing on your understanding of the major elements of these topics will be asked.

1. Life cycles
2. Mutation
3. Adaptation and natural selection

D. Understands regulation and behavior

Questions drawing on your understanding of the major elements of these topics will be asked.

1. Responses to external stimuli
2. Controlling the internal environment

E. Understands the unity and diversity of life and adaptation

F. Understands classification

G. Understands the interdependence of organisms

Questions drawing on your understanding of the major elements of these topics will be asked.

1. Populations
2. Communities
3. Ecosystems
   a. food chain
   b. food web

Discussion areas: Life Science

- Are most cells flat? What do electron microscope pictures show us about cell shape?
- Why are roots, stems, and leaves important to plants?
- How does the human circulatory system work?
- How does the human digestive system work?
- What are dominant and recessive traits?
- How can two parents with brown eyes have a child with blue eyes?
- What are the steps in complete metamorphosis? Incomplete metamorphosis?
- What is meant by "survival of the fittest"?
- What makes a plant bend toward the light?
- What is the scientific term associated with this?
- How does the human body maintain a constant temperature?
- What are adaptations?
- What happens if certain kinds of organisms, such as edible plants, are introduced or removed from a food chain?
- How do food chains become food webs?

III. Physical Science

A. Understands the physical and chemical properties and structure of matter

Descriptions, visuals, or other examples will be presented, accompanied by questions relating to one or more of these topics. You may also be asked definitional questions about these topics.

1. Physical properties of matter
2. Conservation of matter
3. Physical and chemical changes of matter
4. Mixtures and solutions
5. Atoms and elements
6. Molecules and compounds
   a. chemical notation for molecules (e.g., CO_2)
   b. molecules are composed of atoms

B. Understands forces and motion

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Types of motion
   a. speed, distance, and time relationships
   b. acceleration
   c. circular motion
   d. relative motion
2. Laws of motion
   a. Newton's laws of motion
3. Forces and equilibrium
   a. friction
   b. centripetal force
   c. Newton's universal law of gravitation

C. Understands energy

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Forms of energy
2. Transfer and conservation of energy
3. Simple machines

D. Understands interactions of energy and matter

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Wave phenomena (waves in water; sound waves; earthquake waves)
2. Electromagnetic spectrum
   a. visible light waves
   b. nonvisible waves
      – infrared waves
      – radio waves
      – microwaves
      – X-rays
      – gamma rays
3. Light and color
4. Mirrors and lenses
5. Heat and temperature
   a. heat by conduction, convection, and radiation
6. Electricity and magnetism
   a. ways that electrical energy can be converted to heat, light, and motion
7. Sound

Discussion areas: Physical Science

- Does air take up space?
- Sometimes when two chemicals are combined, a chemical reaction takes place.
- What are some of the signs of such a chemical reaction?
- What is an example of a change of state?
- Where are the protons located in an atom?
- How long does it take for a car traveling 30 miles per hour to go 3 miles?
- When a person is driving a car that is moving at the same speed as another car next to it, why does the second car appear to be still?
- What causes an object in motion to accelerate or slow down?
- What is the difference between weight and mass?
- Describe various ways in which an object can have several forces acting on it and still be at rest.
- How do visible light waves differ from sound waves and water waves?
- What is an example of how each of the nonvisible waves is used in day-to-day life?
- What about the properties of light makes a red apple appear red?
- Is light that interacts with a mirror reflected or refracted?
- Which types of lenses magnify and which types produce an image reduced in size?
- How do lenses help nearsighted and farsighted people?
- What are the basic components of a simple electric circuit?
- How does a compass work?
- Some appliances can convert electrical energy to heat energy, light energy, and energy of motion. Give an example of each.
- Why does the sound that accompanies a lightning strike come after the flash of light?
- What are echoes, and what causes them?

- How is the energy of a rock sitting on the top of a hill different from the energy of a rock sitting at the bottom of the same hill?
- Why does rubbing your hands together make them warmer?
- Describe how energy is transformed from potential energy to kinetic energy as a bicycle travels downhill.

IV. Science in Personal and Social Perspectives

(distributed across Earth, Life, and Physical Sciences, see Test Specifications on page 15)

A. Knows about personal health

Note that the test may contain descriptions, visuals, or other examples along with the questions that relate to one or more of the topics. The test may also include definitional questions on the topics.

1. Nutrition
2. Exercise and fitness
3. Safety and well-being
4. Communicable diseases
5. Substance abuse
6. Common diseases (cold, flu, measles, chicken pox), viral and bacterial causes of disease, how vaccinations work

B. Understands science as a human endeavor, process, and career

Descriptions or situations will be given, accompanied by questions asking about the human aspects of the endeavor.

