

Florida Teacher Certification Examinations  
Test Information Guide  
for  
**Elementary Education K–6**



FLORIDA DEPARTMENT OF EDUCATION  
[www.fdoe.org](http://www.fdoe.org)

**Fourth Edition**

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## **Test and Test Information Guide Development**

### **Teacher Certification Testing**

Since 1980, Florida teacher certification candidates have been required to pass the Florida Teacher Certification Examinations (FTCE), which consisted of tests in reading, writing, mathematics, and professional knowledge. The 1986 Florida Legislature modified the testing program by also requiring teacher candidates to pass a test in the subject area in which they wish to be certified. In addition, the Legislature substituted the Florida College-Level Academic Skills Test (CLAST) for the reading, writing, and mathematics portions of the FTCE. The 2000 Florida Legislature replaced the CLAST with the General Knowledge Test, effective July 1, 2002.

The subject area knowledge tested on the Elementary Education K–6 examination was identified and validated by committees of content specialists from within the state of Florida. Committee members included public school teachers, district supervisors, and college faculty with expertise in this field. Committee members were selected on the basis of recommendations by district superintendents, public school principals, deans of education, experts in the field, and other organizations. In developing the test, the committees used an extensive literature review, interviews with selected public school teachers, a large-scale survey of teachers, pilot tests, and their own professional judgment.

### **Role of the Test Information Guide**

The purpose of this test information guide is to help candidates taking the subject area test in Elementary Education K–6 prepare effectively for the examination. The guide was designed to familiarize prospective test takers with various aspects of the examination, including the content that is covered and the way it is represented. The guide should enable candidates to direct their study and to focus on relevant material for review.

This test information guide is intended primarily for use by certification candidates, who may be students in a college or university educator preparation program or persons making a career change. Candidates may have studied and worked in Florida or may be from out of state.

College or university faculty may also use the guide to prepare students for certification, and inservice trainers may find the guide useful for helping previously certified teachers prepare for recertification or multiple certification.

This test information guide is not intended as an all-inclusive source of subject area knowledge, nor is it a substitute for college course work in the subject area. The sample questions are representative of the content of the actual test; however, they are not actual test questions from an actual test form. Instead, the guide is intended to help candidates prepare for the subject area test by presenting an overview of the content and format of the examination.



## Preparation for the Test

The following outline may help you prepare for the examination. Adapt these suggestions to suit your own study habits and the time you have available for review.

### Overview

- **Look over the organization of the test information guide.**

Section 1 discusses the development of the test and test information guide.

Section 2 (this section) outlines test preparation steps.

Section 3 offers strategies for taking the test.

Section 4 presents information about the content and structure of the test.

Section 5 lists question formats and includes sample test questions.

Section 6 provides an annotated bibliography of general references you may find useful in your review.

Section 7 identifies a source of further information.

### Self-Assessment

- **Decide which content areas you should review.**

Section 4 includes the competencies and skills used to develop this subject area test and the approximate proportion of test questions from each competency area.

### Review

- **Study according to your needs.**

Review all of the competencies and concentrate on areas with which you are least familiar.

### Practice

- **Acquaint yourself with the format of the examination.**

Section 5 describes types of questions you may find on the examination.

- **Answer sample test questions.**

Section 5 gives you an opportunity to test yourself with sample test questions and provides an answer key and information regarding the competency to which each question is linked.

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### **Final preparation**

- **Review test-taking advice.**

Section 3 includes suggestions for improving your performance on the examination.

- **Refer to field-specific references.**

Section 6 includes an annotated bibliography listing general references keyed to the competencies and skills used to develop this subject area test.



### Test-Taking Advice

- Go into the examination prepared, alert, and well rested.
- Complete your travel arrangements prior to the examination date. Plan to arrive early so that you can locate the parking facilities and examination room without rushing.
- Dress comfortably and bring a sweater or jacket in case the room is too cool for your comfort.
- Take the following with you to the test site:
  - Admission ticket
  - Proper identification as described in "Identification Policy"
- There are many strategies for taking a test and different techniques for dealing with different types of questions. Nevertheless, you may find the following general suggestions useful.
  - Read each question and all the response options carefully before selecting your answer. Pay attention to all of the details.
  - Go through the entire test once and answer all the questions you are reasonably certain about. Then go back and work through the questions that require more thought.
  - When you are not certain of the correct answer, eliminate as many options as you can and choose the response that seems best. It is to your advantage to answer all the questions on the test, even if you are uncertain about some of your choices.
  - After completing the examination, go back and check every question. Verify that you have answered all of the questions and that your responses are correctly entered.

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## Competencies and Skills and Test Blueprint

The table on the following pages lists the competencies and skills used as the basis for the Elementary Education K–6 examination. These competencies and skills represent the knowledge that teams of teachers, subject area specialists, and district-level educators have determined to be important for beginning teachers. This table can serve as a checklist for assessing your familiarity with each of the areas covered by the test. The competencies and skills should help you organize your review. The test blueprint indicates the approximate percentage of test questions that will cover each specific competency on the exam.

**Competencies** are broad areas of content knowledge.

**Skills** identify specific behaviors that demonstrate the competencies.

**Percentages** indicate the approximate proportion of test questions that represent the competencies on the test.

The following excerpt illustrates the components of the table.

*Approximate percentage of total test questions  
(test blueprint)*

*Competency*

Competency/Skill	Approx. %
<b>LANGUAGE ARTS AND READING</b>	
<b>1 Knowledge of the reading process</b>	<b>29%</b>
1 Identify the content of emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, decoding, concepts of print, motivation, text structures, written language development).	
2 Identify the processes, skills, and stages of word recognition that lead to effective decoding (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic, graphophonemic, morphemic).	
3 Select and apply instructional methods for the development of decoding skills (e.g., continuous blending, chunking).	
4 Distinguish among the components of reading fluency (e.g., accuracy, automaticity, rate, prosody).	
5 Choose and apply instructional methods for developing reading fluency (e.g., practice with high-frequency words, readers theatre, repeated readings).	
6 Identify and differentiate instructional methods and strategies for increasing vocabulary acquisition across the content areas (e.g., word analysis, author's word choice, context clues, multiple exposures).	
7 Identify and evaluate instructional methods and strategies for facilitating students' reading comprehension (e.g., summarizing, self-monitoring, questioning, use of graphic and semantic organizers, think alouds, recognizing story structure).	
8 Identify essential comprehension skills (e.g., main idea, supporting details and facts, author's purpose, point of view, inference, conclusion).	
9 Determine appropriate uses of multiple representations of information for a variety of purposes (e.g., charts, tables, graphs, pictures, print and nonprint media).	
10 Determine and analyze strategies for developing critical-thinking skills such as analysis, synthesis, and evaluation (e.g., making connections and predictions, questioning, summarizing, question generating).	
11 Evaluate and select appropriate instructional strategies for teaching a variety of informational and literary text.	

