



# Grade 7

# CRCT



# Study



# Guide






Reading  
English/Language Arts  
Mathematics  
Science  
Social Studies

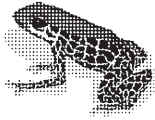




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# Using the CRCT Study Guide

This Study Guide focuses on the knowledge and skills that are tested on the Georgia Criterion-Referenced Competency Tests (CRCT). It is designed for teachers to use with their students and for parents to use with their children. Go to [www.gadoe.org/](http://www.gadoe.org/) to find further information about and support for the CRCT.



Use the following section of this guide, *About the CRCT*, for an overview of the CRCT and for test-taking strategies to review with your students.

- The content tested on the CRCT is based on the Georgia Performance Standards, which describe what all students should know, understand, and be able to do.



The chapters of this guide are organized by subject. In each chapter you can explore the skills needed to succeed in a specific, tested domain (grouping of similar content standards). The subject chapters include a snapshot of each domain, instructional **Activities** that address covered skills, and a **Practice Quiz** with annotated **Solutions** to help assess student progress.

# Overview of the CRCT

## What is the CRCT?

The CRCT is a series of state-mandated achievement tests for students in Grades 1 through 8. In Grades 3 through 8, the subject areas of reading, English/language arts, mathematics, science, and social studies are covered.

## What does the CRCT measure?

The CRCT measures how well students have acquired the knowledge and skills covered by the state curriculum for their grade level. A new statewide curriculum, known as the Georgia Performance Standards (GPS), sets academic standards and expectations for all students in Georgia's public schools. The CRCT corresponds to the new standards.

The tests accomplish the following:

- Ensure that students are learning
- Provide data to teachers, schools, and school districts so they can make better instructional decisions
- Measure accountability, including Adequate Yearly Progress (AYP) as measured by the federal No Child Left Behind Act

CRCT results measure the academic achievement of students, classes, schools, school systems, and the state. This information can be used to identify individual student strengths and weaknesses, or, more generally, to measure the quality of education throughout Georgia.

## How are CRCT questions scored?

The CRCT currently uses only selected-response (multiple-choice) questions. There are four choices for each question, labeled A, B, C, and D.

Students are not compared to each other. Each student is measured on his or her achievement in meeting the standards. Scores are reported according to three performance levels: Does Not Meet the Standard, Meets the Standard, and Exceeds the Standard. For more information, go to the website [www.gadoe.org/ci\\_testing.aspx?PageReq=CI\\_TESTING\\_CRCT](http://www.gadoe.org/ci_testing.aspx?PageReq=CI_TESTING_CRCT) and click the link for "2007 CRCT Interpretive Guide."

Since the spring of 2006, performance on the reading portion of the CRCT has been linked to the Lexile scale. Visit [www.gadoe.org/lexile.aspx](http://www.gadoe.org/lexile.aspx) for more information on this national reading measure.

# Preparing for the CRCT

## Test-Taking Strategies

### **Weeks Before the Test**

*The following are study skills and test-taking tips to share with student:*

Keep on top of material as you learn it in school. Don't leave everything until the last minute!

Ask questions in class when you don't understand something.

Set academic goals for the upcoming weeks and months (short and long term).

Choose a quiet place to work that is free of distractions.

Find out as much as you can about the test.

Build in time to review what you learned in your last study session.

Divide assignments into smaller pieces. It's easier to remember information this way.

Take breaks! Studying for a long time non-stop is not productive.

Consider reviewing materials with others after you've studied on your own. This helps reinforce what you already know and reminds you of things you've forgotten.

Actively take notes while you read. This forces you to think about what you are reading.

Try sample test questions for practice.

At the end of each study session, evaluate what you have accomplished.

## Preparing for the CRCT

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### **Day Before the Test**

Get a good night's rest.

If you are feeling nervous, talk to a teacher or parent.

Remember that this test is only one measure of your knowledge.

Eat a good breakfast before the test; it will give you energy to stay alert.

### **During the Test**

*Remind students of the following strategies to use during the test:*

Relax by taking slow, deep breaths.

Make sure you understand the directions. If you are not sure, ask the teacher for clarification.

Read each question carefully.

When you use scratch paper, make sure that you copy the problem correctly from the test onto your paper.

You can underline and make marks on your test to help you while you work, but the only answers that will be scored are those in the correct place on your answer sheet.

Try to come up with your own answer before seeing the choices. This will help in choosing the best answer choice available.

Eliminate answer choices that you know cannot be right.

Leave a question blank if you are unsure of the answer, then return to it at the end.

Manage your time. Don't let the pace of others make you nervous. However, don't spend too much time on one question.

Be sure to answer all of the questions.

Review your answers when you have finished the test.

Try to stay calm during the test. Remember, this is a chance for you to show what you know.

## **Related Links**

Below are links to important resources that contain information related to the CRCT.

Georgia Performance Standards:  
**[www.georgiastandards.org/](http://www.georgiastandards.org/)**

CRCT Content Descriptions:  
**[www.gadoe.org/ci\\_testing.aspx?PageReq=CITestingCRCTDesc](http://www.gadoe.org/ci_testing.aspx?PageReq=CITestingCRCTDesc)**

Lexile Framework for Reading:  
**[www.gadoe.org/lexile.aspx](http://www.gadoe.org/lexile.aspx)**

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Best practices in education indicate that teachers should first model new skills for students. Next, teachers should provide opportunities for guided practice. Only then should teachers expect students to successfully complete an activity independently.

The activities in this guide are no exception. They are designed to be used by teachers and parents to help students with the skills on the Georgia CRCT.

Since different students have different strengths and needs, the activities in this study guide can be scaffolded for students who need more support, extended to challenge advanced students, or presented as is (with appropriate modeling) for grade-level students.

# Reading





# Reading

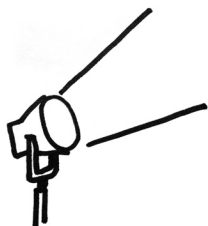
When reading a text closely, the Grade 7 student works carefully to discern the author’s perspective and the particular facts and details that support it. The student reads thoughtfully and purposefully, constantly checking for understanding of the author’s intent and meaning so that interpretation will be sound.

The Reading activities focus on some of the concepts that are assessed on the Grade 7 CRCT Reading domains. These domains are as follows:

- 1 Reading Skills and Vocabulary Acquisition**
- 2 Literary Comprehension**
- 3 Information and Media Literacy**



## Activities



### 1 Reading Skills and Vocabulary Acquisition

Georgia Performance Standards ELA7R2, ELA7RC3 and ELA7RC4

In Grade 7, students need to determine the meanings of words using common roots and affixes. Students also need to use context clues to figure out the meanings of unfamiliar words and multiple-meaning words. In addition to figuring out word meanings, students should use these words within different contexts (e.g., subject areas). Additionally, they should explain idioms and analogies in prose and poetry.

The following activities develop skills in this domain:

- To increase familiarity with Greek/Latin root words and affixes, students should keep a *Word Ring* (large key ring) with a collection of 3 x 5, hole-punched index cards attached to it. Students should add new words and word parts to their Word Rings as they encounter them in their school material. On each card, students should write a word/word part and its definition. To increase understanding of these word parts and how they affect the meanings of the words, students should list other words in the same word family. For example, for the suffix *-less* the students could list beneath the definition: *useless, homeless, and pointless*. Encourage students to use the Word Rings often; for example, while waiting for the bus students could review the words on their ring.
- To help students understand the term *idiom*, explain that an idiom is *an expression whose meaning is not understandable from the ordinary meaning of its words*. Then provide students with opportunities to identify and interpret them. A children's book, such as *Amelia Bedelia*, is a good source for this exercise. The character Amelia gets in trouble by interpreting others' idioms as literal. For example, when asked to *draw the drapes* or *change the towels* she misunderstands the instructions. Students should locate and analyze specific idioms throughout the book. Then students should generate a list of their own idioms such as *it's raining cats and dogs* and *let's break the ice*. Students should also make literal illustrations of their favorite idioms and ask classmates to determine the meanings of their idioms. After students have a good understanding of idiomatic expressions, review with them the definition of idioms.
- To help students learn to use context clues to determine the meanings of unfamiliar words, students should examine sentences that have examples of direct definitions, contrast cues, and cause-and-effect logic. For this activity, students should examine three sentences for each type of context clue. Direct definitions are often signaled by *or*, as in the sentence *Chaps, or protective leg coverings, are often worn by cowboys*. Students should underline both *chaps* and *protective leg coverings*. In sentences with contrasts, students should underline the two words or phrases in contrast to one another and then guess what the word means. For example, *My last apartment was really small, but my new one is quite spacious*. Another type of context clue that students should learn to recognize is in the cause-and-effect sentence. For



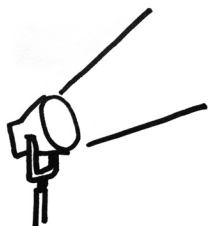
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example, *Because we lingered too long at the restaurant, we missed the beginning of the movie.* Students should underline both *linger* and *missed the beginning* to determine the meaning of the word *linger*.

Further support can be found in the GPS Reading Framework at [www.georgiastandards.org/elaframework.aspx](http://www.georgiastandards.org/elaframework.aspx)



## Activities



## 2 Literary Comprehension

Georgia Performance Standard ELA7R1

How an author uses language—the author’s style—is as significant as *what* texts literally state. In order to understand literary texts, students need to identify text features. They need to be familiar with different literary genres as well as common poetic devices (e.g., figurative language, sound devices, visual features, etc.). Students must also trace plot development and analyze plots that may or may not progress chronologically. Students must identify the ways that authors create characters, and analyze characters’ traits, feelings, and motivations. Furthermore, students must distinguish themes from topics as well as relate texts to their cultural and historical contexts. Finally, students should identify and understand how authors’ word choices create the tone and moods of texts.

The following activities develop skills in this domain:

- For students to analyze character motivation and draw conclusions about characters, they should select a character from their text to analyze using a *Character Trait Sheet*. In the first column of the sheet, there should be statements about the character. In the second column, using specific quotations from the text, students must write in support of or against the statement about the character. Finally, in the third column, students must describe why this character’s particular trait is significant in the text and what motivates him to be this way. Emphasize that students must support any claims they make about a character with concrete textual evidence.
- To help reinforce students’ reading comprehension and an understanding of the five elements of a story (characters, plot, setting, theme, and style), students should answer questions in a particular category based on a piece of literature they have just completed. Label five envelopes, one for each story element. In each of the envelopes, place a cluster of questions on the text for that element. For example, in the *Character* envelope there would be a quotation from a character whom students must identify. Then students should describe what this quotation shows about the character. In the *Theme* envelope, students will answer questions based on the ideas in the text. For example, *What does the recurring symbol represent to the main character?* In the *Style* envelope, there are questions that require the student to identify a particular sound element and describe how it is significant in the piece. For example, a character is anxious so he or she speaks in short, choppy sentences that sound rushed, conveying his or her sense of worry. Students should work in pairs or with an adult.
- To help students improve reading comprehension and identify implicit themes in a text, students should be assigned a selection of quotations from the text, with a graphic organizer beneath each quotation. The graphic organizer will contain three boxes labeled *Character*, *Plot*, and *Theme*. In the *Character* box, the student must name the speaker. Then in the *Plot* box, the student must discuss the context of the quotation. Finally, in the *Theme* box, the student



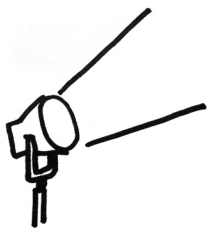
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must discuss how the quotation is significant in terms of the ideas in the novel. To avoid having students merely identify the theme, the *Theme* box should be divided in half. In the top half of the *Theme* box, students identify and label the quote's *Theme* such as the *individual vs. the community*. In the bottom half of the theme box, students must explain how the quote supports and illustrates this idea in the text.

- To help students recognize style, tone, and voice in literature, students should study stories such as *White Fang* by Jack London, *Summer of Fear* by Lois Duncan, *Cheaper by the Dozen* by Frank B. Gilbreth and Ernestine Gilbreth Carey, and *Little Women* by Louisa May Alcott. In addition, students should participate in mini-lessons that focus on writing issues such as word choice, repetition, sentence length, and rhythm. Then students should read and listen to sections of the stories and make notes about style, tone, and voice. Finally, students should discuss their observations and try imitating those techniques while writing short stories.

Further support can be found in the GPS Reading Framework at [www.georgiastandards.org/elaframework.aspx](http://www.georgiastandards.org/elaframework.aspx)

## Activities



### 3 Information and Media Literacy

*Georgia Performance Standards ELA7R1, ELA7RC2 and ELA7LSV2*

Students need to understand and analyze a wide range of informational texts and media. As students encounter various types of media, as well as workplace and consumer materials, they need strong skills to identify common text features (e.g., paragraphs, topic sentences, concluding sentences, footnotes), organizational patterns (e.g., cause-and-effect relationships, comparison and contrast), main ideas, and the evidence used to support them. Students should also be able to recognize an author's purpose and understand the ways authors develop their arguments. Additionally, students need to apply what they read as they follow technical directions for mechanical devices such as computers. Because many of these texts contain diagrams and images, students must also have the skills to analyze common graphic features and understand their relationships with the texts.