Discussion areas: Science in Personal and Social Perspectives

- How does physical fitness help a person?
- In what ways can infection spread?
- How do drugs, alcohol, and tobacco affect the body?
- How do prescription medicines differ from over-the-counter medicines?
- What, historically, has been the purpose of sending humans into space?
- Give an example of a complex scientific endeavor that involves the work of hundreds of people. Give an example of a relatively straightforward scientific endeavor that involves the work of a single scientist.

V. Science as Inquiry and Science Processes

(distributed across Earth, Life, and Physical Sciences, see Test Specifications on page 15)

A. Understands science as inquiry

Descriptions or situations will be given, accompanied by questions, appropriate strategies, and decisions.

1. Using appropriate questioning techniques and developing testable questions and hypotheses
2. Planning and conducting simple investigations and using controlled and experimental variables
3. Gathering data with the tools of science and choosing the appropriate tools
4. Organizing and using data to construct\ reasonable explanations, displaying data, analyzing data
5. Communicating investigations and explanations

B. Understands how to use resources and research materials in science

C. Understands the unifying processes of science

A number of conceptual schemes and procedural schemes are used across all science disciplines. These underlying principles are embodied in different ways in different disciplines (e.g., earth science, botany, medical research), but they transcend disciplinary boundaries and provide students with powerful ideas to help them understand the natural world.

1. Systems, order, and organization
2. Evidence, models, and explanation
3. Change, constancy, and measurement
4. Evolution and equilibrium
5. Form and function

Discussion areas: Science as Inquiry and Science Processes

- How are control variables and experimental variables used in scientific investigations?
- How do different questions require different approaches and tools in the investigation stage?
- How do mathematics and technology assist in different kinds of scientific inquiry?
- What are some examples of measuring instruments?

- How does skepticism relate to scientific inquiry?
- What is the role of ethics in scientific inquiry?
- Other than the inquiry process, what methods have led to important new scientific ideas or discoveries?
- Why is each idea considered a crucial conceptual scheme or procedural scheme, and how does each idea cut across the scientific disciplines?

7. Review Smart Tips for Success

Follow test-taking tips developed by experts

Learn from the experts. Take advantage of the following answers to questions you may have and practical tips to help you navigate the *Praxis* test and make the best use of your time.

Should I guess?

Yes. Your score is based on the number of questions you answer correctly, with no penalty or subtraction for an incorrect answer. When you don't know the answer to a question, try to eliminate any obviously wrong answers and then guess at the correct one. Try to pace yourself so that you have enough time to carefully consider every question.

Can I answer the questions in any order?

You can answer the questions in order or skip questions and come back to them later. If you skip a question, you can also mark it so that you can remember to return and answer it later. Remember that questions left unanswered are treated the same as questions answered incorrectly, so it is to your advantage to answer every question.

Are there trick questions on the test?

No. There are no hidden meanings or trick questions. All of the questions on the test ask about subject matter knowledge in a straightforward manner.

Are there answer patterns on the test?

No. You might have heard this myth: the answers on tests follow patterns. Another myth is that there will never be more than two questions in a row with the correct answer in the same position among the choices. Neither myth is true. Select the answer you think is correct based on your knowledge of the subject.

Can I write on the scratch paper I am given?

Yes. You can work out problems on the scratch paper, make notes to yourself, or write anything at all. Your scratch paper will be destroyed after you are finished with it, so use it in any way that is helpful to you. But make sure to select or enter your answers on the computer.

Smart Tips for Taking the Test

1. **Skip the questions you find extremely difficult.** Rather than trying to answer these on your first pass through the test, you may want to leave them blank and mark them so that you can return to them later. Pay attention to the time as you answer the rest of the questions on the test, and try to finish with 10 or 15 minutes remaining so that you can go back over the questions you left blank. Even if you don't know the answer the second time you read the questions, see if you can narrow down the possible answers, and then guess. Your score is based on the number of right answers, so it is to your advantage to answer every question.

2. **Keep track of the time.** The on-screen clock will tell you how much time you have left. You will probably have plenty of time to answer all of the questions, but if you find yourself becoming bogged down, you might decide to move on and come back to any unanswered questions later.

3. **Read all of the possible answers before selecting one.** For questions that require you to select more than one answer, or to make another kind of selection, consider the most likely answers given what the question is asking. Then reread the question to be sure the answer(s) you have given really answer the question. Remember, a question that contains a phrase such as "Which of the following does NOT …" is asking for the one answer that is NOT a correct statement or conclusion.