*Skills 1–11*

**Table of Competencies, Skills, and Approximate Percentages of Questions**

Competency/Skill	Approx. %
<b>LANGUAGE ARTS AND READING</b>	
<b>1 Knowledge of the reading process</b>	<b>29%</b>
<ol style="list-style-type: none"> <li>1 Identify the content of emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, decoding, concepts of print, motivation, text structures, written language development).</li> <li>2 Identify the processes, skills, and stages of word recognition that lead to effective decoding (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic, graphophonemic, morphemic).</li> <li>3 Select and apply instructional methods for the development of decoding skills (e.g., continuous blending, chunking).</li> <li>4 Distinguish among the components of reading fluency (e.g., accuracy, automaticity, rate, prosody).</li> <li>5 Choose and apply instructional methods for developing reading fluency (e.g., practice with high-frequency words, readers theatre, repeated readings).</li> <li>6 Identify and differentiate instructional methods and strategies for increasing vocabulary acquisition across the content areas (e.g., word analysis, author's word choice, context clues, multiple exposures).</li> <li>7 Identify and evaluate instructional methods and strategies for facilitating students' reading comprehension (e.g., summarizing, self-monitoring, questioning, use of graphic and semantic organizers, think alouds, recognizing story structure).</li> <li>8 Identify essential comprehension skills (e.g., main idea, supporting details and facts, author's purpose, point of view, inference, conclusion).</li> <li>9 Determine appropriate uses of multiple representations of information for a variety of purposes (e.g., charts, tables, graphs, pictures, print and nonprint media).</li> <li>10 Determine and analyze strategies for developing critical-thinking skills such as analysis, synthesis, and evaluation (e.g., making connections and predictions, questioning, summarizing, question generating).</li> <li>11 Evaluate and select appropriate instructional strategies for teaching a variety of informational and literary text.</li> </ol>	

Competency/Skill	Approx. %
<b>2 Knowledge of literary analysis and genres</b>	<b>16%</b>
<ol style="list-style-type: none"> <li>1 Differentiate among characteristics and elements of a variety of literary genres (e.g., realistic fiction, fantasy, poetry, informational texts).</li> <li>2 Identify and analyze terminology and intentional use of literary devices (e.g., simile, metaphor, personification, onomatopoeia, hyperbole).</li> <li>3 Evaluate and select appropriate multicultural texts based on purpose, relevance, cultural sensitivity, and developmental appropriateness.</li> <li>4 Identify and evaluate appropriate techniques for varying student response to texts (e.g., think-pair-share, reading response journals, evidence-based discussion).</li> </ol>	
<b>3 Knowledge of language and the writing process</b>	<b>16%</b>
<ol style="list-style-type: none"> <li>1 Identify and evaluate the developmental stages of writing (e.g., drawing, dictating, writing).</li> <li>2 Differentiate stages of the writing process (i.e., prewriting, drafting, revising, editing, publishing).</li> <li>3 Distinguish among the modes of writing (e.g., narrative, informative/explanatory, argument).</li> <li>4 Select the appropriate mode of writing for a variety of occasions, purposes, and audiences.</li> <li>5 Identify and apply instructional methods for teaching writing conventions (e.g., spelling, punctuation, capitalization, syntax, word usage).</li> <li>6 Apply instructional methods for teaching writer's craft across genres (e.g., precise language, figurative language, linking words, temporal words, dialogue, sentence variety).</li> </ol>	

Competency/Skill	Approx. %
<b>4 Knowledge of literacy instruction and assessments</b>	<b>23%</b>
<ol style="list-style-type: none"> <li>1 Distinguish among different types of assessments (e.g., norm-referenced, criterion-referenced, diagnostic, curriculum-based) and their purposes and characteristics.</li> <li>2 Select and apply oral and written methods for assessing student progress (e.g., informal reading inventories, fluency checks, rubrics, story retelling, portfolios).</li> <li>3 Analyze assessment data (e.g., screening, progress monitoring, diagnostic) to guide instructional decisions and differentiate instruction.</li> <li>4 Analyze and interpret students' formal and informal assessment results to inform students and stakeholders.</li> <li>5 Evaluate the appropriateness of assessment instruments and practices.</li> <li>6 Select appropriate classroom organizational formats (e.g., literature circles, small groups, individuals, workshops, reading centers, multiage groups) for specific instructional objectives.</li> <li>7 Evaluate methods for the diagnosis, prevention, and intervention of common emergent literacy difficulties.</li> </ol>	
<b>5 Knowledge of communication and media literacy</b>	<b>16%</b>
<ol style="list-style-type: none"> <li>1 Identify characteristics of penmanship (e.g., legibility, letter formation, spacing).</li> <li>2 Distinguish among listening and speaking strategies (e.g., questioning, paraphrasing, eye contact, voice, gestures).</li> <li>3 Identify and apply instructional methods (e.g., collaborative conversation, collaborative discussion, presentation) for developing listening and speaking skills.</li> <li>4 Select and evaluate a wide array of resources (e.g., Internet, printed material, artifacts, visual media, primary sources) for research and presentation.</li> <li>5 Determine and apply the ethical process (e.g., citation, paraphrasing) for collecting and presenting authentic information while avoiding plagiarism.</li> <li>6 Identify and evaluate current technology for use in educational settings.</li> </ol>	

Competency/Skill		Approx. %
<b>SOCIAL SCIENCE</b>		
<b>1</b>	<b>Knowledge of effective instructional practices and assessment of the social sciences</b>	<b>19%</b>
1	Select appropriate resources for instructional delivery of social science concepts, including complex informational text.	
2	Identify appropriate resources for planning for instruction of social science concepts.	
3	Choose appropriate methods for assessing social science concepts.	
4	Determine appropriate learning environments for social science lessons.	
<b>2</b>	<b>Knowledge of time, continuity, and change (i.e., history)</b>	<b>26%</b>
1	Identify and analyze historical events that are related by cause and effect.	
2	Analyze the sequential nature of historical events using timelines.	
3	Analyze examples of primary and secondary source documents for historical perspective.	
4	Analyze the impacts of the cultural contributions and technological developments of Africa; the Americas; Asia, including the Middle East; and Europe.	
5	Identify the significant historical leaders and events that have influenced Eastern and Western civilizations.	
6	Determine the causes and consequences of exploration, settlement, and growth on various cultures.	
7	Interpret the ways that individuals and events have influenced economic, social, and political institutions in the world, nation, or state.	
8	Analyze immigration and settlement patterns that have shaped the history of the United States.	
9	Identify how various cultures contributed to the unique social, cultural, economic, and political features of Florida.	
10	Identify the significant contributions of the early and classical civilizations.	