The following activities develop skills in this domain:

- To help students learn to identify and interpret graphic features (e.g., diagrams, maps, illustrations, charts, tables, and graphs), guide students in an examination of a science and/or social studies textbook. First, students should locate all the graphic features in a short chapter or a section of their textbook. Second, students should study each graphic feature and the caption that goes with it. They should then write a sentence summarizing the information in each graphic feature. Next, students should write two questions that can be answered by each graphic feature. One question should focus on a detail, such as, *Which city had the highest population in 1970?* The second question should focus on broader information, such as, *What pattern do you notice in the population size since World War II?* Finally, students should predict the main points they think will be covered in the chapter or section.
- To help students understand the way an author develops an argument throughout a piece of writing and how a paragraph is structured with a main idea and supporting details, students should outline an essay that has been written. For example, students could look at an essay or article on global warming. After reading the piece, they will select three paragraphs that illustrate the author's development of his or her theory. In Paragraph #1, students cite the evidence or hypothesis of the theory of global warming. Paragraph #2 illustrates what is done to measure and collect the data. Paragraph #3 addresses the analysis of the data collected. For each paragraph, students should draw a rectangular text box labeled *Main Idea*. Remind students that the main idea may be implied rather than directly stated. Next, students should label three more text boxes underneath the main idea box, labeled *Supporting Details*, and fill in the text boxes. After the boxes have been filled in, students should give each paragraph a title or name and describe the development of the author's argument as represented by this three-paragraph outline.



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- To help students identify an author’s implicitly stated purpose, students will read texts in which the author or source is being persuasive and/or manipulative. Students should look for techniques such as repetition, rhetorical questions, accentuating one side of the argument, exaggeration, and appealing to people’s emotions. Also, students should examine some visual sources of propaganda, such as World War II posters. Students should analyze print advertisements from magazines and newspapers to recognize persuasive language and suggestiveness. Next, students should create their own persuasion project in the form of an advertising campaign for an imaginary product. Students should create a product logo (a distinctive symbol to represent the product), a product jingle (a catchy, short song), a product poster (a visual advertisement), and then script a product speech (a promotional passage about the product). Students should present their campaigns to their classmates or family members.

Further support can be found in the GPS Reading Framework at [www.georgiastandards.org/elaframework.aspx](http://www.georgiastandards.org/elaframework.aspx)



## Practice Quiz



Genre: Nonfiction

Read the passage below and answer the questions that follow.

### Peppers and Pepper: Worlds Apart

When Christopher Columbus landed in the Americas in the 15th century, he was hoping to find a new route to India. A new sea route to India would have meant, among other things, easier access to black pepper. At the time, black pepper was the most valuable spice in the world.

Columbus never reached India, but he did reach the Americas. Instead of black pepper, Columbus found the hot chili, a unique fruit previously unknown to Europeans. Widely used to season food in the Americas, the chili had a spicy quality similar to that of black pepper. Probably because of this similarity, Columbus called this newfound seasoning “pepper.” Ever since, the two spices have been linked by a common name. However, despite the name, black pepper from India and the chili pepper of the Americas are actually very different.

### Peppercorns from Asia

Black pepper comes from the dried berries of *Piper nigrum*, a vine native to India. When dried, these berries are called peppercorns. Peppercorns from *Piper nigrum* can be black, white, or green. Black peppercorn is the type most commonly used. It is usually ground into a powder and used as a seasoning.

Black pepper has been used as a spice for at least 4,000 years. First used only in Asia, it eventually became known throughout the rest of the world. For most of its history, black pepper has been extremely valuable. Grown almost exclusively in India, black pepper was one of the first items traded between Asia and Europe. Its distinctive flavor created a high demand among Europeans, who were willing to pay a high price for it. Only the wealthy could afford to use black pepper to season their food.

Over the years, the spice trade became a big business, and many tried to profit from it. Cities along the trade routes charged “customs duties” or tolls for the right to ship goods through their territories. This raised the price of pepper in Europe. By the 1400s, black pepper became so expensive that Europeans wanted a route to India that would avoid these cities. Columbus and many other explorers sailed across the Atlantic trying to reach India by sea.

### American Chilies

The chili pepper has played a very important part in the culture of the Americas. The word “chili” comes from the Nahuatl (na-WHA-tull) people of southern Mexico and Central America, who called it *chilli* or *xilli*. One of the first plants cultivated in the Americas, it has been farmed there for thousands of years. By the time Columbus arrived, chilies were being grown throughout Central America, Mexico, and the Caribbean.



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The chili pepper comes from plants of the *Capsicum* genus and is native to South America. Sweet bell peppers, paprika, cayenne pepper, and jalapeños are among the most common varieties.

The spicy “heat” of many types of chilies comes from the chemical called *capsaicin*. It causes a burning feeling on the lips, tongue, and throat. Unlike many chemicals, capsaicin stays “hot” even when it has been cooked or frozen. Capsaicin is also very potent. It is about 100 times hotter than *piperine*, the chemical that makes black pepper spicy.

### **Worlds Crossing**

The Spanish were the first Europeans to recognize the chili’s potential. They found that the ground chilies made a good substitute for high-priced black pepper. Soon they were shipping tons of chilies from the Americas to Europe. European farmers even began to grow chili peppers. The dried powder came to be sold in markets all over Europe. Many recipes printed in 18<sup>th</sup> century Europe used chili powder.

Chilies never completely displaced peppercorns, though. In the 1800s, better trade routes made black pepper easier to obtain. As a result, black pepper became more affordable. A greater number of people were able to use black pepper on a daily basis. Today, black pepper is the most widely traded spice in the world. Black pepper stands next to salt on family and restaurant tables. It appears in countless recipes. People in the United States use, on average, more than a quarter pound of black pepper per person per year.

These days, both black pepper and chili peppers are used throughout the world. The next time you use a pepper shaker or burn your mouth on a fiery chili, think about the long, interesting histories of these remarkable spices.



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- 1 **What is one reason European explorers tried to find a sea route to India?**
- A They needed a replacement for black pepper.
  - B They wanted to learn how to grow chili peppers.
  - C They needed to create new uses for chili peppers.
  - D They wanted an easier way to import black pepper.
- 2 **Which of these is the topic sentence in paragraph four?**
- A People have been using black pepper for at least 4,000 years.
  - B For most of its history, black pepper has been extremely valuable.
  - C Only the wealthy could afford to use black pepper to season their food.
  - D Grown almost exclusively in India, black pepper was one of the first items traded between Asia and Europe.
- 3 **According to the passage, what was the MAIN reason the discovery of the chili was important for Europe?**
- A It gave explorers an important new source of food.
  - B It provided a cheap substitute for an expensive spice.
  - C It could be ground into a powder and used as a seasoning.
  - D It was a unique ingredient that could be used in interesting ways.
- 4 **What was MOST LIKELY the author's purpose for writing this passage?**
- A to argue that chilies are superior to peppercorns
  - B to describe the cultivation of chilies and peppercorns
  - C to suggest new ways of using chilies and peppercorns
  - D to explain the relationship between chilies and peppercorns
- 5 **Which of these BEST explains why black pepper became so expensive in Europe?**
- A Many recipes listed black pepper as an ingredient.
  - B Few people were interested in selling black pepper.
  - C Customs duties added to the cost of importing black pepper.
  - D Explorers were hoping to find another source of black pepper.

- 6 **Why does the author MOST LIKELY italicize the words *chilli* and *xilli*?**

The word "chili" comes from the people of southern Mexico and Central America. They called it *chilli* or *xilli*.

- A to show that they refer to scientific ideas
- B to show that they refer to historical periods
- C to show that they are important to the passage
- D to show that they are from a different language



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7 **Which of these BEST describes how the information in paragraph 10 is organized?**

- A to show cause and effect
- B to list the steps in a process
- C to compare and contrast items
- D to present ideas in order of importance

8 **Which sentence from the passage BEST supports the idea that chilies did not replace black pepper?**

- A At the time, black pepper was the most valuable spice in the world.
- B Only the wealthy could afford to use black pepper to season their food.
- C Today, black pepper is the most widely traded spice in the world.
- D People in the United States use, on average, more than a quarter pound of black pepper per person per year.

9 **What is the meaning of the word *duties* as used in the sentence?**

Cities along the trade routes charged “customs duties” or tolls for the right to ship goods through their territories.

- A agents
- B fees
- C pledges
- D roads

10 **What does the word *potent* mean in the sentence?**

Capsaicin is also very potent. It is about one hundred times hotter than *piperine*, the chemical that makes black pepper spicy.

- A fresh
- B heavy
- C useful
- D strong



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## Solutions

Number	Correct Answer	Explanation
1	D	<p><i>Distinguishes between the concepts of theme in a literary work and the author's purpose in an expository text. (ELA7R1a)</i></p> <p>The correct answer is <b>Choice (D) They wanted an easier way to import black pepper.</b> The second sentence of the passage states, "A new sea route to India would have meant easier access to black pepper." Choice (D) is correct because it restates this idea, providing one reason the European explorers tried to find a sea route to India. Choices (A), (B), and (C) were not motivations for European explorers to find a sea route to India.</p>
2	A	<p><i>Distinguishes between the concepts of theme in a literary work and the author's purpose in an expository text. (ELA7R1a)</i></p> <p>The correct answer is <b>Choice (A) People have been using black pepper as a spice for at least 4,000 years.</b> This topic sentence presents the main idea on which the whole paragraph focuses. All the sentences that follow this first sentence present information about black pepper's 4,000 years of use as a spice. Choices (B), (C), and (D) are detail sentences.</p>
3	B	<p><i>Relates a literary work to information about its setting or historical moment. (ELA7R1c)</i></p> <p>The correct answer is <b>Choice (B) It provided a cheap substitute for an expensive spice.</b> The passage explains that black pepper was the most valuable spice in the world, yet it was expensive and not widely available during Columbus's time. Choice (A) is incorrect, as the passage does not describe chili in this way. Although Choices (C) and (D) are reasons that the discovery of the chili was important for Europe, they are not the main reason.</p>
4	D	<p><i>Examine the author's purpose in writing. (ELA7RC2e)</i></p> <p>The correct answer is <b>Choice (D) to explain the relationship between chilies and peppercorns.</b> After reading the passage, the reader has a good understanding of the relationship between chilies and peppercorns. The author's purpose is what the author hopes to accomplish through the description in the passage and has a close relationship with the main ideas. The passage does not try to persuade the reader of any of the ideas presented in Choices (A), (B), or (C).</p>



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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
5	<b>C</b>	<p><i>Relates a literary work to information about its setting or historical moment. (ELA7R1c)</i></p> <p>The correct answer is <b>Choice (C) Customs duties added to the cost of importing black pepper.</b> This is the best choice due to the direct and specific explanation about the influence of customs duties. Paragraph five specifically states that the great interest in profiting from the spice trade led to customs duties along the trade routes. Customs duties drove the price of black pepper up, Choices (A) and (B) are incorrect because are not mentioned in the passage as reasons why black pepper became so expensive in Europe. Choice (D) is incorrect because it is a result of the high cost of black pepper rather than a cause.</p>
6	<b>D</b>	<p><i>Recognizes and uses the features of disciplinary texts (e.g., charts, graphs, photos, maps, highlighted vocabulary). (ELA7RC2f)</i></p> <p>The correct answer is <b>Choice (D) to show that they are from a different language.</b> Authors often italicize foreign words or phrases. The passage never uses the words <i>chilli</i> and <i>xilli</i> in a way that shows they are scientific ideas or historical periods, so neither Choice (A) nor Choice (B) is correct. Although authors sometimes use italics to emphasize particular words or ideas, Choice (C) is incorrect because the author does not use these words emphatically.</p>
7	<b>A</b>	<p><i>Applies knowledge of common organizational structures and patterns (i.e., logical order, cause and effect relationships, comparison and contrast, transitions). (ELA7R1c)</i></p> <p>The correct answer is <b>Choice (A) to show cause and effect.</b> This paragraph states that a cause (better trade routes) led to specific effects (pepper becoming easier to obtain and more affordable). Choices (B), (C), and (D) are incorrect because they do not describe the organizational structure of paragraph 10.</p>

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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
8	<b>C</b>	<p><i>Identifies events that advance the plot and determines how each event explains past action(s) or foreshadows future action(s). (ELA7R1e)</i></p> <p>The correct answer is <b>Choice (C) Today, black pepper is the most widely-traded spice in the world.</b> This answer provides the best evidence that chilies never replaced black pepper by showing the widespread trade in black pepper today. Choices (A) and (B) are incorrect since these answers focus on the past expense of black pepper. Choice (D) is incorrect as it focuses on black pepper consumption only in the United States.</p>
9	<b>B</b>	<p><i>Determines word meanings through the use of definition, example, restatement, or contrast. (ELA7R2d)</i></p> <p>The correct answer is <b>Choice (B) fees.</b> The passage provides several clues to help determine that this is the correct choice. The verb “charged” must be followed by something that can be charged. The author also directly defines the word “duties” with the synonym “tolls.” In working on this question, students should realize that “customs,” “duties,” and “tolls” are synonyms. Choices (A), (C), and (D) are incorrect because they don’t make sense in the context of the sentence.</p>
10	<b>D</b>	<p><i>Determines the meaning of unfamiliar words using context clues (e.g., contrast, cause and effect, etc.). (ELA7R2a)</i></p> <p>The correct answer is <b>Choice (D) strong.</b> The context is critical for figuring out what “potent” means. The sentence that follows the word “potent” states that capsaicin “is about 100 times hotter than <i>piperine</i>.” Choices (A), (B), and (C) are incorrect, as the sentence does not describe capsaicin as <i>fresh, heavy, or useful</i>.</p>

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# **English / Language Arts**





# English/Language Arts

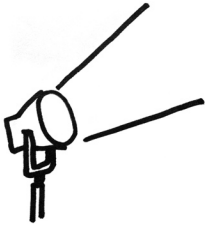
By the end of Grade 7, students have a good command of different modes of writing, including persuasion, as well as an understanding of how each mode is used. Students have increased their ability to use descriptive words and complex sentences. They continue to gain proficiency in critiquing their own and others' writing constructively, gaining practice with editing and proofreading.