4. **Check your answers.** If you have extra time left over at the end of the test, look over each question and make sure that you have answered it as you intended. Many test takers make careless mistakes that they could have corrected if they had checked their answers.

5. **Don't worry about your score when you are taking the test.** No one is expected to answer all of the questions correctly. Your score on this test is not analogous to your score on the *GRE*® or other tests. It doesn't matter on the *Praxis* tests whether you score very high or barely pass. If you meet the minimum passing scores for your state and you meet the state's other requirements for obtaining a teaching license, you will receive a license. In other words, what matters is meeting the minimum passing score. You can find passing scores for all states that use the *Praxis* tests at https://www.ets.org/praxis/institutions/scores/passing/ or on the web site of the state for which you are seeking certification/licensure.

6. **Use your energy to take the test, not to get frustrated by it.** Getting frustrated only increases stress and decreases the likelihood that you will do your best. Highly qualified educators and test development professionals, all with backgrounds in teaching, worked diligently to make the test a fair and valid measure of your knowledge and skills. Your state painstakingly reviewed the test before adopting it as a licensure requirement. The best thing to do is concentrate on answering the questions.

8. Check on Testing Accommodations

See if you qualify for accommodations to take the Praxis *test*

What if English is not my primary language?

Praxis tests are given only in English. If your primary language is not English (PLNE), you may be eligible for extended testing time. For more details, visit www.ets.org/praxis/register/plne_accommodations/.

What if I have a disability or other health-related need?

The following accommodations are available for *Praxis* test takers who meet the Americans with Disabilities Act (ADA) Amendments Act disability requirements:

- Extended testing time
- Additional rest breaks
- Separate testing room
- Writer/recorder of answers
- Test reader
- Sign language interpreter for spoken directions only
- Perkins Brailler
- Braille slate and stylus
- Printed copy of spoken directions
- Oral interpreter
- Audio test
- Braille test
- Large print test book
- Large print answer sheet
- Listening section omitted

For more information on these accommodations, visit www.ets.org/praxis/register/disabilities.

Note: Test takers who have health-related needs requiring them to bring equipment, beverages, or snacks into the testing room or to take extra or extended breaks must request these accommodations by following the procedures described in the *Bulletin Supplement for Test Takers with Disabilities or Health-Related Needs* (PDF), which can be found at https://www.ets.org/s/praxis/pdf/bulletin_supplement_test_takers_with_disabilities_health_needs.pdf.

You can find additional information on available resources for test takers with disabilities or health-related needs at www.ets.org/disabilities.

9. Do Your Best on Test Day

Get ready for test day so you will be calm and confident

You followed your study plan. You prepared for the test. Now it's time to prepare for test day.

Plan to end your review a day or two before the actual test date so you avoid cramming. Take a dry run to the test center so you're sure of the route, traffic conditions, and parking. Most of all, you want to eliminate any unexpected factors that could distract you from your ultimate goal—passing the *Praxis* test!

On the day of the test, you should:

- be well rested
- wear comfortable clothes and dress in layers
- eat before you take the test
- bring an acceptable and valid photo identification with you
- bring an approved calculator only if one is specifically permitted for the test you are taking (see Calculator Use, at http://www.ets.org/praxis/test_day/policies/calculators)
- be prepared to stand in line to check in or to wait while other test takers check in

You can't control the testing situation, but you can control yourself. Stay calm. The supervisors are well trained and make every effort to provide uniform testing conditions, but don't let it bother you if the test doesn't start exactly on time. You will have the allotted amount of time once it does start.

You can think of preparing for this test as training for an athletic event. Once you've trained, prepared, and rested, give it everything you've got.

What items am I restricted from bringing into the test center?

You cannot bring into the test center personal items such as:

- handbags, knapsacks, or briefcases
- water bottles or canned or bottled beverages
- study materials, books, or notes
- pens, pencils, scrap paper, or calculators, unless specifically permitted for the test you are taking (see Calculator Use, at http://www.ets.org/praxis/test_day/policies/calculators)
- any electronic, photographic, recording, or listening devices

Personal items are not allowed in the testing room and will not be available to you during the test or during breaks. You may also be asked to empty your pockets. At some centers, you will be assigned a space to store your belongings, such as handbags and study materials. Some centers do not have secure storage space available, so please plan accordingly.

Test centers assume no responsibility for your personal items.

If you have health-related needs requiring you to bring equipment, beverages or snacks into the testing room or to take extra or extended breaks, you need to request accommodations in advance. Procedures for requesting accommodations are described in the Bulletin Supplement for Test Takers with Disabilities or Health-related Needs (PDF).