Competency/Skill	Approx. %
<b>3 Knowledge of people, places, and environment (i.e., geography)</b>	<b>18%</b>
<ol style="list-style-type: none"> <li>1 Identify and apply the six essential elements of geography (i.e., the world in spatial terms, places and regions, physical systems, human systems, environment and society, uses of geography), including the specific terms for each element.</li> <li>2 Analyze and interpret maps and other graphic representations of physical and human systems.</li> <li>3 Identify and evaluate tools and technologies (e.g., maps, globe, GPS, satellite imagery) used to acquire, process, and report information from a spatial perspective.</li> <li>4 Interpret statistics that show how places differ in their human and physical characteristics.</li> <li>5 Analyze ways in which people adapt to an environment through the production and use of clothing, food, and shelter.</li> <li>6 Determine the ways tools and technological advances affect the environment.</li> <li>7 Identify and analyze physical, cultural, economic, and political reasons for the movement of people in the world, nation, or state.</li> <li>8 Evaluate the impact of transportation and communication networks on the economic development in different regions.</li> <li>9 Compare and contrast major regions of the world, nation, or state.</li> </ol>	
<b>4 Knowledge of government and the citizen (i.e., government and civics)</b>	<b>20%</b>
<ol style="list-style-type: none"> <li>1 Distinguish between the structure, functions, and purposes of federal, state, and local government.</li> <li>2 Compare and contrast the rights and responsibilities of a citizen in the world, nation, state, and community.</li> <li>3 Identify and interpret major concepts of the U.S. Constitution and other historical documents.</li> <li>4 Compare and contrast the ways the legislative, executive, and judicial branches share powers and responsibility.</li> <li>5 Analyze the U.S. electoral system and the election process.</li> <li>6 Identify and analyze the relationships between social, economic, and political rights and the historical documents that secure these rights in the United States.</li> <li>7 Identify and analyze the processes of the U.S. legal system.</li> </ol>	

Competency/Skill	Approx. %
<b>5 Knowledge of production, distribution, and consumption (i.e., economics)</b>	<b>17%</b>
<ol style="list-style-type: none"> <li>1 Determine ways that scarcity affects the choices made by governments and individuals.</li> <li>2 Compare and contrast the characteristics and importance of currency.</li> <li>3 Identify and analyze the role of markets from production through distribution to consumption.</li> <li>4 Identify and analyze factors to consider when making consumer decisions.</li> <li>5 Analyze the economic interdependence between nations (e.g., trade, finance, movement of labor).</li> <li>6 Identify human, natural, and capital resources and evaluate how these resources are used in the production of goods and services.</li> </ol>	

Competency/Skill	Approx. %
<b>SCIENCE</b>	
<b>1 Knowledge of effective science instruction</b>	<b>20%</b>
<ol style="list-style-type: none"> <li>1 Analyze and apply developmentally appropriate researched-based strategies for teaching science practices.</li> <li>2 Select and apply safe and effective instructional strategies to utilize manipulatives, models, scientific equipment, real-world examples, and print and digital representations to support and enhance science instruction.</li> <li>3 Identify and analyze strategies for formal and informal learning experiences to provide science curriculum that promotes students' innate curiosity and active inquiry (e.g., hands-on experiences, active engagement in the natural world, student interaction).</li> <li>4 Select and analyze collaborative strategies to help students explain concepts, to introduce and clarify formal science terms, and to identify misconceptions.</li> <li>5 Identify and apply appropriate reading strategies, mathematical practices, and science-content materials to enhance science instruction for learners at all levels.</li> <li>6 Apply differentiated strategies in science instruction and assessments based on student needs.</li> <li>7 Identify and apply ways to organize and manage a classroom for safe, effective science teaching that reflect state safety procedures and restrictions (e.g., procedures, equipment, disposal of chemicals, classroom layout, use of living organisms).</li> <li>8 Select and apply appropriate technology, science tools and measurement units for students' use in data collection and the pursuit of science.</li> <li>9 Select and analyze developmentally appropriate diagnostic, formative and summative assessments to evaluate prior knowledge, guide instruction, and evaluate student achievement.</li> <li>10 Choose scientifically and professionally responsible content and activities that are socially and culturally sensitive.</li> </ol>	

Competency/Skill	Approx. %
<b>2 Knowledge of the nature of science</b>	<b>18%</b>
1 Analyze the dynamic nature of science models, laws, mechanisms, and theories that explain natural phenomena (e.g., durability, tentativeness, replication, reliance on evidence).	
2 Identify and apply science and engineering practices through integrated process skills (e.g., observing, classifying, predicting, hypothesizing, designing and carrying out investigations, developing and using models, constructing and communicating explanations).	
3 Differentiate between the characteristics of experiments (e.g., multiple trials, control groups, variables) and other types of scientific investigations (e.g., observations, surveys).	
4 Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).	
5 Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.	
6 Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.	
7 Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).	
8 Analyze the interactions of science and technology with society including cultural, ethical, economic, political, and global factors.	

Competency/Skill	Approx. %
<b>3 Knowledge of physical sciences</b>	<b>20%</b>
<ol style="list-style-type: none"> <li>1 Identify and differentiate among the physical properties of matter (e.g., mass, volume, texture, hardness, freezing point).</li> <li>2 Identify and differentiate between physical and chemical changes (e.g., tearing, burning, rusting).</li> <li>3 Compare the properties of matter during phase changes through the addition and/or removal of energy (e.g., boiling, condensation, evaporation).</li> <li>4 Differentiate between the properties of homogeneous mixtures (i.e., solutions) and heterogeneous mixtures.</li> <li>5 Identify examples of and relationships among atoms, elements, molecules, and compounds.</li> <li>6 Identify and compare potential and kinetic energy.</li> <li>7 Differentiate among forms of energy, transformations of energy, and their real-world applications (e.g., chemical, electrical, mechanical, heat, light, sound).</li> <li>8 Distinguish among temperature, heat, and forms of heat transfer (e.g., conduction, convection, radiation).</li> <li>9 Analyze the functionality of an electrical circuit based on its conductors, insulators, and components.</li> <li>10 Identify and apply the characteristics of contact forces (e.g., push, pull, friction), at-a-distance forces (e.g., magnetic, gravitational, electrostatic), and their effects on matter (e.g., motion, speed).</li> </ol>	

Competency/Skill	Approx. %
<b>4 Knowledge of Earth and space</b>	<b>19%</b>
<ol style="list-style-type: none"> <li>1 Identify characteristics of geologic formations (e.g., volcanoes, canyons, mountains) and the mechanisms by which they are changed (e.g., physical and chemical weathering, erosion, deposition).</li> <li>2 Identify and distinguish among major groups and properties of rocks and minerals and the processes of their formations.</li> <li>3 Identify and analyze the characteristics of soil, its components and profile, and the process of soil formation.</li> <li>4 Identify and analyze processes by which energy from the Sun is transferred (e.g., radiation, conduction, convection) through Earth's systems (e.g., biosphere, hydrosphere, geosphere, atmosphere, cryosphere).</li> <li>5 Identify and analyze the causes and effects of atmospheric processes and conditions (e.g., water cycle, weather, climate).</li> <li>6 Identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.</li> <li>7 Analyze the Sun-Earth-Moon system in order to explain repeated patterns such as day and night, phases of the Moon, tides, and seasons.</li> <li>8 Compare and differentiate the composition and various relationships among the objects of our Solar System (e.g., Sun, planets, moons, asteroids, comets).</li> <li>9 Identify major events in the history of space exploration and their effects on society.</li> </ol>	

Competency/Skill		Approx. %
<b>5</b>	<b>Knowledge of life science</b>	<b>23%</b>
1	Identify and compare the characteristics of living and nonliving things.	
2	Analyze the cell theory as it relates to the functional and structural hierarchy of all living things.	
3	Identify and compare the structures and functions of plant and animal cells.	
4	Classify living things into major groups (i.e., Linnaean system) and compare according to characteristics (e.g., physical features, behaviors, development).	
5	Compare and contrast the structures, functions, and interactions of human and other animal organ systems (e.g., respiration, reproduction, digestion).	
6	Distinguish among infectious agents (e.g., viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.	
7	Identify and analyze the processes of heredity and natural selection and the scientific theory of evolution.	
8	Analyze the interdependence of living things with each other and with their environment (e.g., food webs, ecosystems, pollution).	
9	Identify and analyze plant structures and the processes of photosynthesis, transpiration, and reproduction (i.e., sexual, asexual).	
10	Predict the responses of plants to various stimuli (e.g., heat, light, gravity).	
11	Identify and compare the life cycles and predictable ways plants and animals change as they grow, develop, and age.	