The English/Language Arts activities focus on some of the concepts that are assessed on the Grade 7 CRCT domains. These domains are as follows:

- 1 Grammar/Sentence Construction**
- 2 Research/Writing Process**



## Activities



### 1 Grammar/Sentence Construction

*Georgia Performance Standard ELA7C1*

Within the Grammar/Sentence Construction domain, students increase their ability to write clearly, coherently, and with appropriate use of writing and style conventions. They provide variety in their writing by using simple, compound, and compound-complex sentences as appropriate, applying guidelines of punctuation. They use standard subject-verb agreement, correct verb tenses, traditional transitional structures, correct spelling and application of homonyms, appropriate comparative and superlative forms of adjectives, and appropriate use of commas and semicolons (simple, complex, compound, compound-complex and split dialogue).

The following activities develop skills in this domain:

- Teams of two or three student detectives work together to locate incorrect verb tense forms in the following mystery story. Timing is important in solving this mystery, so each team must be alert to detect incorrect verb tenses. Then they must work together to rewrite the story, using the correct forms.

As soon as I opened the door to the animal hospital this morning, I notice first thing that the kangaroo was missed. The door to his cage has been pried open. No kangaroo can I found—anywhere. Then I notice that the monkeys are missed, too. Two cages are empty, and District Inspector Caldwell has been coming to check our shop in an hour! I become worried that a thief had sneaked in during the night and carrying off two of our most valuable pets. I am furious at first; then I calmed down and begin to think things through. The monkeys have managed to open the door to their cage before. Besides, in the past, they always have like teasing the kangaroo. “Where,” I asked myself, “might the monkeys take the kangaroo—just for a joke?” In a minute, I know the answer: the storage closet. I run to the door and flung it open. There, sleeping happily in a soft, furry pile, were two monkeys and a kangaroo. I quickly snatched them up and tuck them safely into the cages just as Inspector Caldwell arrives.

- To assist students in revising their writing, help them prepare and maintain a personal or classroom style guidebook. The idea is to keep a user-friendly record of the writing guidelines that students in the class are likely to use most often, instead of having to use a large, published style guide. Use a loose leaf notebook and keep it in a place that is easily accessible for everyone in the class to consult while they edit and revise. Each page of the book will contain style guidelines for a particular issue on which students are likely to need guidance. For instance, the first page can contain guidelines for capitalization; another, for use of quotation marks; still another, for end punctuation, and so forth. For each item, students will write the guideline and then give an example. Class members should decide together which guidelines are useful enough to go into the book. The process of reviewing guidelines and choosing which are most useful will, in itself, provide a good review.



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- To become proficient at using and punctuating compound and complex sentences, students need to be able to identify independent clauses and adverbial clauses. Students can review these two concepts with the following reminders: An independent clause contains a related subject and verb; it states a complete thought. For instance, *We need a dictionary*. A compound sentence is made up of two independent clauses joined by a coordinating conjunction: *and, but, or, nor, for, or so*. An adverbial clause, on the other hand, is a type of dependent clause, which means it does not state a complete thought. Although it has a related subject and verb, it must be combined with an independent clause to make up a full sentence. Adverb clauses can tell *when*, as in, *when I reached home*; state a condition, such as, *if they arrive quickly*; give a reason, such as, *because I was happy*; or express opposition, as in, *although we were first in line*. Students can practice with the following items. They should write *Compound* before each sentence with two joined independent clauses. They should write *Complex* before each sentence with an independent clause and an adverb clause.

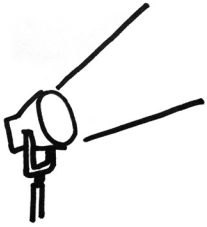
- 1 \_\_\_\_\_ Cell phones are very popular and the new ones offer special features.
- 2 \_\_\_\_\_ If old cell phones are discarded they pile up in our landfills.
- 3 \_\_\_\_\_ Some people give away their used phones or they send them to a recycling shop.
- 4 \_\_\_\_\_ When recyclers take cell phones they can turn them into many different products.
- 5 \_\_\_\_\_ Although some recyclers receive as many as 15,000 used cell phones every day that is only a small portion of the cell phones that are thrown away.
- 6 \_\_\_\_\_ If people saw the huge boxes of old cell phones going to landfills they would be more careful about recycling.

After students identify each sentence above as compound or complex, they will punctuate the sentences correctly. They should keep in mind that in a compound sentence, a comma is placed just before the coordinating conjunction. In a sentence with an introductory dependent clause, the comma comes just after the final word of that clause.

Further support can be found in the GPS English/Language Arts Framework at [www.georgiastandards.org/elaframework.aspx](http://www.georgiastandards.org/elaframework.aspx)



## Activities



### 2 Research/Writing Process

*Georgia Performance Standards ELA7W1, ELA7W2 and ELA7W4*

In Grade 7, students continue to gain proficiency in expressing their ideas in writing and sharing what they have learned. They utilize appropriate organizational patterns, and they use transitional structures to assure coherence. They use appropriate supporting details to develop a main idea, while excluding extraneous and inconsistent details. They provide a sense of closure in their writing.

The following activities develop skills in this domain:

- To gain an understanding of ways in which different organizational patterns help writers develop an idea, students will read the following paragraph, noting the order in which details are presented.

Ben's pet ferret, Rocky, keeps him laughing and also very busy. Rocky is lively and curious, but he causes problems. He is happiest when he is digging under things to find out what's underneath. Last week, when no one was home, Rocky got bored in his cage. He sneaked out, climbed up on the kitchen counter and tipped a big bottle of soda off the counter. It smashed to the floor, burst open, and sent bubbly, foaming, dark soda all over the walls and the ceiling. It was Rocky's misdeed, but Ben needed to find a good solution. He filled Rocky's cage with soft toys, a dish of water, a ferret hammock, and even a big box of dried rice, where Rocky can dig to his heart's content. Now Rocky will stay safely in the cage whenever Ben can't keep a close eye on his pet.

After reading the above paragraph, students need to decide which organizational pattern has been used: rule and example, definition, comparison and contrast, or problem and solution. Students can then work with partners to rewrite the story, this time using the organizational pattern of cause and effect or time order.

- To practice supplying effective supporting details to support a main point in a piece of persuasive writing, students work with partners or a small group with any one of the generalizations listed on the next page. They should brainstorm at least five supporting points that could be developed into a paragraph. During the brainstorming session, a volunteer should take notes and underline the ideas that seem most convincing. They should be alert to any ideas that are inconsistent with the main point or that seem unrelated to it. Then the group should decide on one topic and work together to write a paragraph, arranging their best supporting evidence first, followed by the rest in order of importance. They need to agree on a final, closing statement that makes clear how the supporting details persuade readers to agree with the main idea.



**1** The computer is a great tool for learning about current events.

**2** Practice does not always make perfect.

**3** When at first you don't succeed, try again.

**4** Everyone likes a good joke.

**5** Anyone can be a hero.

- For extra practice with transitions in sentences, students should take word groups like those in the following lists and join them together with an appropriate word or phrase. Each group in Group A should be combined with the corresponding one in Group B. When students have finished the exercise, they should list the transitional words or phrases they have used. Next to each transition, they should write what type of relationship it expresses: cause and effect, comparison and contrast, providing an example, sequence, etc.

<b>Group A</b>	<b>Group B</b>
I was planning to finish homework early.	I fell asleep when I got home.
Ginny had to wear her thick boots.	The sidewalk was very snowy.
Tad likes folk songs.	"Red River Valley"
First, you wash your hands.	You rub on a dab of hand lotion.

Further support can be found in the GPS English/Language Arts Framework at [www.georgiastandards.org/elaframework.aspx](http://www.georgiastandards.org/elaframework.aspx)



## Practice Quiz



- 1 **Which is a compound sentence?**
  - A Lori baked six dozen cookies, and she sold them at the bake sale.
  - B As Juan walked to school, he noticed a nest of baby birds in a tree.
  - C Sheila has tennis practice on Monday and soccer practice on Friday.
  - D Nate wore his warm jacket because the weatherperson predicted snow.
  
- 2 **Which sentence uses correct subject-verb agreement?**
  - A Either John or Sherry are required to be there.
  - B Each one of them have been awarded for their efforts.
  - C The ship's captain and crew is preparing for the journey.
  - D Only one person out of twenty is qualified to make the Math team.
  
- 3 **Which sentence is written correctly?**
  - A Last week, my Family and I moved from Clark Street to Avon Street.
  - B Last week, my family and I moved from Clark Street to Avon Street.
  - C Last Week, my family and i moved from Clark street to Avon street.
  - D Last week, my family and I moved from Clark street to Avon street.
  
- 4 **Which sentence uses the correct punctuation?**
  - A "I'll paddle in the front my brother said and you paddle in the back."
  - B "I'll paddle in the front, my brother said, and you paddle in the back."
  - C "I'll paddle in the front," my brother said, "and you paddle in the back."
  - D "I'll paddle in the front my brother," said, "and you paddle in the back."
  
- 5 **What is the superlative adjective in the sentence?**

My loving grandmother made the prettiest hand-sewn quilt for our happy family.

  - A loving
  - B prettiest
  - C happy
  - D hand-sewn



6 **What organizational method is used in the paragraph?**

Because blue light has one of the shortest wavelengths, it hits the particles in the atmosphere and reflects off of them. This scatters the blue light all around the sky. When you look up, this scattered blue light reaches your eyes, making the sky look blue during daytime hours.

- A cause and effect
- B chronological order
- C question and answer
- D similarity and difference

7 **Which sentence should be removed from the paragraph?**

<sup>1</sup>Mosquitoes may seem like simple little pests, but they actually have complex systems for finding their prey. <sup>2</sup>Mosquitoes have chemical and visual sensors that detect the carbon dioxide given off by mammals and birds as they breathe. <sup>3</sup>For many years, people have tried to keep mosquito populations under control. <sup>4</sup>Additionally, mosquitoes have heat sensors that help them track down living things whose body temperatures are warmer than the surrounding air.

- A sentence 1
- B sentence 2
- C sentence 3
- D sentence 4

8 **Which sentence should be the beginning of a second paragraph?**

<sup>1</sup>The Monterey Peninsula is called “Steinbeck Country” for good reason. <sup>2</sup>John Steinbeck, one of this country’s foremost authors, lived in and wrote about the Monterey Peninsula and his hometown of Salinas. <sup>3</sup>*Cannery Row* is a humorous and very detailed view of life in and around Monterey’s sardine-canning factories in the 1940s. <sup>4</sup>Works by other authors have also reflected the everyday lives of people in the authors’ communities. <sup>5</sup>William Faulkner is well known for his stories of southern living in his fictitious Yoknapatawpha County, which he created from his life in Mississippi. <sup>6</sup>Charles Dickens, a famous British novelist, wrote colorful sketches of the people he met in England during the 19<sup>th</sup> century.

- A sentence 2
- B sentence 3
- C sentence 4
- D sentence 5



9 **Which sentence provides the BEST closure to the paragraph?**

Most people are familiar with the distinctive appearance and reputation of a skunk. Even if they have never smelled one, most people know that these striped creatures give off a strong and unpleasant odor. However, it might be surprising to know that skunks do not give off this musky odor all the time. In fact, these tolerant and shy animals usually use their powerful spray only when they feel threatened.

- A The skunk's unique musk has been used in some perfumes.
- B The spray of a skunk is so strong that it can be smelled up to a mile away.
- C Amazingly, some of the skunk's natural enemies have adapted to the smell.
- D Despite their reputation, skunks will leave you alone if you do not bother them.

10 **Which detail BEST supports the topic sentence?**

Earth is home to many different environments.

- A Deserts, rain forests, oceans, and mountains make up much of our natural world.
- B Deep sea divers have discovered treasures along the floors of many oceans.
- C Fossils are proof that plants and animals lived billions of years ago.
- D Scientists believe the moon has a hard, rocky surface.