Note: All cell phones, smart phones (e.g., Android® devices, iPhones®, etc.), and other electronic, photographic, recording, or listening devices are strictly prohibited from the test center. If you are seen with such a device, you will be dismissed from the test, your test scores will be canceled, and you will forfeit your test fees. If you are seen *using* such a device, the device will be confiscated and inspected. For more information on what you can bring to the test center, visit www.ets.org/praxis/test_day/bring.

Are You Ready?

Complete this checklist to determine whether you are ready to take your test.

- ❒ Do you know the testing requirements for the license or certification you are seeking in the state(s) where you plan to teach?
- ❒ Have you followed all of the test registration procedures?
- ❒ Do you know the topics that will be covered in each test you plan to take?
- ❒ Have you reviewed any textbooks, class notes, and course readings that relate to the topics covered?
- ❒ Do you know how long the test will take and the number of questions it contains?
- ❒ Have you considered how you will pace your work?
- ❒ Are you familiar with the types of questions for your test?
- ❒ Are you familiar with the recommended test-taking strategies?
- ❒ Have you practiced by working through the practice questions in this study companion or in a study guide or practice test?
- ❒ If constructed-response questions are part of your test, do you understand the scoring criteria for these questions?
- ❒ If you are repeating a *Praxis* test, have you analyzed your previous score report to determine areas where additional study and test preparation could be useful?

If you answered "yes" to the questions above, your preparation has paid off. Now take the *Praxis* test, do your best, pass it—and begin your teaching career!

10. Understand Your Scores

Understand how tests are scored and how to interpret your test scores

Of course, passing the *Praxis* test is important to you so you need to understand what your scores mean and what your state requirements are.

What are the score requirements for my state?

States, institutions, and associations that require the tests set their own passing scores. Visit www.ets.org/praxis/states for the most up-to-date information.

If I move to another state, will my new state accept my scores?

The *Praxis* tests are part of a national testing program, meaning that they are required in many states for licensure. The advantage of a national program is that if you move to another state that also requires *Praxis* tests, you can transfer your scores. Each state has specific test requirements and passing scores, which you can find at www.ets.org/praxis/states.

How do I know whether I passed the test?

Your score report will include information on passing scores for the states you identified as recipients of your test results. If you test in a state with automatic score reporting, you will also receive passing score information for that state.

A list of states and their passing scores for each test are available online at www.ets.org/praxis/states.

What your *Praxis* scores mean

You received your score report. Now what does it mean? It's important to interpret your score report correctly and to know what to do if you have questions about your scores.

Visit http://www.ets.org/s/praxis/pdf/sample_score_report.pdf to see a sample score report.
To access *Understanding Your Praxis Scores*, a document that provides additional information on how to read your score report, visit www.ets.org/praxis/scores/understand.

Put your scores in perspective

Your score report indicates:

- Your score and whether you passed
- The range of possible scores
- The raw points available in each content category
- The range of the middle 50 percent of scores on the test

If you have taken the same *Praxis* test or other *Praxis* tests over the last 10 years, your score report also lists the highest score you earned on each test taken.

Content category scores and score interpretation

Questions on the *Praxis* tests are categorized by content. To help you in future study or in preparing to retake the test, your score report shows how many raw points you earned in each content category. Compare your "raw points earned" with the maximum points you could have earned ("raw points available"). The greater the difference, the greater the opportunity to improve your score by further study.

Score scale changes

ETS updates *Praxis* tests on a regular basis to ensure they accurately measure the knowledge and skills that are required for licensure. When tests are updated, the meaning of the score scale may change, so requirements may vary between the new and previous versions. All scores for previous, discontinued tests are valid and reportable for 10 years, provided that your state or licensing agency still accepts them.

These resources may also help you interpret your scores:

- *Understanding Your Praxis Scores* (PDF), found at www.ets.org/praxis/scores/understand
- *Praxis* Passing Scores can be found at https://www.ets.org/praxis/institutions/scores/passing/
- State requirements, found at www.ets.org/praxis/states

Appendix: Other Questions You May Have

Here is some supplemental information that can give you a better understanding of the *Praxis* tests.

What do the *Praxis* tests measure?

The *Praxis* tests measure the specific knowledge and skills that beginning teachers need. The tests do not measure an individual's disposition toward teaching or potential for success, nor do they measure your actual teaching ability. The assessments are designed to be comprehensive and inclusive but are limited to what can be covered in a finite number of questions and question types. Teaching requires many complex skills that are typically measured in other ways, including classroom observation, video recordings, and portfolios.