Competency/Skill		Approx. %
<b>MATHEMATICS</b>		
<b>1</b>	<b>Knowledge of student thinking and instructional practices</b>	<b>26%</b>
1	Analyze and apply appropriate mathematical concepts, procedures, and professional vocabulary (e.g., subitize, transitivity, iteration, tiling) to evaluate student solutions.	
2	Analyze and discriminate among various problem structures with unknowns in all positions in order to develop student understanding of operations (e.g., put-together/take-apart, arrays/area).	
3	Analyze and evaluate the validity of a student's mathematical model or argument (e.g., inventive strategies, standard algorithms) used for problem solving.	
4	Interpret individual student mathematics assessment data (e.g., diagnostic, formative, progress monitoring) to guide instructional decisions and differentiate instruction.	
5	Select and analyze structured experiences for small and large groups of students according to the cognitive complexity of the task.	
6	Analyze learning progressions to show how students' mathematical knowledge, skills, and understanding develop over time.	
7	Distinguish among the components of math fluency (i.e., accuracy, automaticity, rate, flexibility).	

Competency/Skill	Approx. %
<b>2 Knowledge of operations, algebraic thinking, counting and number in base ten</b>	<b>28%</b>
<ol style="list-style-type: none"> <li>1 Interpret and extend multiple representations of patterns and functional relationships by using tables, graphs, equations, expressions, and verbal descriptions.</li> <li>2 Select the representation of an algebraic expression, equation, or inequality that models a real-world situation.</li> <li>3 Analyze and apply the properties of equality and operations in the context of interpreting solutions.</li> <li>4 Determine whether two algebraic expressions are equivalent by applying properties of operations or equality.</li> <li>5 Evaluate expressions with parentheses, brackets, and braces.</li> <li>6 Analyze and apply strategies (e.g., models, estimation, reasonableness) to solve multistep word problems.</li> <li>7 Apply number theory concepts (e.g., primes, composites, multiples, factors, parity, rules of divisibility).</li> <li>8 Identify strategies (e.g., compensation, combining tens and ones) based on place value to perform multidigit arithmetic.</li> </ol>	
<b>3 Knowledge of fractions, ratios, and integers</b>	<b>18%</b>
<ol style="list-style-type: none"> <li>1 Compare fractions, integers, and integers with integer exponents and place them on a number line.</li> <li>2 Convert among standard measurement units within and between measurement systems (e.g., metric, U.S. customary) in the context of multistep, real-world problems.</li> <li>3 Solve problems involving addition, subtraction, multiplication, and division of fractions, including mixing whole numbers and fractions, decimals and percents by using visual models and equations to represent the problems and their solutions.</li> <li>4 Select the representation (e.g., linear, area, set model) that best represents the problem and solution, given a word problem or equation involving fractions.</li> <li>5 Solve real-world problems involving ratios and proportions.</li> </ol>	

<b>Competency/Skill</b>		<b>Approx. %</b>
<b>4</b>	<b>Knowledge of measurement, data, and statistics</b>	<b>16%</b>
1	Calculate and interpret statistics of variability (e.g., range, mean absolute deviation) and central tendency (e.g., mean, median).	
2	Analyze and interpret data through the use of frequency tables and graphs.	
3	Select appropriate measurement units to solve problems involving estimates and measurements.	
4	Evaluate the choice of measures of center and variability, with respect to the shape of the data distribution and the context in which the data were gathered.	
5	Solve problems involving distance, time, liquid volume, mass, and money, which may include units expressed as fractions or decimals.	
<b>5</b>	<b>Knowledge of geometric concepts</b>	<b>12%</b>
1	Apply geometric properties and relationships to solve problems involving perimeter, area, surface area, and volume.	
2	Identify and locate ordered pairs in all four quadrants of a rectangular coordinate system.	
3	Identify and analyze properties of three-dimensional shapes using formal mathematical terms such as volume, faces, edges, and vertices.	
4	Classify two-dimensional figures in a hierarchy based on mathematical properties.	

## 5

## Test Format and Sample Questions

The Elementary Education K–6 subject area test consists of four subtests: Language Arts and Reading, Social Science, Science, and Mathematics. There are approximately 220 multiple-choice items. You will have four and one-half hours to complete the test.

Each of the questions in the exam will contain four response options. You will choose the best response out of four options, and indicate **A**, **B**, **C**, or **D**. The table below presents types of questions on the exam and directs you to examples of these formats among the sample items that follow.

Type of Question	Sample Question
<p><b>Sentence completion</b> Select the response option that best completes the sentence.</p>	Question 1, page 22
<p><b>Direct question</b> Choose the response option that best answers the question.</p>	Question 2, page 22
<p><b>Scenario</b> Examine a classroom situation or a student composition. Then select the response option that best answers a question, recommends a course of action, or gives the appropriate evaluation or teacher comment.</p>	Question 5, page 22
<p><b>Word Problem</b> Apply mathematical principles to solve a real-world problem.</p>	Question 3, page 29
<p><b>Graphics</b> Choose the option that best answers a question involving a number line, a geometric figure, graphs of lines or curves, a table, or a chart.</p>	Question 4, page 30

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## **Sample Questions**

The following questions represent both the form and content of questions on the examination. These questions will acquaint you with the general format of the examination; however, these sample questions do not cover all of the competencies and skills that are tested and will only approximate the degree of examination difficulty.

An answer key follows at the end of the sample questions. The answer key includes information regarding the competency to which each question is linked.

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**DIRECTIONS: Read each question and select the best response.**

**Subtest 1: Language Arts and Reading**

1. The most effective way to develop students' reading fluency is through
  - A. repeated reading.
  - B. choral reading.
  - C. round-robin reading.
  - D. readers theatre.
  
2. Which of the following instructional strategies would be a good way to introduce a variety of genres to a class in order to compare and contrast information about a subject?
  - A. sign systems
  - B. read alouds
  - C. book clubs
  - D. text sets
  
3. Which literary device is being used when inanimate objects or abstract concepts are seemingly endowed with human characteristics?
  - A. imagery
  - B. paradox
  - C. personification
  - D. metonymy
  
4. Which of the following describes what happens in the graphophonic component of writing?
  - A. Students learn how to form letters correctly and legibly.
  - B. Students learn how to organize ideas into various text structures.
  - C. Students learn that one sound may be formed a number of different ways.
  - D. Students learn that words are made up of letters that represent objects and ideas.
  