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## Solutions

Number	Correct Answer	Explanation
1	A	<p><i>Identifies and writes simple, compound, complex, and compound-complex sentences correctly, punctuating properly, avoiding fragments and run-ons, adding or deleting modifiers, combining or revising sentences. (ELA7C1a)</i></p> <p>The correct answer is <b>Choice (A) Lori baked six dozen cookies, and she sold them at the bake sale.</b> This is a compound sentence, made up of two simple sentences joined by a coordinating conjunction. Choice (B) is incorrect because it is a simple sentence with an introductory adverb clause. Choice (C) is a simple sentence with a prepositional phrase, and Choice (D) is a simple sentence ending in a dependent clause.</p>
2	D	<p><i>Uses standard subject-verb and pronoun-antecedent agreement. (ELA7C1c)</i></p> <p>The correct answer is <b>Choice (D) Only one person out of twenty is qualified to make the Math team.</b> The subject, <i>person</i>, agrees with the verb, <i>is</i>. Choice (A) is an incorrect answer because with the <i>either/or</i> construction, the subject that sits closest to the verb must agree with the verb: <i>Either John or Sherry is required...</i> (not <i>are required</i>). Choice (B) is incorrect because <i>Each one</i> is singular, so it should be followed by the singular verb <i>has</i>. Choice (C) is incorrect because it has a compound subject: <i>captain and crew</i>, so the correct sentence would be <i>The ship's captain and crew are preparing....</i></p>
3	B	<p><i>Produces final drafts/presentations that demonstrate accurate spelling and the correct use of punctuation and capitalization. (ELA7C1h)</i></p> <p>The correct answer is <b>Choice (B) Last week, my family and I moved from Clark Street to Avon Street.</b> This sentence correctly shows initial capital letters for the first word in the sentence and for both words in each street name. Choice (A) is incorrect because <i>family</i> is not a proper noun; it should not be capitalized. In Choice (C), <i>Week</i> should not be capitalized, but both instances of the pronoun <i>I</i> should be capitalized, and the word <i>street</i> should be capitalized. In Choice (D), the word <i>street</i> should be capitalized each time it appears.</p>

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Number	Correct Answer	Explanation
4	C	<p><i>Demonstrates appropriate comma and semicolon usage (compound, complex, and compound-complex sentences, and split dialogue). (ELA7C1f)</i></p> <p>The correct answer is <b>Choice (C) “I’ll paddle in the front,” my brother said, “and you paddle in the back.”</b> Choice (C) correctly punctuates split dialogue. Split dialogue is the statement of one person or character that is “split” by the author’s explanation of who is talking. The parts of the dialogue must together form a complete sentence, and the intervening explanation (of who is talking) must be set off by commas. Choice (A) is incorrect because it does not split the quoted sentence to allow for the explanatory words. Choice (B) is incorrect; although commas are inserted, the quotation is not closed before the explanatory words and reopened afterwards. Choice (D) is incorrect because the words <i>my brother</i> are incorrectly punctuated as if they were part of the quotation.</p>
5	B	<p><i>Demonstrates correct usage of comparative and superlative forms of adjectives and adverbs. (ELA7C1e)</i></p> <p>The correct answer is <b>Choice (B) prettiest.</b> The superlative degree of an adjective is the form that ends in <i>-est</i> and modifies a noun to the highest degree, for example, <i>the highest</i> or <i>the slowest</i>. Choices (A), (C), and (D) are incorrect answers because they do not imply any degree of comparison.</p>



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Number	Correct Answer	Explanation
6	A	<p><i>Uses traditional structures for conveying information (e.g., chronological order, cause and effect, similarity and difference, and posing and answering a question). (ELA7W1c)</i></p> <p>The correct answer is <b>Choice (A) cause and effect</b>. The words <i>because</i>, <i>when</i>, and <i>making</i> all signal a series of cause-and-effect relationships. Short wavelengths <i>cause</i> blue light to “hit particles in the atmosphere,” and these collisions have two <i>effects</i>: The blue light “reflects off” of the particles and “scatters the blue light.” “When” (meaning <i>if</i>) someone looks upward so that “scattered blue light” enters his or her eyes (a <i>cause</i>), the daytime sky appears blue (an <i>effect</i>). Choice (B) is incorrect because the entire passage is not ordered chronologically. Specifically, no one actually looks up into the sky after blue light has scattered. Choice (C) is incorrect because the passage includes neither a <i>question</i> nor an <i>answer</i>. Choice (D) is incorrect because the passage does not describe any similarities or differences.</p>
7	C	<p><i>Excludes extraneous details and inconsistencies. (ELA7W2e)</i></p> <p>The correct answer is <b>Choice (C) sentence 3</b>. Although the paragraph is actually about ways in which mosquitoes detect prey, <i>sentence 3</i> goes off on a different tack, discussing people’s efforts to control mosquito populations. Choices (A), (B), and (D) are incorrect answer choices because they are each relevant to the main idea of the paragraph.</p>
8	C	<p><i>Revises manuscripts to improve the organization and consistency of ideas within and between paragraphs. (ELA7W4c)</i></p> <p>The correct answer is <b>Choice (C) sentence 4</b>. The paragraph begins with a focus on John Steinbeck and the area where he lived and wrote. <i>Sentence 4</i>, however, shifts to the broader idea of how other authors have also written about their local communities. It would make sense to create a new paragraph when this shift to other authors occurs, so Choices (A), (B), and (D) are incorrect.</p>

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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
9	<b>D</b>	<p><i>Provides a sense of closure to the writing. (ELA7W2g)</i></p> <p>The correct answer is <b>Choice (D) Despite their reputation, skunks will leave you alone if you do not bother them.</b> The paragraph focuses on skunks' reputation for being smelly even though they only give off a strong scent when threatened. Choices (A), (B), and (C) are incorrect because they do not provide an appropriate closure related to focus of the paragraph.</p>
10	<b>A</b>	<p><i>Develops the topic with supporting details. (ELA7W2d)</i></p> <p>The correct answer is <b>Choice (A) Deserts, rain forests, oceans, and mountains make up much of our natural world.</b> This sentence provides specific examples to support the idea that many different environments can be found on Earth. Choices (B), (C), and (D) are incorrect because they focus on just one natural environment or feature of the natural world.</p>

# Mathematics





## Chapter 3

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# Mathematics

By the end of Grade 7, students will understand and use rational numbers, including signed numbers. Students will solve linear equations with one variable. They will describe, sketch, and construct plane figures, use and apply properties of similar plane figures, and demonstrate an understanding of transformations of the figures. Properties of geometric shapes in space will be examined, and students will describe and sketch solid figures, including their cross sections. In the Algebra domain, students will represent and describe relationships between variables in tables, graphs, and formulas, as well as analyze the characteristics of linear relationships. Lastly, students will represent and analyze data using graphical displays, measures of central tendency, and measures of variation.

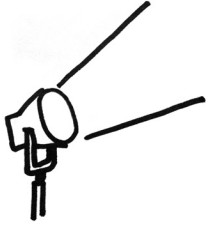
The Mathematics activities focus on some of the concepts that are assessed on the Grade 7 CRCT Mathematics domains. These domains are as follows:

- 1 Number and Operations**
- 2 Geometry**
- 3 Algebra**
- 4 Data Analysis and Probability**

The *Mathematical Process Skills* are integrated throughout the domains. These are skills used to acquire and apply content knowledge.

*Mathematical Process Skills* refer to students' dexterity in applying concepts and skills in the context of authentic problems, and understanding concepts rather than merely following a sequence of procedures. Process skills are used to acquire and apply content knowledge. Process skills include solving problems that arise in mathematics and other contexts; reasoning and evaluating mathematical arguments; communicating mathematically; making connections among mathematical ideas and to other content areas; and representing mathematical ideas in multiple ways.

## Activities



### 1 Number and Operations

Georgia Performance Standard M7N1

Within the Number and Operations domain, students learn the meaning of positive and negative rational numbers and use them in computation. Students will learn to find the absolute value of a number and understand it as the distance from zero on a number line. They will be able to compare and order rational numbers, including repeating decimals. Students will be able to add, subtract, multiply, and divide positive and negative rational numbers, and use these skills to solve problems with rational numbers.

The following activities develop skills in this domain:

- Students will use the four basic operations with rational numbers to set the alarm of a clock that is set by turning dials. The dials on each alarm clock can only be turned clockwise, but can be turned any fraction of a rotation. The table for each clock is labeled with the amount the wake-up time is changed by turning the big dial or small dial one whole rotation.

#### Alarm Clock A

One rotation of the big dial adds  $\frac{1}{2}$  hour to the wake-up time.

One rotation of the small dial adds  $-\frac{1}{3}$  hour to the wake-up time.

Alarm starts at	If you turn the big dial...	...and the small dial...	The alarm will go off at
12:00 A.M.	14 times	2 times	
12:00 A.M.		0 times	5:20 A.M.
12:00 A.M.	$10\frac{1}{2}$ times	$2\frac{1}{4}$ times	
12:00 A.M.			8:05 A.M.
12:00 A.M.			8:55 A.M.

#### Alarm Clock B

One rotation of the big dial adds  $\frac{2}{5}$  hour to the wake-up time.

One rotation of the small dial adds  $-\frac{3}{8}$  hour to the wake-up time.

Alarm starts at	If you turn the big dial...	...and the small dial...	The alarm will go off at
12:00 A.M.	20 times	2 times	
12:00 A.M.		0 times	6:24 A.M.
12:00 A.M.	$12\frac{1}{5}$ times	$3\frac{3}{5}$ times	
12:00 A.M.			7:45 A.M.
12:00 A.M.			9:15 A.M.

**Alarm Clock C**

One rotation of the big dial adds  $\frac{7}{10}$  hour to the wake-up time.

One rotation of the small dial adds  $-\frac{5}{12}$  hour to the wake-up time.

Alarm starts at	If you turn the big dial...	...and the small dial...	The alarm will go off at
12:00 A.M.	13 times	1 time	
12:00 A.M.		0 times	6:18 A.M.
12:00 A.M.	$9\frac{1}{2}$ times	$2\frac{2}{3}$ times	
12:00 A.M.			7:35 A.M.
12:00 A.M.			9:25 A.M.

- To conceptualize the absolute value of a number as the distance it is from zero on a number line, each student will create a timeline with '0' as the year of his or her birth, then record various events in American history. The date of each event will be rewritten as the number of years before or after the students' birth. Students can use  $|Event\ Year - Birth\ Year|$  to find the new dates. Dates before their births will be labeled B.M. (Before Me) and dates after their births will be labeled A.M. (After Me).

1776: The Declaration of Independence is written.

1788: On January 2, the Constitution is unanimously ratified in Georgia.

1789: George Washington is inaugurated as America's first President.

1803: The Louisiana Purchase doubles the size of the United States for three cents an acre.

1969: American Neil Armstrong becomes the first man to walk on the moon.

1996: The XXVI (26th) Summer Olympics are held in Atlanta, Georgia.

2004: NASA's Mars Rover lands on Mars and begins collecting detailed information about the planet.

2005: George W. Bush begins his second term as the President of the United States.

2007: Barry Bonds hits his 756th home run to beat Hank Aaron's all-time record set in 1976.

2008: On November 4th, the 44th President of the United States will be elected.

After making the re-labeled timeline, students will answer these questions:

- 1 How many years before your birth was the Constitution ratified by the State of Georgia?
- 2 How many years passed between Georgia ratifying the Constitution and the Louisiana Purchase?
- 3 How many years passed between the Louisiana Purchase and Armstrong's walk on the moon?
- 4 How many years passed between the XXVI Summer Olympics and the election of George W. Bush to a second term as President?



- 5 Which operations could be used to find the answer when both dates are B.M. or both are A.M.? Which could be used when one date is B.M. and the other is A.M.?
- To practice ordering rational numbers, students will order the value of several stocks after the first day of trading on the fictional Park City Stock Exchange (PCSE). The stocks all start the day at the same price (middle column), and the price changes over the course of the day are given in the right column.

**Start Price and Total Change of Stocks on the PCSE**

<b>Stock</b>	<b>Start Price</b>	<b>Change (\$)</b>
Jet Oil Co.	\$10	+2.16
Atlantic Electric Inc.	\$10	+2 $\frac{1}{4}$
Loose Leaf Book Publishers	\$10	-1 $\frac{1}{9}$
Pinnacle Electronics	\$10	-1 $\frac{1}{10}$
Pink Advertising	\$10	+2 $\frac{1}{6}$
Java Roasters	\$10	+ $\frac{1}{10}$
Old Thyme Spices	\$10	+1.09
Millennium Software	\$10	-1.11
Comfy Mattress Co.	\$10	-1 $\frac{1}{11}$
Shred Skis	\$10	+2.26

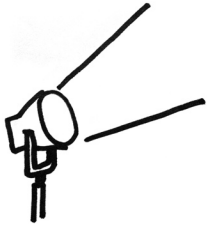
After listing the stocks in order from highest price to lowest price at the end of the first day of trading, students should answer these questions:

- 1 How did you order the numbers given in different forms?
- 2 Did you find the actual price at the end of the day or just use the price increases given in the right column? If you only used the price increases, why didn't you think it was necessary to find the actual prices?