Ranging from Agriculture to World Languages, there are more than 80 *Praxis* tests, which contain selected-response questions or constructed-response questions, or a combination of both.

Who takes the tests and why?

Some colleges and universities use the *Praxis* Core Academic Skills for Educators tests (Reading, Writing, and Mathematics) to evaluate individuals for entry into teacher education programs. The assessments are generally taken early in your college career. Many states also require Core Academic Skills test scores as part of their teacher licensing process.

Individuals entering the teaching profession take the *Praxis* content and pedagogy tests as part of the teacher licensing and certification process required by many states. In addition, some professional associations and organizations require *Praxis* Subject Assessment tests for professional licensing.

Do all states require these tests?

The *Praxis* tests are currently required for teacher licensure in approximately 40 states and United States territories. These tests are also used by several professional licensing agencies and by several hundred colleges and universities. Teacher candidates can test in one state and submit their scores in any other state that requires *Praxis* testing for licensure. You can find details at www.ets.org/praxis/states.

What is licensure/certification?

Licensure in any area—medicine, law, architecture, accounting, cosmetology—is an assurance to the public that the person holding the license possesses sufficient knowledge and skills to perform important occupational activities safely and effectively. In the case of teacher licensing, a license tells the public that the individual has met predefined competency standards for beginning teaching practice.

Because a license makes such a serious claim about its holder, licensure tests are usually quite demanding. In some fields, licensure tests have more than one part and last for more than one day. Candidates for licensure in all fields plan intensive study as part of their professional preparation. Some join study groups, others study alone. But preparing to take a licensure test is, in all cases, a professional activity. Because a licensure exam surveys a broad body of knowledge, preparing for a licensure exam takes planning, discipline, and sustained effort.

Why does my state require the *Praxis* tests?

Your state chose the *Praxis* tests because they assess the breadth and depth of content—called the "domain"—that your state wants its teachers to possess before they begin to teach. The level of content knowledge, reflected in the passing score, is based on recommendations of panels of teachers and teacher educators in

each subject area. The state licensing agency and, in some states, the state legislature ratify the passing scores that have been recommended by panels of teachers.

How were the tests developed?

ETS consulted with practicing teachers and teacher educators around the country during every step of the *Praxis* test development process. First, ETS asked them what knowledge and skills a beginning teacher needs to be effective. Their responses were then ranked in order of importance and reviewed by hundreds of teachers.

After the results were analyzed and consensus was reached, guidelines, or specifications, for the selected-response and constructed-response tests were developed by teachers and teacher educators. Following these guidelines, teachers and professional test developers created test questions that met content requirements and *ETS Standards for Quality and Fairness*.*

When your state adopted the research-based *Praxis* tests, local panels of teachers and teacher educators evaluated each question for its relevance to beginning teachers in your state. During this "validity study," the panel also provided a passing-score recommendation based on how many of the test questions a beginning teacher in your state would be able to answer correctly. Your state's licensing agency determined the final passing-score requirement.

ETS follows well-established industry procedures and standards designed to ensure that the tests measure what they are intended to measure. When you pass the *Praxis* tests your state requires, you are proving that you have the knowledge and skills you need to begin your teaching career.

How are the tests updated to ensure the content remains current?

Praxis tests are reviewed regularly. During the first phase of review, ETS conducts an analysis of relevant state and association standards and of the current test content. State licensure titles and the results of relevant job analyses are also considered. Revised test questions are then produced following the standard test development methodology. National advisory committees may also be convened to review and revise existing test specifications and to evaluate test forms for alignment with the specifications.

How long will it take to receive my scores?

Scores for tests that do not include constructed-response questions are available on screen immediately after the test. Scores for tests that contain constructed-response questions or essays aren't available immediately after the test because of the scoring process involved. Official score reports are available to you and your designated score recipients approximately two to three weeks after the test date for tests delivered continuously, or two to three weeks after the testing window closes for other tests. See the test dates and deadlines calendar at www.ets.org/praxis/register/dates_centers for exact score reporting dates.

Can I access my scores on the web?

All test takers can access their test scores via My *Praxis* Account free of charge for one year from the posting date. This online access replaces the mailing of a paper score report.

The process is easy—simply log into My *Praxis* Account at www.ets.org/praxis and click on your score report. If you do not already have a *Praxis* account, you must create one to view your scores.

Note: You must create a *Praxis* account to access your scores, even if you registered by mail or phone.

**ETS Standards for Quality and Fairness* (2014, Princeton, N.J.) are consistent with the *Standards for Educational and Psychological Testing*, industry standards issued jointly by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education (2014, Washington, D.C.).

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