5. A 3<sup>rd</sup>-grade teacher asks the students to partner-read a literary selection. The teacher walks around the room and stops to question each pair of students about the story. Which type of assessment is the teacher using?
  - A. informal
  - B. formal
  - C. diagnostic
  - D. standardized

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6. Which of the following modes of writing is intended to provide information and includes facts and data?
    - A. descriptive
    - B. narrative
    - C. expository
    - D. persuasive
  
  7. A kindergarten teacher prefaces reading to the class by pointing out the title, author, illustrator, and title page. Which skill is this teacher most likely developing with his students?
    - A. generating questions
    - B. expanding vocabulary
    - C. concepts about books
    - D. comprehension of text
  
  8. Students need a collection of maps to complete an assignment. The best resource for students to use would be a(an)
    - A. dictionary.
    - B. periodical.
    - C. atlas.
    - D. encyclopedia.

### **Subtest 2: Social Science**

1. To assess a student's ability to analyze the draining of the Everglades and the development of South Florida, it would be most effective to ask the student to
  - A. participate in a play about the state's agriculture.
  - B. prepare a report on early exploration in the area.
  - C. label a blank political map of the state.
  - D. write a cause-and-effect essay about the region.
  
2. A 2<sup>nd</sup>-grade teacher is planning a lesson on the Constitution. Of the following, which would be the most appropriate primary source through which to present the lesson?
  - A. watch a video clip of the Emancipation Proclamation
  - B. read a complex text about the Boston Tea Party
  - C. view a replica of the Constitution document
  - D. sing a song about legal documents

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3. The Sons of Liberty organized a demonstration primarily in response to the
    - A. Quartering Act.
    - B. Stamp Act.
    - C. Townshend Act.
    - D. Tea Act.
  
  4. Between 1849 and 1852, nearly 250,000 people arrived in California, which ultimately led to the admission of California as a state in 1850. Which was the cause of the largest migration in American history to date?
    - A. California Gold Rush
    - B. discovery of oil and gas
    - C. expansion of the fur trade
    - D. Transcontinental Railroad
  
  5. The formal name the United States of America denotes which type of region?
    - A. language
    - B. religious
    - C. political
    - D. climate
  
  6. Which of the following U.S. documents states that the purposes of government include establishing justice and securing the blessings of liberty?
    - A. the Articles of Confederation
    - B. the Constitution of the United States
    - C. the Declaration of Independence
    - D. the Bill of Rights
  
  7. Over the course of U.S. history, six constitutional amendments have expanded voting rights to more citizens to include African Americans, women, and young citizens.

Which amendment specifically gave women the right to vote?

- A. Fifteenth amendment
- B. Nineteenth amendment
- C. Twenty-fourth amendment
- D. Twenty-sixth amendment

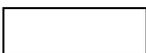
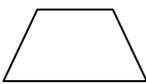
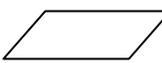
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8. The Latin phrase *caveat emptor* encourages consumers to
- A. use comparison shopping to get the best prices.
  - B. avoid using credit to buy products.
  - C. refuse to buy items on impulse or hunches.
  - D. examine products carefully before purchasing.

**Subtest 3: Science**

1. During the discovery and application process students are making discoveries. Which of the following should the teacher be doing?
- A. doing a demonstration as instruction
  - B. coaching and guiding children as needed
  - C. presenting situations and posing questions
  - D. maintaining order throughout the classroom
2. Which scientific device would be most appropriate to use to map the ocean floor?
- A. sonar
  - B. ground penetrating radar
  - C. seismometer
  - D. microwave generator
3. When examining the color and clarity of 20 milliliters of a liquid, which of the following would be the most appropriate substitute for a test tube?
- A. beaker
  - B. eyedropper
  - C. graduated cylinder
  - D. drinking glass
4. A pendulum bob swings back and forth. When does the bob have its greatest potential energy?
- A. when the bob starts to move downward
  - B. when the bob starts to move upward
  - C. when the bob is at the top of the arc
  - D. when the bob is at the bottom of the arc

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5. Which of the following is the most important rationale for the scientific study of Mars?
- A. investigating the existence of intelligent life forms
  - B. understanding the evolution of the solar system
  - C. gaining access to valuable minerals
  - D. establishing a human colony
6. Which of the following structures is present in plant cells but not in animal cells?
- A. chloroplast
  - B. mitochondrion
  - C. cytoplasm
  - D. nucleus
7. The mechanism that Darwin saw as the means for evolution to occur was
- A. under production of offspring.
  - B. over production of offspring.
  - C. artificial selection.
  - D. natural selection.

## K–6 Mathematics Reference Sheet

Area		
	Triangle	$A = \frac{1}{2}bh$
	Rectangle	$A = lw$
	Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$
	Parallelogram	$A = bh$
	Circle	$A = \pi r^2$

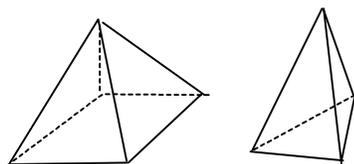
KEY	
$b$ = base	$d$ = diameter
$h$ = height	$r$ = radius
$l$ = length	$A$ = area
$w$ = width	$C$ = circumference
$S.A.$ = surface area	$V$ = volume
	$B$ = area of base
Use 3.14 or $\frac{22}{7}$ for $\pi$	

### Circumference

$$C = \pi d = 2\pi r$$

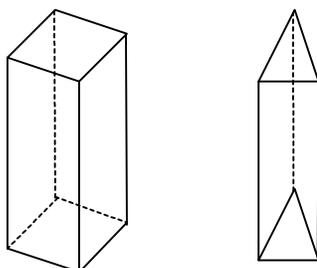
### Surface Area

- Surface area of a prism or pyramid equals the sum of the areas of all faces.



### Volume

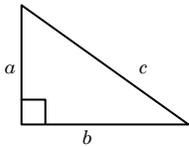
- Volume of a triangular or rectangular prism equals the Area of the Base ( $B$ ) times the height ( $h$ ).  
 $V = Bh$



- 
- 
2. Volume of a pyramid equals  $\frac{1}{3}$  times the Area of the Base ( $B$ ) times the height ( $h$ ).

$$V = \frac{1}{3}Bh$$

**Pythagorean theorem:**  $a^2 + b^2 = c^2$



## Conversions

1 yard = 3 feet = 36 inches  
1 mile = 1,760 yards = 5,280 feet  
1 acre = 43,560 square feet  
1 hour = 60 minutes  
1 minute = 60 seconds

1 liter = 1000 milliliters = 1000 cubic centimeters  
1 meter = 100 centimeters = 1000 millimeters  
1 kilometer = 1000 meters  
1 gram = 1000 milligrams  
1 kilogram = 1000 grams

1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts  
1 pound = 16 ounces  
1 ton = 2,000 pounds

Metric numbers with four digits are presented without a comma (e.g., 9960 kilometers).  
For metric numbers greater than four digits, a space is used instead of a comma (e.g., 12 500 liters).