Further support can be found in the GPS Mathematics Framework:  
Unit 3: *Rational Reasoning*.

The Mathematics Framework documents are available at  
[www.georgiastandards.org/mathframework.aspx](http://www.georgiastandards.org/mathframework.aspx)

## Activities



### 2 Geometry

*Georgia Performance Standards M7G1, M7G2, M7G3 and M7G4*

Within the Geometry domain, students are expected to construct plane figures that meet given conditions. Students will perform basic constructions using a compass and straight edge or other appropriate technology. Constructions students will be able to perform include copying a segment, copying an angle, bisecting a segment, bisecting an angle, constructing perpendicular lines (including the perpendicular bisector of a line segment), and constructing a line parallel to a given line through a point not on the line. Students will learn that many constructions are based on the creation of congruent triangles. Students will demonstrate understanding of transformations, including translations, dilations, rotations, reflections, and, given a figure in the coordinate plane, determine the coordinates resulting from those transformations. Students will relate symmetry to appropriate transformations, as well as use the properties of similarity and apply them to geometric figures. Students will understand the meaning of similarity, visually comparing geometric figures for similarity, and describing similar figures in terms of corresponding parts. They will understand the relationships among the scale factor, length ratio, and area ratio of similar figures, as well as use them to determine unknown side lengths and areas of similar geometric figures. Students will understand congruence of geometric figures as a special case of similarity (that congruent figures are similar figures with the same size and shape). Students will further develop their understanding of solids by describing three-dimensional figures formed under translations and rotations of plane figures through space. They will sketch, model, and describe cross sections of cones, cylinders, pyramids, and prisms.

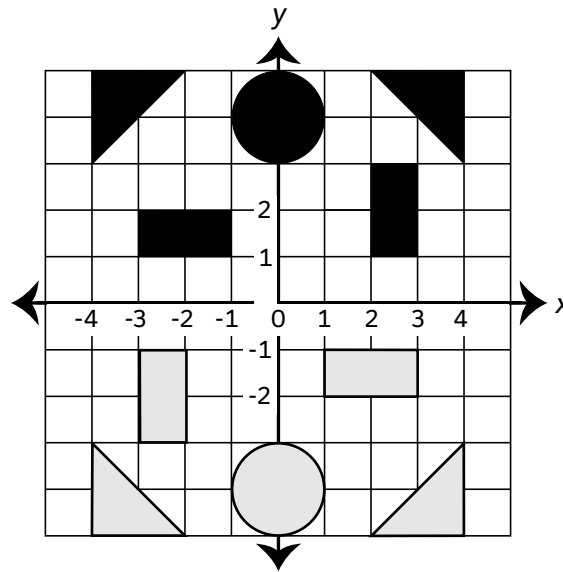
The following activities develop skills in this domain:

- To develop the connection between two-dimensional plane figures and three-dimensional solids, students will predict and create the solids formed by rotating plane figures around an axis. Students will need cardboard, straws, and aluminum foil.
  - First, students should cut four congruent right triangles, four congruent rectangles, and four congruent semi-circles out of the cardboard.
  - Second, students should tape one triangle to the straw, with one of the legs (not the hypotenuse) attached to the straw. Students will then rotate the straw and visualize what solid the rotating triangle forms. Students will then tape the remaining triangles around the straw, and wrap the aluminum foil around the frame to complete the three-dimensional figure.

Students will repeat the same activity with the rectangles and semi-circles. After completing the activity with the given plane figures, students should think of solids that could not be formed by rotation of a plane figure around an axis.



- To develop students' sense of transformations in the coordinate plane, students will play a game in which the board is a portion of the coordinate plane, and the pieces are plane figures that move around the board by transformations. Students should make a 10 x 10 grid, highlighting the middle lines as the x- and the y-axes, cut out the five pieces of each color shown in the sample below, and start with them in the given positions.



The goal of the game is to capture all of your opponent's pieces. The rules are:

- On any turn only one piece can be moved:
  - Rectangles can rotate  $90^\circ$ ,  $180^\circ$ , or  $270^\circ$  about the origin, but cannot move in any other way (Note: teachers looking to challenge students may describe the rotations as  $-90^\circ$ ,  $-180^\circ$ , and  $-270^\circ$  rotations.)
  - Triangles can translate horizontally and vertically a total of three units OR reflect about the y-axis.
  - Circles can translate one unit horizontally or vertically.
  - Only rectangles can move over another piece.
- A player cannot have two pieces occupying the same square.
- If a player places any part of one of his or her pieces on top of any part of one of his or her opponent's pieces of the same shape, he or she captures that piece.
- If a player places any part of one of his or her pieces on any part of one of his or her opponent's pieces of a different shape, the opponent's piece is frozen until the player's piece moves on.

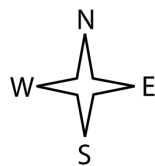
Students will make a table to use as a transformation log, in which they record the kind of transformation in the left column, the coordinates before the transformation in the middle column, and the coordinates after the transformation in the right column. They should identify the relationship between each pair of coordinates and explain how this relationship is associated with the transformation recorded. For example, if the transformation was a horizontal translation, the value of the y-coordinates


would not change but the values of the x-coordinates would. In evaluating a horizontal translation, students should also note the similarity to a reflection across the y-axis and the inverse relationship to a vertical translation.

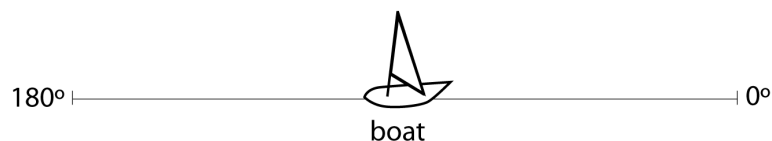
- To understand the relationship between the length and area ratios of similar figures, students will make squares out of graphing paper. Resources are available online to print out graph paper with specified grid dimensions. After printing out graph paper with 1-cm squares, students will make squares with sides measuring 1-cm, 2-cm, 3-cm, 4-cm, 6-cm, and 9-cm in length (one each). By seeing how many of the smaller squares will fit into the larger one, students will determine the area ratios of:
  - The 2-cm square to the 1-cm square
  - The 4-cm square to the 2-cm square
  - The 3-cm square to the 1-cm square
  - The 6-cm square to the 3-cm square
  - The 9-cm square to the 3-cm square

Students will then use these ratios to determine the areas of all of the squares based on the 1-sq cm area of the 1-cm square.

- To practice bisecting an angle and measuring the resulting angles, students should estimate the angle a ship needs to turn towards its destination by bisecting a straight  $180^\circ$  angle with a line. The students will then repeat this twice, bisecting the resulting angle and getting closer each time to the proper path toward the island. The boat in the picture below is traveling east (towards  $0^\circ$ ).



small island  






- To estimate the angle the boat needs to turn, relative to  $0^\circ$ , students will:
  - 1** Bisect the straight angle shown with a vertex at the location of the boat.
  - 2** Bisect the resulting angle with the island in the interior of the angle. Find the measurement of the bisector and label it.
  - 3** Bisect the resulting angle with the island in the interior of the angle. Use the fact that a bisector cuts an angle in half to label the measurement of the resulting angle. Find the measurement of the bisector and label it.

Students then use the two angles the island lies between to estimate the angle the boat should turn. Finally, students respond to these questions:

- 1** How could you get a more accurate reading?
- 2** Is there a limit to how accurate the estimate can be?

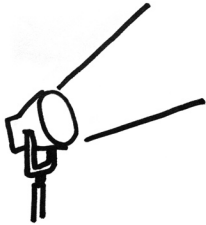
The activity can be repeated by setting up an identical picture with the island in a different location.

Further support can be found in the GPS Mathematics Framework: Unit 4: *Flip, Slide, and Turn*; Unit 5: *Staying in Shape*; and Unit 7: *Slices and Shadows*.

The Mathematics Framework documents are available at  
**[www.georgiastandards.org/mathframework.aspx](http://www.georgiastandards.org/mathframework.aspx)**



## Activities



### 3 Algebra

*Georgia Performance Standards M7A1, M7A2 and M7A3*

The Algebra domain addresses students' ability to represent and evaluate quantities using algebraic expressions. Students will translate verbal phrases to algebraic expressions; simplify and evaluate those expressions using commutative, associative, and distributive properties; and add and subtract linear expressions. Students will understand and apply linear equations in one variable. Given a problem, students will know to define a variable, write an equation, how to solve the equation, and how to interpret the solution. To do this, students will use the addition and multiplication properties of equality to solve one- and two-step linear equations. Students will understand different kinds of relationships between two variables. They will represent, describe, and analyze relations from tables, graphs, and formulas, as well as describe how changes in one variable affect the related variable. They will describe patterns in the graphs of proportional relationships, both direct ( $y = kx$ ) and inverse ( $y = k/x$ ). Students will also learn to plot points on the full coordinate plane.

The following activities develop skills in this domain:

- To practice plotting points on a coordinate plane, students should plot the points where a taxicab has picked up and dropped off customers throughout the day. Street numbers will be on the  $x$ -axis and avenue numbers on the  $y$ -axis. North avenues will have positive  $y$ -values and south avenues will have negative  $y$ -values. East streets will have positive  $x$ -values and west streets will have negative  $x$ -values. Students will translate the taxicab coordinates such as North 9<sup>th</sup> Street and East 8<sup>th</sup> Avenue, to standard algebraic coordinates, (9, 8). Please note that Zero Avenue is on the  $x$ -axis. Students will then plot and label the five pick-ups and drop-offs listed below:
  - 10:00 A.M.: Pick up customer at South 10<sup>th</sup> Street and West 4<sup>th</sup> Avenue
  - 10:25 A.M.: Drop off customer at South 9<sup>th</sup> Street and East 8<sup>th</sup> Avenue
  - 12:40 P.M.: Pick up customer at North 1<sup>st</sup> Street and East 2<sup>nd</sup> Avenue
  - 1:20 P.M.: Drop off customer at South 13<sup>th</sup> Street and West 11<sup>th</sup> Avenue
  - 2:05 P.M.: Pick up customer at South 11<sup>th</sup> Street and West 5<sup>th</sup> Avenue
  - 2:25 P.M.: Drop off customer at South 3<sup>rd</sup> Street and East 1<sup>st</sup> Avenue
  - 3:30 P.M.: Pick up customer at North 6<sup>th</sup> Street and West 6<sup>th</sup> Avenue
  - 4:30 P.M.: Drop off customer at South 8<sup>th</sup> Street and East 8<sup>th</sup> Avenue
  - 5:10 P.M.: Pick up customer at North 10<sup>th</sup> Street and Zero Avenue
  - 6:00 P.M.: Drop off customer at Zero Street and East 12<sup>th</sup> Avenue

For each trip students will count the number of blocks the cab traveled horizontally and vertically, and use the table on the next page to calculate the fare for each trip and the total amount of money the cab driver made that day.



<b>Trip</b>	<b>Horizontal Blocks</b>	<b>Vertical Blocks</b>	<b>Total Blocks</b>	<b>Cab Fare</b> (\$0.25 x Total Blocks)
1				
2				
3				
4				
5				

- Solving two-step equations can be used to convert fictional temperature units to Fahrenheit to decide when seasons occur on a different planet.
  - Euler is a planet in the Alpha Centauri system where the seasons and months have the same names as ours, but the seasons do not occur in the same months. In addition, temperatures are measured using a unit called a Galois. The equation that can be used to convert temperatures in Galois (G) to temperatures in Fahrenheit (F) is:  
 $G = 194 - 4.5F$

The temperature on Euler was measured on one day in each month and is given in the table below.

<b>On this day...</b>	<b>On Euler it was...</b>	<b>So in Fahrenheit it was...</b>
January 3	23° G	
February 3	50° G	
March 3	60° G	
April 3	25° G	
May 3	0° G	
June 3	-60° G	
July 3	-120° G	
August 3	-143° G	
September 3	-120° G	
October 3	-100° G	
November 3	-75° G	
December 3	-4° G	

On Euler, in which months do winter, spring, summer, and fall occur?

- To increase awareness of the difference between a directly proportional relationship and an inversely proportional relationship, students will consider the following two situations, make tables, graph the results, and answer the questions.



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**Scenario 1**

- You have invited all your friends to your birthday party, and every friend who is coming will bring 4 cookies. How many cookies will be at your party if 1 friend comes? How many cookies will there be if 2 friends come? Make a table for the number of cookies at your party if up to 6 friends attend. Using your results in the table, develop a general rule for finding the number of cookies,  $y$ , at your party for any number of friends that come,  $x$ . Graph the ordered pairs in this table. Does your general rule work with the results on your graph? What happens to the number of cookies at your party as the number of guests goes up?

**Scenario 2**

- You buy a box of 30 cookies for your birthday party and invite all of your friends. How many cookies will each guest get if there is only 1 guest? 2 guests? Make a table for the number of cookies each guest gets if the number of guests is 3, 4, 5, 6, 10, and 15. Using your results in the table, develop a general rule for finding the number of cookies per person,  $y$ , at your party for any number of friends that come,  $x$ . Graph the ordered pairs in this table. Does your general rule work with the results on your graph? What happens to the number of cookies each guest can have as the number of guests increases?

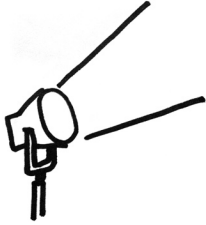
Students will then describe in their own words the difference between the results in Scenario 1 and Scenario 2. Let students know that one relationship is called *directly proportional* and the other relationship is called *inversely proportional*. Students should discuss which scenario they think might be *directly proportional* and why, as well as which scenario they think might be *inversely proportional* and why. Use questioning to guide students' thinking.

Further support can be found in the GPS Mathematics Framework: Unit 2: *Patterns and Relationships*; Unit 3: *Rational Reasoning*; and Unit 6: *Values That Vary*.

The Mathematics Framework documents are available at [www.georgiastandards.org/mathframework.aspx](http://www.georgiastandards.org/mathframework.aspx)



## Activities



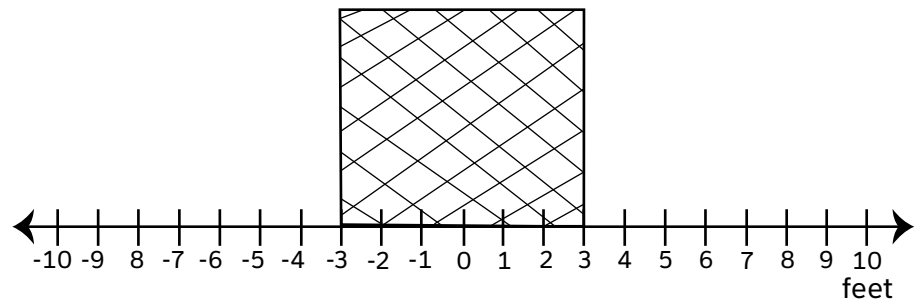
### 4 Data Analysis and Probability

*Georgia Performance Standard M7D1*

Within the Data Analysis and Probability domain, students pose questions, collect data, represent and analyze the data, and interpret results. Students will practice formulating questions and collecting data from a census of at least 30 objects and from samples of varying sizes. Students examine data by constructing frequency distributions, analyzing it using measures of central tendency (mean, median, and mode) and measures of variation (range, quartiles, interquartile range), and learn to recognize outliers. Students will compare measures of central tendency and variation from samples to those from a census, and observe that sample statistics are more likely to approximate the population parameters as sample size increases. Further analysis will be conducted with appropriate graphs, including pictographs, histograms, bar graphs, line graphs, circle graphs, line plots, box-and-whisker plots, and scatter plots. By the end of Grade 7, students will be able to analyze and draw conclusions about data, including describing the relationship between two variables.

The following activities develop skills in this domain:

- To see the significance of the range of a data set, students will study two data sets with identical means but different ranges. Students should plot the location of Kevin and Darryl's shots on-goal during a hockey game, on the figure below:



The middle of the goal is '0' on the number line. The measures given in the table below correspond to the distance to the left (negative) or right (positive) of the middle of the goal of each of ten shots.

Shot	Kevin (feet from the center)	Darryl (feet from the center)
1	-7	-2
2	2	2
3	6	1
4	0	0
5	-5	2
6	4	2
7	5	-4
8	4	2
9	-8	-1
10	-1	-2

Students will plot Kevin’s shots and Darryl’s shots, and then answer the following questions:

- 1** Calculate the mean distance from the center of the net for Kevin and Darryl. What does this tell you?
- 2** How many shots did Darryl make? How many shots did Kevin make?
- 3** Calculate the range of Kevin’s and Darryl’s distances from the center. What does this tell you about each player’s shots?
- 4** Although he made fewer shots, Kevin’s average distance from the center of the goal is the same as Darryl’s. How does the range help explain this?
- 5** In your own words, explain what you think the range of a data set tells you.
- 6** Now consider James and Skyler: both shoot with an average distance of 1 foot from the middle of the goal. However, Skyler’s shots have a range of 13 feet, and James’s have a range of only 4 feet. Who is more accurate? How does the range tell you this without the need to look at their shots as we did with Kevin and Darryl?

- Students will further their understanding of the measures of central tendency by comparing the mean and median to visually located data centers. For each data set below, students will plot the data points on a number line and then answer the questions.

**Age of 10 Respondents at Local HS Basketball Game**

Person	1	2	3	4	5	6	7	8	9	10
Age	15.2	14.1	17.7	17.4	15.5	16.4	18.0	16.2	16.2	16.9

- Approximately where is the center of this data set? Circle that point or area on the number line.
- Calculate the mean and median and locate them on your number line.
- Compare the mean and median to the center that you visually estimated.



**Age of 10 Respondents at a Local Music Store**

Person	1	2	3	4	5	6	7	8	9	10
Age	26	35	32	24	21	18	32	29	28	19

- Approximately where is the center of this data set? Circle that point or area on the number line.
- Calculate the mean and median and locate them on your number line.
- Compare the mean and median to the center that you visually estimated.

**Age of 10 Respondents at a Local Grocery Store**

Person	1	2	3	4	5	6	7	8	9	10
Age	26	82	31	79	25	94	25	33	21	20

- Approximately where is the center of this data set? Circle that point or area on the number line.
- Calculate the mean and median and locate them on your number line.
- Compare the mean and median to the center that you visually estimated.

Students should first answer questions 1–4:

- 1** What do you think the center of a data set is?
- 2** What do the mean and median of a data set tell you? (Hint: the mean and median are called measures of central tendency.)
- 3** In which of the three data sets above were there outliers?
- 4** For which kind of data set is the median a better measure of central tendency? (Hint: use your answer from 3.)

Then students should make box-and-whisker plots for each data set and answer questions 5–7:

- 5** What does the middle line in a box-and-whisker plot tell you?
- 6** What do the boxes tell you?
- 7** Use your answers from (5) and (6) to say how a box-and-whisker plot can give you information about the center of a data set without needing to look at the actual numbers.

- To enhance understanding of box-and-whisker plots, students will compare them to histograms of the same data set. First students will create histograms for the three temperature data sets on the following page using the following ranges:

- values greater than 5 and less than or equal to 10
- values greater than 10 and less than or equal to 15
- values greater than 15 and less than or equal to 20
- values greater than 20 and less than or equal to 25
- values greater than 25 and less than or equal to 30

**Temperature on 12 days in city A (Celsius)**

13	19	16	11	21	23	16	6	29	18	12	23	17	28	9
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**Temperature on 12 days in city B (Celsius)**

7	14	13	9	12	27	12	8	11	21	6	11	17	14	13
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**Temperature on 12 days in city C (Celsius)**

27	22	22	16	24	23	13	27	7	24	23	28	22	29	21
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Students will then use the histograms they've created to answer questions 1 and 2:

- 1** The temperature data set for city A is known as a symmetric data set. What do you think it means to say that a data set is symmetric? (What does it say about the location of the data values? Are the numbers evenly spread out?)
- 2** The temperature data sets for city B and city C are known as asymmetric data sets. What do you think it means to say that a data set is asymmetric?

Students should then create box-and-whisker plots for each data set and answer questions 3 and 4:

- 3** If you were given only the box-and-whisker plots, would you be able to tell whether the data sets were symmetric or asymmetric? If so, describe what a symmetric data set's box-and-whisker plot will look like and what an asymmetric data set's box-and-whisker plot will look like.
- 4** In the histograms, the taller the bar, the more values that fall into that range. In a box-and-whisker plot, does a wider box mean more values fall into that range? If not,
  - a. What does it mean?
  - b. Can you tell how many data values fall into a range on a box-and-whisker plot?

Further support can be found in the GPS Mathematics Framework: Unit 1: *Dealing with Data*; and Unit 2: *Patterns and Relationships*.

The Mathematics Framework documents are available at [www.georgiastandards.org/mathframework.aspx](http://www.georgiastandards.org/mathframework.aspx)



# Practice Quiz



- 1 Mrs. Blackwell has been on a diet for the last six weeks and goes to a support group every Monday night to weigh in and make plans for the next week. The changes in her weight for each of the six weeks are listed below, with negative numbers denoting a loss in weight and positive numbers denoting a gain in weight from the previous week. Place the data in order from the smallest number to the largest number.

$-3\frac{1}{2}$  lb., 3.71 lb.,  $-3\frac{2}{3}$  lb.,  $-3.23$  lb.,  $3\frac{3}{4}$  lb.,  $-3.52$  lb.

A  $-3\frac{1}{2}$  lb.,  $-3\frac{2}{3}$  lb.,  $3\frac{3}{4}$  lb.,  $-3.23$  lb.,  $-3.52$  lb., 3.71 lb.

B  $-3\frac{1}{2}$  lb.,  $-3\frac{2}{3}$  lb.,  $3\frac{3}{4}$  lb.,  $-3.23$  lb.,  $-3.52$  lb., 3.71 lb.

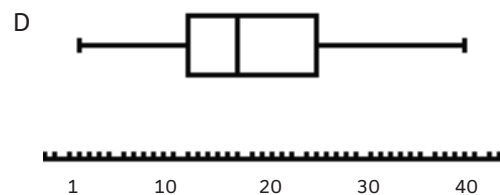
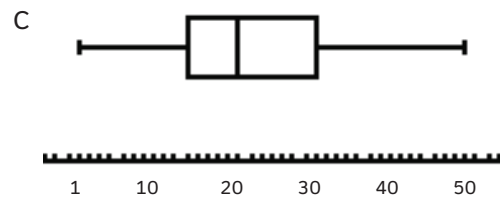
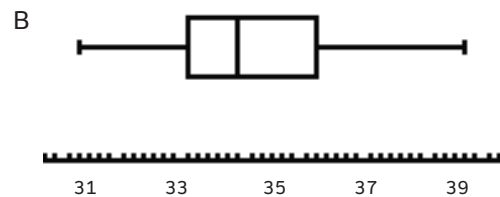
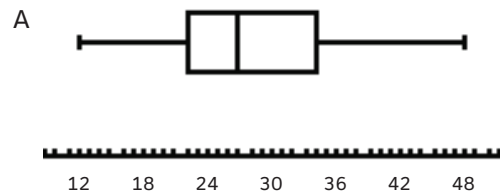
C  $-3\frac{2}{3}$  lb.,  $-3.23$  lb.,  $-3\frac{1}{2}$  lb.,  $-3.52$  lb., 3.71 lb.,  $3\frac{3}{4}$  lb.

D  $-3\frac{2}{3}$  lb.,  $-3.52$  lb.,  $-3\frac{1}{2}$  lb.,  $-3.23$  lb., 3.71 lb.,  $3\frac{3}{4}$  lb.

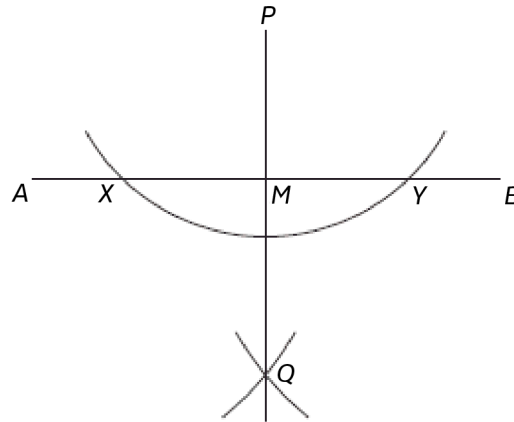
- 2 At lunch, the Grade 7 teachers were talking about the high price of gasoline. They compared the gas mileage of their vehicles by making the data set below, and graphing it as a box-and-whiskers plot.

**31, 27, 12, 23, 45, 24, 48, 19, 34, 17, 29, 22, 29, 24, 39**

Which graph shows the box-and-whiskers plot the teachers made?