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#### Subtest 4: Mathematics

1. Which of the following sequences is the most appropriate learning progression through the levels of geometric thinking?
  - A. analytic, abstract, descriptive
  - B. analytic, descriptive, abstract
  - C. descriptive, abstract, analytic
  - D. descriptive, analytic, abstract
  
2. A local school district requires all 5<sup>th</sup> graders to complete an untimed test containing 50 multiple choice mathematics problems. The tests are scored and the results are compared throughout the district. What component of mathematics fluency is most likely the goal of this type of assessment?
  - A. rate
  - B. flexibility
  - C. automaticity
  - D. accuracy
  
3. A group of students are working on a project. They complete 30% of the project in 12 hours. If they continue to work at the same speed, how many hours will it take the group to finish the project?
  - A. 24 hours
  - B. 36 hours
  - C. 40 hours
  - D. 42 hours

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4. A student was responsible for taking care of a plant over a 3 month period. The student measured and recorded the height of the plant at the end of each month as shown in the table.

Number of Months with the Plant	Height of the Plant in Inches
0	7
1	9
2	11
3	13

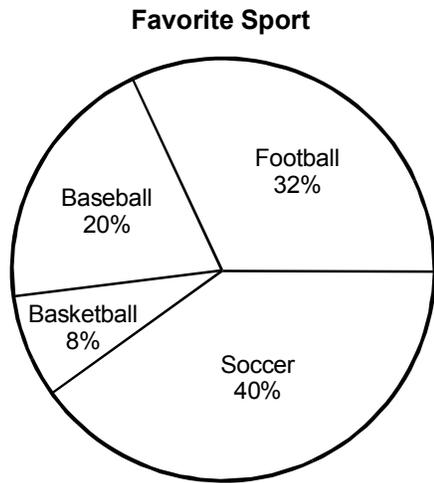
Which of the following equations relates the height of the plant,  $h$ , and the number of months,  $m$ , that the student had taken care of the plant, assuming a constant rate of growth?

- A.  $2h + 2 = m$   
B.  $7m + 2 = h$   
C.  $2m + 7 = m$   
D.  $2m + 7 = h$
5. Simplify the expression.

$$90 - 60 \div 30 + 10$$

- A. 10  
B. 11  
C. 78  
D. 98

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- 
6. The following circle graph shows the results of a survey of 150 students. How many students chose baseball as their favorite sport?



- A. 15  
B. 20  
C. 30  
D. 40
7. Which of the following polygons can be classified as regular?



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## Answer Key

### Language Arts and Reading

Question Number	Correct Response	Competency
1.	A	01
2.	C	01
3.	C	02
4.	C	03
5.	A	04
6.	C	03
7.	C	04
8.	C	05

### Science

Question Number	Correct Response	Competency
1.	B	01
2.	A	01
3.	C	02
4.	C	03
5.	B	04
6.	A	05
7.	D	05

### Social Science

Question Number	Correct Response	Competency
1.	D	01
2.	C	01
3.	D	02
4.	A	02
5.	C	03
6.	B	04
7.	B	04
8.	D	05

### Mathematics

Question Number	Correct Response	Competency
1.	D	01
2.	D	01
3.	C	03
4.	D	02
5.	D	02
6.	C	04
7.	B	05

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## Annotated Bibliography

The annotated bibliography that follows includes basic references that you may find useful in preparing for the exam. Each resource is linked to the competencies and skills found in Section 4 of this guide.

This bibliography is representative of the most important and most comprehensive texts pertaining to the competencies and skills. The Florida Department of Education does not endorse these references as the only appropriate sources for review; many comparable texts currently used in teacher preparation programs also cover the competencies and skills that are tested on the exam.

### Language Arts and Reading

1. Bromley, K. D. (1998). *Language Arts: Exploring connections* (3rd ed.). Boston, MA: Pearson Allyn & Bacon.  
Details connections between the receptive language arts (listening, reading, and viewing) and the expressive arts (speaking and writing) through real-world stories from teachers. Useful for review of competency 3.
2. DeVries, B. A. (2008). *Literacy assessment and intervention for K–6 classrooms* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway Publishers.  
Focuses on appropriate assessment strategies and interpretation of results with special attention to emergent literacy. Useful for review of competencies 3 and 4.
3. Gunning, T. G. (2004). *Creating literacy instruction for all children in grades pre-k to four*. Boston, MA: Pearson Allyn & Bacon.  
Features sample lessons for virtually every major literacy skill or strategy and offers reinforcement suggestions and listings of materials appropriate for the lower grades. Useful for review of competencies 3 and 4.
4. Gunning, T. G. (2012). *Assessing and correcting: Reading and writing difficulties* (5th ed.). Boston, MA: Allyn & Bacon.  
Infuses research and theory to create a balanced, practical approach to reading assessment, diagnosis, and remediation that includes sample lessons and strategies for teachers to aid in developing skills in word recognition, vocabulary, comprehension, writing, spelling, studying, and reading in the content area. Useful for review of competency 4.
5. Gunning, T. G. (2013). *Creating literacy instruction for all students* (8th ed.). Boston, MA: Pearson.  
Includes plans and strategies to develop appropriate lesson plans that enable students to achieve higher levels of literacy. Useful for review of competency 5.

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6. Jennings, J. H., Caldwell, J., & Lerner, J. W. (2010). *Reading problems: Assessment and teaching strategies* (6th ed.). Boston, MA: Pearson Allyn & Bacon.  
Includes general information on the reading process, problem readers, assessment, and principles of instruction. Details successful intervention programs and teaching in diverse and inclusive settings. Useful for review of competency 4.
  7. Lever-Duffy, J., & McDonald, J. B. (2008). *Teaching and learning with technology* (3rd ed.). Boston, MA: Pearson.  
Provides teachers with a clear understanding of educational media and technologies and how they can be used effectively to enhance learning. Explores the current and emerging technologies and multimedia available to teachers while maintaining an instructional focus. Useful for review of competency 5.
  8. Morrow, L. M. (2012). *Literacy development in the early years: Helping children read and write* (7th ed.). Boston, MA: Pearson.  
Presents a comprehensive, balanced approach to literacy teaching and learning through both theoretical and research-based rationales. Useful for review of competencies 1 and 2.
  9. Norton, D. E. (2004). *The effective teaching of language arts* (6th ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.  
Offers clearly developed methodologies and lessons and makes extensive use of children's actual language samples to illustrate ways literature can enhance the development of skills. Includes instruction and assessment in speaking, listening, writing, and reading. Useful for review of competency 5.
  10. Roblyer, M. D., & Doering, A. H. (2010). *Integrating educational technology into teaching* (5th ed.). Boston, MA: Pearson.  
Incorporates two complementary instructional models to create a comprehensive technology integration framework built on research and proven techniques. Provides teachers with the knowledge and skills to overcome obstacles when integrating technology into their curriculum across the content areas. Useful for review of competency 5.
  11. Roe, B. D., & Ross, E. P. (2006). *Integrating language arts through literature and thematic units*. Boston, MA: Pearson.  
Integrates literature into thematic units to follow current thinking in the field and adapts instruction for English language and special needs learners to reflect the population of current classrooms. Useful for review of competencies 1, 2, 4, and 5.