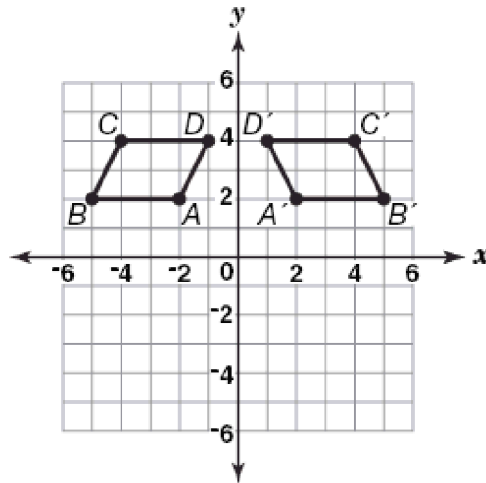


- 3 **Kurt made this construction with a compass and a straight edge.**



**Which construction did Kurt make?**

- A copying a line segment
  - B bisecting a line segment
  - C drawing a line parallel to a given line through a point not on the line
  - D drawing a line perpendicular to a given line through a point on the line
- 4 **In this figure,  $A'B'C'D'$  is a transformation of  $ABCD$ .**

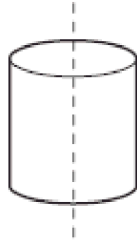


**What type of transformation is  $A'B'C'D'$ ?**

- A dilation
- B rotation
- C reflection
- D translation



- 5 **Look at the cylinder.**



**If the cylinder is sliced in half vertically as shown by the dotted line, what shape is the cross section that is formed?**

- A circle
  - B cone
  - C rectangle
  - D sphere
- 6 **The cost of renting a boat is \$10. There is also a charge of \$2 for each person. Which expression represents the total cost for renting the boat for  $p$  persons?**
- A  $10 + 2p$
  - B  $10 - 2p$
  - C  $2 + 10p$
  - D  $2 - 10p$
- 7 **Aaron has 5 fewer than 3 times the number of baseball cards that Sam has. Aaron has 31 baseball cards. The equation below represents this situation.**

$$3x - 5 = 31$$

**What does  $x$  represent in this equation?**

- A the number of cards Sam has
- B the number of cards Aaron has
- C how many more cards Aaron has than Sam
- D how many cards Sam and Aaron have together

- 8 **Look at the function table.**

$x$	$y$
-1	-8
0	-5
1	-2
2	1

**What happens to  $y$  when  $x$  increases by 2?**

- A  $y$  decreases by 3  
B  $y$  decreases by 6  
C  $y$  increases by 3  
D  $y$  increases by 6
- 9 **The number of hours,  $h$ , it takes to wash  $c$  cars at a school fundraiser is inversely proportional to the number of students,  $s$ , who come to help at the car wash. Which expression represents this relationship?**
- A  $h = c \times s$   
B  $h = c \times s^2$   
C  $h = \frac{s}{c}$   
D  $h = \frac{c}{s}$
- 10 **Below is a list of the ages of your friend's aunts and uncles.**

**23, 33, 35, 27, 38, 25, 24, 19**

**What is the median age?**

- A 25  
B 26  
C 27  
D 28

## Solutions

Number	Correct Answer	Explanation
1	<b>D</b>	<p><i>Compare and order rational numbers, including repeating decimals. (M7N1b)</i></p> <p>The correct answer is <b>Choice (D)</b> <math>-3\frac{2}{3}</math> lb., <math>-3.52</math> lb., <math>-3\frac{1}{2}</math> lb., <math>-3.23</math> lb., <math>3.71</math> lb., <math>3\frac{3}{4}</math> lb. The larger the absolute value of a negative number, the smaller the number. Choices (A) and (B) are incorrect and result from ordering the fractions and decimals separately by absolute value. Choice (C) is incorrect, and may result from ordering the numbers by absolute value and calculating the absolute value of <math>-3\frac{2}{3}</math>.</p>
2	<b>A</b>	<p><i>Solve problems using rational numbers. (M7N1d)</i></p> <p>The correct answer is <b>Choice (A)</b>. The smallest and largest numbers in the data set are 12 and 48, and the only box plot that begins at 12 and ends at 48 is the box plot in Choice (A). Choice (B) is incorrect and results from using the first data value as the leftmost point and the last data value as the rightmost point. Choice (C) is incorrect and results from using the correct value for the upper bound, but thinking that the plot must start at 0. Choice (D) is incorrect and results from using the last data value as the rightmost point, and using 0 as the starting point.</p>
3	<b>D</b>	<p><i>Perform basic constructions using both compass and straight edge, and appropriate technology. Constructions should include copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line. (M7G1a)</i></p> <p>The correct answer is <b>Choice (D) drawing a line perpendicular to a given line through a point not on the line</b>. The arc that crosses points <math>X</math> and <math>Y</math> as well as the two arcs that cross at point <math>Q</math> are two steps in the bisection of an angle. Bisecting a straight line angle creates a line perpendicular to it. Choice (A) is incorrect and may result from concluding on sight that line segment <math>PQ</math> is the same length as line segment <math>AB</math>. Choice (B) is incorrect and may result from concluding on sight that line segment <math>PQ</math> has cut line segment <math>AB</math> in half. Choice (C) is incorrect and may result from confusing parallel and perpendicular.</p>



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Number	Correct Answer	Explanation
4	C	<p><i>Demonstrate understanding of translations, dilations, rotations, reflections, and relate symmetry to appropriate transformations. (M7G2a)</i></p> <p>The correct answer is <b>Choice (C) reflection</b>. Parallelogram <math>ABCD</math> is reflected across the <math>y</math>-axis to become parallelogram <math>A'B'C'D'</math>. Choice (A) is incorrect because the figure would have changed size and not orientation under a <i>dilation</i>. Choice (B) is incorrect. A 270-degree <i>rotation</i> would put the image in quadrant I, but the coordinates of the vertices would not be different. Choice (D) is incorrect because the figure has changed orientation, which does not happen under a <i>translation</i>.</p>
5	C	<p><i>Sketch, model, and describe cross sections of cones, cylinders, pyramids, and prisms. (M7G4b)</i></p> <p>The correct choice is <b>Choice (C) rectangle</b>. If a cylinder is cut perpendicular to its circular sides, the resulting cross section is a rectangle. Choice (A) is incorrect, and is the resulting horizontal cross section of a cylinder, not the vertical cross section. Choices (B) and (D) are incorrect. A cross section of a solid is a plane figure, and cannot be another solid such as a cone or sphere.</p>
6	A	<p><i>Translate verbal phrases to algebraic expressions. (M7A1a)</i></p> <p>The correct choice is <b>Choice (A) <math>10 + 2p</math></b>. The rental cost is constant at \$10. The additional \$2 per person charge will vary depending on the number of people, <math>p</math>, for a variable charge of <math>2p</math> that would need to be added to the initial cost of \$10, with the total cost of renting the boat being the sum of the boat rental and the variable per person charge, <math>10 + 2p</math>. Choices (C) and (D) are incorrect because they multiply the variable number of people, <math>p</math>, by the constant, 10. Choice (B) is incorrect because it subtracts <math>2p</math> from 10 when it should be adding it to get the total cost of the boat rental for <math>p</math> people.</p>
7	A	<p><i>Given a problem, define a variable, write an equation, solve the equation, and interpret the solution. (M7A2a)</i></p> <p>The correct choice is <b>Choice (A) the number of cards Sam has</b>. A variable always represents the unknown quantity, and the unknown quantity in this case is the number of cards Sam has. Choice (B) is incorrect, and may result from thinking that Aaron must be on the left side of the equation because he came first in the problem setup. Choices (C) and (D) are both incorrect. Although both are unknowns, neither exists as a single variable or number in this equation.</p>

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Number	Correct Answer	Explanation
8	D	<p><i>Describe how change in one variable affects the other variable. (M7A3c)</i></p> <p>The correct answer is <b>Choice (D) y increases by 6</b>. If we look at the table we see that when <math>x</math> increases by 2 from <math>-1</math> to <math>1</math> and from <math>0</math> to <math>2</math>, <math>y</math> increases by 6. Choice (A) is incorrect, and likely results from misreading the effect of a one unit increase in <math>x</math> from <math>-1</math> to <math>0</math> as decreasing <math>y</math> from 8 to 5. Choice (B) is incorrect, and may result from misreading the increase from <math>-8</math> to <math>-2</math> as a decrease from 8 to 2. Choice (C) is incorrect and likely results from mistakenly giving the amount <math>y</math> increases for a one unit change in <math>x</math>.</p>
9	D	<p><i>Describe patterns in the graphs of proportional relationships, both direct (<math>y = kx</math>) and inverse (<math>y = k/x</math>). (M7A3d)</i></p> <p>The correct choice is <b>Choice (D) <math>h = \frac{c}{s}</math></b>. To say that <math>h</math> is inversely proportional to <math>s</math> is to say that <math>s</math> increases as <math>h</math> decreases. The only equation that yields that relationship is choice (D). Choices (A) and (B) are incorrect, and use the correct form for a proportional relationship, rather than for an inversely proportional relationship. Choice (C) is incorrect, and results from using the correct equation form for an inversely proportional relationship, but placing <math>s</math> in the numerator rather than the denominator.</p>
10	B	<p><i>Analyze data using measures of central tendency (mean, median, and mode), including recognition of outliers. (M7D1c)</i></p> <p>The correct choice is <b>Choice (B) 26</b>. When there is an even number of values in a data set, the median is the mean of the two middle numbers when the values are in order. The two middle numbers here are 25 and 27, and the median is <math>\frac{25 + 27}{2}</math>. Choices (A) and (C) are incorrect, and result from choosing either the lower or upper middle numbers, rather than finding the mean of the two. Choice (D) is incorrect, and results from confusing the mean of the data set with the median.</p>

**Science**





# Science

Students in Grade 7 use observations to explain diversity of living organisms and how the organisms are classified. They use different models to represent systems such as cells, tissues, and organs. Students use what they know about ecosystems to explain the cycling of matter and energy. The concepts of natural selection and fossil evidence are also used in explanations of their observations on the diversity of living organisms. Grade 7 students write instructions, describe observations, and show information in graphical form. When analyzing the data they collect, students can recognize relationships in simple charts and graphs and find more than one way to interpret their findings. The students replicate investigations and compare results to find similarities and differences.

The middle school life science course is designed to give students the necessary skills for a smooth transition from elementary life science standards to high school biology standards. The purpose is to give all students an overview of common strands in life science including, but not limited to, diversity of living organisms, structure and function of cells, heredity, ecosystems, and biological evolution.

The Science activities focus on some of the concepts that are assessed on the Grade 7 CRCT Science domains. These domains are as follows:

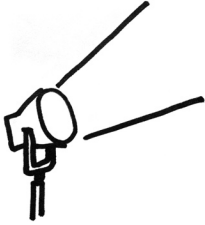
- 1 Cells and Genetics**
- 2 Interdependence of Life**
- 3 Evolution**

The *Characteristics of Science* skills are integrated throughout the domains. These skills are corequisites for understanding the content of each science domain.

*Characteristics of Science* refer to understanding the process skills used in the learning and practice of science. These skills include testing a hypothesis, record keeping, using correct safety procedures, using appropriate tools and instruments, applying math and technology, analyzing data, interpreting results, and communicating scientific information. *Characteristics of Science* also refer to understanding how science knowledge grows and changes, and the processes that drive those changes.



## Activities



### 1 Cells and Genetics

*Georgia Performance Standards S7L2 and S7L3*

Within the Cells and Genetics domain, students are expected to recognize cells as the basic building blocks of organisms, and to understand their structure and function. Students should explain that tissues, organs, and organ systems serve the needs cells have for oxygen, food, and waste removal. Genetic content knowledge includes an awareness of the importance of genes and chromosomes in the process of inheriting a specific trait, and the mechanisms of reproduction. Students should know that through selective breeding small differences can accumulate in successive generations with the end result of producing plants and animals with desired traits.

The following activities develop skills in this domain:

- For students to visualize how the cell membrane regulates what comes in and out of the cell, students will use a balloon, cardboard box, vanilla, and water. The balloon will represent the cell membrane; the cardboard box will represent outside the cell; vanilla will represent small molecules; and water will represent large molecules. Students will create two experimental setups. In the first setup students will place a teaspoon of vanilla extract inside an uninflated balloon, tie the end, and place it in a closed cardboard box. In the second setup, students will fill an uninflated balloon with water, tie a knot at the end to seal it, and place it in another closed cardboard box. Students will predict what will happen to the experimental setup in both trials. Both setups should be left to sit for twenty minutes, after which students should answer the following questions during a class discussion:
  - What observations did you make after opening each box?
  - Did anything leave the balloons?
  - If something did leave the balloons, why?

After answering the questions, the students should relate their findings to how a cell membrane is selectively permeable. Remember that cell membranes allow only certain things in and out.

- To create an analogy of how life functions on the cellular level, students should create a chart that matches cell organelles with specific real-world jobs that have the same function. The ideal chart will include a column each for the organelle, function, and job. After completing the chart, students will match the organelles with parts of the city. Students should determine places that are important in any city because they provide the functions identified. Students should draw the city and be creative in the naming of the city and the illustrations (e.g., a mitochondrion-shaped power station). After completion of the drawing, students should present their work to a group of peers as if they were at a scientific conference. Students will then write a report that explains their drawing, and how it relates to the function of specific organelles. Students should also include the following:

- Basic information about the city
  - A description of each organelle with its corresponding part of the city
  - Reasons behind choosing each analogy
  - What would happen if one part of the city malfunctioned
- In order to help students compare and contrast asexual and sexual reproduction, students will play *Create-A-Kid*, a game using quarters and a list of traits. Sample traits will be hair color, eye shape, eye color, height, earlobe type, face shape, and nose shape. For each trait there should be two possibilities (e.g., brown or blue eyes) with one representing the dominant trait (capital letter B) and the other representing the recessive trait (lowercase letter b). Students should create a chart with columns for heads, tails, genotype, and phenotype. The genotype represents the actual genetics of the organism (BB, Bb, or bb), and the phenotype represents how the organism looks (dominant trait for BB and Bb and the recessive trait for bb only). Follow the chart below:

Trait	Dominant (Heads)	Recessive (Tails)	Flip One	Flip Two	Genotype	Phenotype
Eye Color	Brown (B)	Blue (b)	B	b	Bb	Brown Eyes

In the first trial, the students will flip only one coin, which represents asexual reproduction. Since there is only one parent in asexual reproduction, whatever allele is passed on through the flip becomes the only allele of the resulting offspring. In the second trial, the students should flip two coins, and this represents sexual reproduction. Students will do at least 10 flips for each trial. Each coin represents one parent with two possible alleles, and the resulting offspring will have a new genotype based on one allele from each parent. Each trial should include ten traits including eye color, and after completion of the experiments, students will create pictures of the two new offspring. Students will also create Punnet squares to represent the parental genotypes during both asexual and sexual reproduction trial for three of the traits. Students should be able to answer the following questions at the end of the exercise:

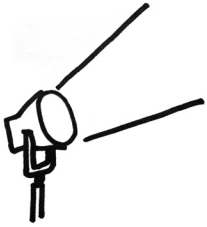
- What is the main difference between asexual and sexual reproduction?
- Which type of reproduction has more genetic variation?
- Why do scientists use Punnet squares when studying inheritance?
- What is the difference between genotype and phenotype?
- Is it possible to know the genetic composition of an organism by simply looking at it? Why or why not?