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12. Spears, D. (2013). *Developing critical reading skills* (9th ed.). New York, NY: McGraw-Hill.  
Designed for intermediate and advanced reading courses. Features a variety of selections and excellent coverage of critical reading skills. Useful for review of competency 1.
  13. Strickland, D. S., & Morrow, L. M. (2000). *Beginning reading and writing*. New York, NY: Teachers College Press.  
Presents current, research-based information on the advances and refinements in the areas of emerging literacy and the early stages of formal instruction in reading and writing. Includes suggestions for classroom practice. Useful for review of competency 3.
  14. Tompkins, G. E. (2009). *Language arts: Patterns of practice* (7th ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.  
Strategies for teaching and assessing language arts. Analyzes the reading and writing processes and emergent literacy. Useful for review of competencies 3 and 5.
  15. Tompkins, G. (2011). *Teaching writing: Balancing process and product* (6th ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.  
Examines genres and instructional procedures with a strong new focus on differentiating instruction to ensure success for all writing students. Useful for review of competency 3.
  16. Vacca, J., Vacca, R., Gove, M., Burikey, L., Lenhart, L., & McKeon, C. (2012). *Reading and learning to read* (8th ed.). Boston, MA: Pearson.  
Discusses instructional practices and ways of encouraging success in reading and reading comprehension. Useful for review of competency 4.
  17. Vughn, S., & Linan-Thompson, S. (2004). *Research-based methods of reading instruction: Grades K–3*. Alexandria, VA: ASCD.  
Explores the research on reading, providing a comprehensive overview of five core instructional areas and how they affect student achievement. Includes reading activities and lesson plans that are grounded in solid research. Useful for review of competency 1.
  18. Yellin, D., Jones, M. B., & Devries, B. (2008). *Integrating the language arts* (4th ed.). Scottsdale, AZ: Holcomb Hathaway Publishers.  
Introduces a balanced approach between direct instruction in the communication arts and integrating the language arts with other content areas, such as music, art, drama, mathematics, social studies, and science. Useful for review of competencies 3 and 5.

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## Social Science

1. Brinkley, A. (2007). *American history: A survey* (12th ed.). Boston, MA: McGraw-Hill.  
Explores various areas of history (social, cultural, urban, racial, ethnic), the history of the West and South, environmental history, the history of women and gender issues, and U.S. history in a global context. Useful for review of competency 2.
2. Chapin, J. R. (2009). *Elementary social studies: A practical guide* (7th ed.). Boston, MA: Pearson Allyn & Bacon.  
Presents the essential methods for teaching and assessing social studies content in the K–8 classroom. Useful for review of all competencies.
3. Davidson, J. W., Stoff, M. B., & Viola, H. J. (2005). *The American nation*. Upper Saddle River, NJ: Pearson Prentice Hall.  
Explores U.S. history from earliest Native American civilizations to the present with maps, charts, activities, study questions, and review chapters. Useful for review of competencies 1, 2, and 3.
4. Duplass, J. A. (2008). *Teaching elementary social studies: Strategies, standards, and internet resources* (2nd ed.). Boston, MA: Houghton Mifflin.  
Includes active-learning strategies, application of constructivist principles, a focus on big ideas and thinking skills, use of the Internet, modeling of best practices, and performance-based assessments. Useful for review of all competencies.
5. Gannon, M. (2003). *Florida: A short history* (rev. ed.). Gainesville, FL: University Press of Florida.  
Relates the history of Florida, from indigenous peoples to modern environmentalists, in a chronological narrative. Includes sections covering “in-migration,” restoration of the Everglades, education, the work force, and the role of Florida in the 2000 presidential election. Useful for review of competencies 2 and 4.
6. Getis, A., Getis, J., Bjelland, M., & Fellmann, J. D. (2011). *Introduction to geography* (13th ed.). New York, NY: McGraw-Hill.  
Includes four parts that center on each of the geological themes of Earth science, culture-environment, location, and area analysis. Introduces students to the breadth and spatial insights of the field of geography while allowing the major research traditions of geography to dictate the principal themes. Useful for review of competency 3.

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7. Magleby, D. B., Light, P. C., & Nemacheck, C. L. (2011). *Government by the people* (24th ed.). Boston, MA: Pearson Longman.  
Offers an introduction to the foundational principles, processes, and institutions of American government. Highlights how similarities and differences in political beliefs continuously shape government. Useful for review of competency 4.
  8. Mason, L., Garcia, J., Powell, F., & Risinger, C. F. (1998). *America's past and promise*. Evanston, IL: McDougal Littell.  
Presents a survey of major events in U.S. history in a chronological fashion. Useful for review of competencies 2, 3, and 4.
  9. Massing, G. I. (2009). *Civics in practice: Principles of government and economics*. Austin, TX: Holt, Rinehart, and Winston.  
Provides fundamentals of U.S. government in the context of various other social science fields such as economics, history, and sociology. Useful for review of competencies 4 and 5.
  10. Miller, R. L. (2001). *Glencoe economics: Today and tomorrow*. New York, NY: McGraw-Hill.  
Includes coverage of the economy and the impact of the digital revolution, as well as statistics and news events. Contains relevant diagrams, charts, maps, and illustrations. Useful for review of competency 5.
  11. Parker, W. C. (2009). *Social studies in elementary education* (13th ed.). Boston, MA: Pearson.  
Presents social studies content and pedagogy for children in elementary school and offers the material in simple and accessible ways. Useful for review of all competencies.
  12. Pulsipher, L. M., & Pulsipher, A. (2011). *World regional geography: Global patterns, local lives* (5th ed.). New York, NY: W.H. Freeman and Company.  
Shows how larger geographical forces affect the lives of individuals and communities around the globe. Useful for review of competency 3.
  13. Smaldino, S., Lowther, D., & Russell, J. (2008). *Instructional technology and media for learning* (9th ed.). Upper Saddle River, NJ: Pearson.  
Guides teachers through sample lesson plans and informative explanations to incorporate computer technology into the classroom. Useful for review of competency 1.

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14. Sunal, C. S., & Haas, M. E. (2008). *Social studies for the elementary and middle grades: A constructivist approach* (3rd ed.). Boston, MA: Pearson.  
Approaches elementary and middle school social studies education from a constructivist's view. Provides pedagogical content knowledge within a guided inquiry framework. Includes suggestions for activities and assessment strategies. Useful for review of all competencies.
  15. Zarrillo, J. J. (2012). *Teaching elementary social studies: Principles and applications* (4th ed.). Boston, MA: Pearson.  
Emphasizes differentiated instruction and meeting the needs of all students while addressing those diverse students through social studies teaching methods. Useful for review of all competencies.

## Science

1. Abruscato, J., & DeRosa, D. A. (2010). *Teaching children science: A discovery approach* (7th ed.). Boston, MA: Allyn & Bacon.  
Provides content on the latest technologies in science teaching. Establishes a solid foundation in science pedagogy upon which students can build in later years. Useful for review of competencies 1 and 2.
2. Barnes, D., et al. (2005). *ScienceSaurus: A student handbook* (Grades 4–5). Wilmington, MA: Great Source.  
Includes chapters on general science information, the branches of science, doing science, life science, Earth science, and physical science. Useful for review of competencies 2, 4, and 5.
3. Bass, J. E., Contant, T. L., & Carin, A. A. (2009). *Teaching science as inquiry* (11th ed.). Boston, MA: Prentice Hall.  
Introduces science content, teaching strategies, and inquiry activities necessary to teach science in contemporary ways. Useful for review of competency 4.
4. Bonnstetter, R., et al. (2006). *ScienceSaurus: A student handbook* (Grades 6–8). Wilmington, MA: Great Source.  
Includes chapters on general science information, the branches of science, science labs, life science, Earth science, and physical science. Useful for review of competencies 2, 4, and 5.
5. Buckley, D. M., et al. (2012). *Interactive science: Florida life science*. Boston, MA: Pearson.  
Supports student understanding of life science through an inquiry-based approach. Useful for review of competencies 1 and 5.

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6. Campbell, N. A., Reece, J. B., Taylor, M. R., & Simon, E. J. (2008). *Biology: Concepts and connections* (5th ed.). San Francisco, CA: Pearson Benjamin Cummings.  
Makes biology approachable with the use of analogies, real-world examples, and conversational language. Useful for review of competency 5.
  7. Charlesworth, R., & Lind, K. M. (2013). *Math and science for young children* (7th ed.). Clifton Park, NJ: Delmar Cengage Learning.  
Focuses on the integration of mathematics and science with other important areas of child development from birth to age 8. Useful for review of competency 2.
  8. Davis, G. A., & Keller, J. D. (2009). *Exploring science and mathematics in a child's world*. Upper Saddle River, NJ: Pearson Education.  
Explores the relationship between mathematics and science and how children develop understanding of different concepts. Provides insight into growth and development of reasoning and logic skills. Useful for review of competencies 1 and 2.
  9. Hess, F. S., et al. (2006). *Earth science: Geology, the environment, and the universe*. New York, NY: McGraw-Hill.  
Presents an overview of Earth space science for students. Useful for review of competency 4.
  10. Martin, D. J. (2001). *Constructing early childhood science*. Clifton Park, NY: Delmar Cengage Learning.  
Provides early childhood education students with a comprehensive hands-on guide to science education. Includes activities for children ages 3 to 8 which aids in developing interdisciplinary instruction. Useful for review of competency 1.
  11. Martin, S. (2009). *ScienceSaurus: A student handbook* (Grades 2–3). Wilmington, MA: Great Source.  
Includes chapters on general science information, the branches of science, doing science, life science, Earth science, and physical science. Useful for review of competencies 2, 4, and 5.
  12. Peters, J. M., & Stout, D. L. (2011). *Science in elementary education: Methods, concepts, and inquiries* (11th ed.). Boston, MA: Pearson.  
Presents a constructivist approach to the methodology of effective elementary science teaching. Topics include how science concepts and skills are effectively taught and learned, ways to successfully plan science instruction, resources needed to enhance the science program, assessment of student inquiry, and integration of instructional and design technology. Useful for review of competencies 1 and 2.

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13. Suchocki, J. (2011). *Conceptual chemistry* (4th ed.). Boston, MA: Prentice Hall.  
Builds a base from which non-science students may view the chemical world more perceptively and helps them visualize the behavior of atoms and molecules to understand the macroscopic environment. Useful for review of competency 3.
  14. Tillery, B. W. (2007). *Physical science* (7th ed.). Boston, MA: McGraw-Hill.  
Introduces basic concepts and key ideas while providing opportunities for students to learn reasoning skills. Useful for review of competency 3.
  15. Victor, E., Kellough, R. D., & Tau, R. H. (2008). *Science K–8: An integrated approach* (11th ed.). Upper Saddle River, NJ: Pearson.  
Based on integrated learning by inquiry. Outlines content that covers the big concepts of Earth science, life science, and physical science. Discusses the relationships between curriculum standards, assessment, and high-stakes achievement testing. Useful for review of competencies 4 and 5.

## Mathematics

1. Bennett, A. B., Burton, L. J., & Nelson, L. T. (2012). *Mathematics for elementary teachers: A conceptual approach* (9th ed.). New York, NY: McGraw-Hill.  
Contains a strong focus on the development of mathematics skills and the instructional practices that most encourage success. Useful for review of competency 2.
2. Billstein, R., Libeskind, S., & Lott, J. W. (2007). *A problem solving approach to mathematics for elementary school teachers* (9th ed.). Boston, MA: Pearson Education.  
Features skills-based resources for future teachers. Includes instruction for problem solving, integers, probability, and geometry. Useful for review of competencies 2, 3, and 5.
3. Blitzer, R. F. (2008). *Thinking mathematically* (4th ed.). Upper Saddle River, NJ: Prentice Hall.  
Presents an introduction to topics such as measurement, geometry, sets, logic, counting, principles, probability, and statistics. Useful for review of competencies 2 and 4.
4. Long, C. T., DeTemple, D. W., & Millman, R. S. (2012). *Mathematical reasoning for elementary teachers* (6th ed.). Boston, MA: Pearson Education.  
Focuses on mathematical content knowledge that teachers will need to know and methods of its use in the classroom. Useful for review of competencies 2 and 4.

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5. Mandery, M., & Schneider, M. (2000). *Achieving proficiency in mathematics*. New York, NY: AMSCO School Publications.  
Promotes mathematical mastery through critical thinking and applied strategies, including use of the calculator as a tool for exploration and implementation. Emphasizes data reading and interpreting statistical information summarized in tables, bar graphs, and line graphs. Useful for review of competency 2.
  6. Miller, C. D., Heeren, V. E., & Hornsby, J. (2012). *Mathematical ideas* (12th ed.). Boston, MA: Pearson Education.  
Features an innovative approach that brings the best of popular entertainment into the classroom and integrates it with mathematics lessons. Useful for review of competencies 2 and 5.
  7. Musser, G. L., Burger, W. F., & Peterson, B. E. (2011). *Mathematics for elementary teachers: A contemporary approach* (9th ed.). Hoboken, NJ: John Wiley & Sons.  
Features problem-solving strategies, relevant topics, and opportunities for hands-on experiences. Moves from concrete to pictorial to abstract, reflecting the typical sequence of mathematics instruction in elementary classrooms. Useful for review of competencies 3 and 5.
  8. Van de Walle, J. A. (2005). *Teaching student-centered mathematics*. Boston, MA: Pearson Allyn & Bacon.  
Provides big idea approaches and explanations to mathematical concepts through student-centered, problem-based learning. Useful for review of competencies 1 and 2.
  9. Van de Walle, J. A. (2007). *Elementary and middle school mathematics: Teaching developmentally* (6th ed.). Boston, MA: Pearson Allyn & Bacon.  
Reflects the National Council of Teachers of Mathematics Principles and Standards for School Mathematics in a K–8 mathematics methods text. Provides ideas and discussions to help future teachers understand the mathematics they will be teaching. Discusses the benefits of student-centered instruction in mathematics. Useful for review of competencies 4 and 5.



## **Additional Information**

Please visit the following website to review FTCE registration details and to find additional FTCE information, including test locations and passing scores.

[www.fldoe.org/accountability/assessments/postsecondary-assessment/ftce/](http://www.fldoe.org/accountability/assessments/postsecondary-assessment/ftce/)