Further support can be found in the GPS Science Framework: *Organization of Life, Genetics, and Heredity* and *Structure and Function of Cells*.

The Science Framework documents are available at [www.georgiastandards.org/scienceframework.aspx](http://www.georgiastandards.org/scienceframework.aspx)



## Activities



### 2 Interdependence of Life

*Georgia Performance Standard S7L4*

Within the Interdependence of Life domain, students will investigate the diversity of living organisms and how they can be compared scientifically. In addition, students are expected to describe Earth's major biomes and understand environmental influences that affect both individuals and populations. Complex interactions among producers and consumers serve to define food webs and their ultimate dependence on sunlight.

The following activities develop skills in this domain:

- To further understand types of ecosystems and biomes, students will do research based on Antarctica. Antarctica is a desert biome even though it is covered in ice, because it falls below a certain level of rainfall each year. Students should watch a movie in class or at home like “March of the Penguins,” which examines the life and reproductive cycles of Emperor penguins in Antarctica, or some other documentary that explores the animal life cycle in Antarctica. While watching the movie, students should answer the following questions:
  - How would you describe the desert biome seen in Antarctica.
  - How does the desert biome differ from your own?
  - How does the desert biome affect the animals?
  - How have the animals adapted to the desert biome?
  - What types of predators are found in Antarctica?
  - What would happen if there were a major climactic change in Antarctica due to global warming? Would the animals still be able to survive?

At the end of the movie, students should do research on the biome they live in, a temperate deciduous forest. Basic research can be done in a textbook, on the Internet, or in the classroom while in-depth plant life research can be done in local parks, forests, and backyards. Students should then create a dichotomous key by creating a chart of local plants and trees that can be used to identify unfamiliar plant and tree species.

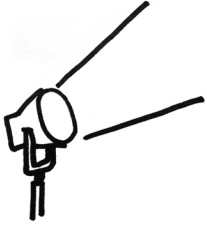
- To demonstrate that sunlight is the ultimate source of energy for most organisms, students will conduct an experiment on the effects of sunlight on plants. Plants are a type of producer because they make their own food during photosynthesis. Animals—the consumers—receive energy indirectly from the sun by eating producers. Students should design an experiment using two plants of their choice. Both experimental setups should be identical except that the control group will be placed in direct sunlight and the experimental group will be kept in darkness. Students will create a chart with the following columns: date, height of plant, appearance of plant, and total growth. Students should make observations for the chart at the same time every other day for two weeks. After the experiment, students should answer the following questions:

- 
- Was there any difference between the two plants after day 6, 10, and 14?
  - Which plant showed the most growth?
  - Why did that plant do better?
  - What would be the effect of no sunlight on plants and consumers?
  - Why are producers at the base of energy pyramids?
- To help students understand symbiotic relationships, students will demonstrate examples of each type of symbiotic relationship. Students should work in pairs with friends, schoolmates, or family members because symbiosis requires two organisms with at least one organism benefitting from the relationship. Students should start with a chart that names the four types of symbiosis: commensalism, mutualism, predation, and parasitism. The chart should say if the interaction is positive, negative, or neutral for each of the two organisms. The students will create skits for each symbiosis type. An example would have one student eating a sandwich and discarding the crusts, while the second student picks up the crusts to eat: an example of commensalism. One of the prepared skits will then be presented to the class as part of the game, *What Type of Symbiosis?* Students will wait until the end of the skit to guess what type of symbiosis is being demonstrated. At the end of the skits, students will be able to answer the following questions:
- How do all of the types of symbiosis differ?
  - What do all types of symbiosis have in common?
  - Why is competition not considered a symbiotic relationship?
  - How do symbiotic relationships affect humans?

Further support can be found in the GPS Science Framework: *Energy Flow and Nutrient Cycling and Interdependence of Life*.

The Science Framework documents are available at  
**[www.georgiastandards.org/scienceframework.aspx](http://www.georgiastandards.org/scienceframework.aspx)**

## Activities



### 3 Evolution

Georgia Performance Standard S7L5

Within the Evolution domain, students are expected to understand how traits change over time, and how this affects adaptation and survival for species. In addition, students should know that evidence for the long history of changing life forms can be found in the many layers of sedimentary rock.

The following activities develop skills in this domain:

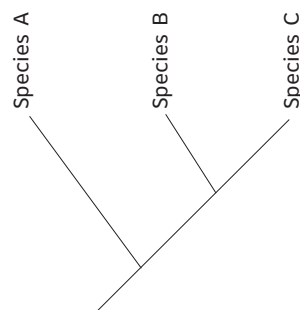
- To help students understand how natural selection shapes life, students will play the game called *The Kudzu Caterpillar*. Students should understand that this activity is intended to replicate the effects of altering environment on predators' ability to spot prey, as observed with peppered moths. Students will place two large pieces of paper, one brown and the other green, on a table one foot apart. Students will then cut out twenty-five caterpillar shapes of each color. The brown piece of paper represents Georgia's trees prior to the Kudzu invasion, and the green piece of paper represents Georgia's trees after the invasion. Students will place the cutout caterpillars on the paper as shown in the first trial in the chart below (green caterpillars on the brown paper). Students will pick up, one at a time, as many caterpillars as they can in twenty seconds. They should use the following chart to track data, and then proceed through each trial.

Trial	Observations	Green Caterpillars "Eaten"	Brown Caterpillars "Eaten"
Brown paper with green caterpillars			
Brown paper with brown caterpillars			
Brown paper with brown and green caterpillars			
Green paper with green caterpillars			
Green paper with brown caterpillars			
Green paper with green and brown caterpillars			

After completing the game, students should be able to answer the following questions in a report to present to the class:

- During pre-invasion Georgia, which caterpillars would be more likely to be eaten by predators?
- During post-invasion Georgia, which caterpillars would be more likely to be eaten by predators?
- What adaptation allowed the successful caterpillars to survive?

- How does natural selection explain this phenomenon?
  - What would happen to the caterpillar population if the trees were suddenly covered in red soot?
- To see how scientists learn about the past, students will look closely at the fossil record. A fossil is a once-living thing that has turned into inorganic matter. A good example is petrified wood, which was once a living tree, but over thousands of years, the wood has been turned into stone. Animal bones and plant life become fossils that give evidence of species that once lived. The fossil record can be dated by relative dating so that scientists can see how species have changed over time. If a species cannot adapt to its surroundings, it becomes extinct. Students should research organisms like armadillos, sharks, cockroaches, and horses to see how the species have evolved. Students will pick one organism after their initial research to create a cladogram (diagram below). A cladogram shows a common ancestor and the species that have evolved over time, including those that are now extinct.



After completion of the cladogram, students will compare their work to classmates' based on the following questions:

- How does your structure differ from your classmates'?
  - What determines the structure of the cladogram?
  - How do you know if an organism has become extinct?
  - What is the common ancestor of your classmate? How did you know?
- To demonstrate how evolution can happen rapidly, students will research avian flu. Avian flu is currently an epidemic that affects birds, and can now be passed from birds to humans. If the avian flu mutates or adapts to a strain that can be passed from human to human, it could kill millions of humans. Students should research major flu epidemics in humans, while keeping in mind that the flu (influenza) is a virus that reproduces asexually through the use of a healthy host cell. Students will then participate in a panel discussion about their findings, and discuss why a new flu vaccine is needed every year to be effective.

Further support can be found in the GPS Science Framework: *Evidence of Evolution*.

The Science Framework documents are available at  
[www.georgiastandards.org/scienceframework.aspx](http://www.georgiastandards.org/scienceframework.aspx)



## Practice Quiz



- Ethan is getting energy by eating chicken nuggets for lunch. What was the original source of the energy in the chicken nuggets?**
  - air
  - soil
  - sunlight
  - water
  
- Which of the following biomes has the greatest diversity (most number of species) of plants and animals?**
  - arctic tundra
  - desert
  - savannah
  - tropical rain forest
  
- Kathleen is performing an investigation about the leaves of a Live oak tree, the state tree of Georgia. She finds six leaves from Live oak trees and measures the length of each leaf.**

Leaf Sample	Length (in centimeters)
1	6
2	12
3	9
4	10
5	13
6	9

**Which of these BEST explains how Kathleen should report the length of a typical leaf of a Live oak tree?**

- She should use the mean because it is the average of the lengths of all of the leaves.
  - She should use the mode because it is the average of the lengths of all the leaves.
  - She should use the median because it is the average of the lengths of all the leaves.
  - She should use the sum because it is the average of the lengths of all the leaves.
- 
- Which of these BEST describes why most organisms look similar to their parents?**
    - The organisms and their parents have similar genes.
    - The organisms and their parents consume similar foods.
    - The organisms and their parents have similar survival skills.
    - The organisms and their parents live in similar environments.



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- 5 **Frank removed a small plant from his garden. However, a new plant grew in its place because he did not remove all of the small plant's roots. Which of these is true about the two plants?**
- A The two plants have identical genetic material.
  - B The two plants have completely different genetic material.
  - C The second plant has half as much genetic material as the first plant.
  - D The second plant has twice as much genetic material as the first plant.
- 6 **Bees carry pollen from one flower to another when they gather nectar. Which of these describes the symbiotic relationship between the bee and the flower?**
- A The bee and the flower both benefit.
  - B Neither the bee nor the flower benefit.
  - C The bee benefits but the flower does not.
  - D The flower benefits but the bee does not.
- 7 **Sometimes people get bacterial infections that do not respond to antibiotics. Which of these is MOST LIKELY the reason these bacteria are resistant to the antibiotics?**
- A The people do not eat healthy foods.
  - B The bacteria have inherited a mutation.
  - C The people have weak immune systems.
  - D The bacteria are missing an outer coating.
- 8 **Which of these is the MAIN reason that humans selectively breed certain animals?**
- A to produce offspring with certain traits
  - B to produce a greater variety of offspring
  - C to produce a greater number of offspring
  - D to produce offspring different from parents
- 9 **Which of these cell structures directs the activities of a cell?**
- A chloroplast
  - B cytoplasm
  - C mitochondria
  - D nucleus
- 10 **In the human body, which of these structures is the simplest level of organization?**
- A cell
  - B organ
  - C system
  - D tissue



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## Solutions

Number	Correct Answer	Explanation
1	<b>C</b>	<p><i>Explain in a food web that sunlight is the source of energy, and that this energy moves from organism to organism. (S7L4b)</i></p> <p>The correct answer is <b>Choice (C) sunlight</b>. The sun's energy provides a catalyst for photosynthesis that produces energy for plants and animals. Choices (A), (B), and (D) are incorrect because <i>air, soil, and water</i> do not provide energy for biological processes.</p>
2	<b>D</b>	<p><i>Describe the characteristics of Earth's major terrestrial biomes (i.e., tropical rain forest, savannah, temperate, desert, taiga, tundra, and mountain) and aquatic communities (i.e., freshwater, estuaries, and marine). (S7L4e)</i></p> <p>The correct answer is <b>Choice (D) tropical rain forest</b>. <i>Tropical rain forests</i> cover approximately 2% of the Earth's surface, but house 50% of Earth's species. Choices (A), (B), and (C) are incorrect because they do not have high levels of biodiversity due to climate and amount of available nutrients.</p>
3	<b>A</b>	<p><i>Use the mean, median, and mode to analyze a set of scientific data. (S7CS3b)</i></p> <p>The correct answer is <b>Choice (A) She should use the mean because it is the average of the lengths of all of the leaves</b>. The mean is the arithmetic average of all the values in the data table. Choice (B) is incorrect because the mode is the most commonly represented value. Choice (C) is incorrect because the median is the middle value when all the values are placed in order from least to most. Choice (D) is incorrect because the sum is not an average and would not represent the typical leaf length.</p>
4	<b>A</b>	<p><i>Explain the role of genes and chromosomes in the process of inheriting a specific trait. (S7L3a)</i></p> <p>The correct answer is <b>Choice (A) The organisms and their parents have similar genes</b>. Sexually reproducing organisms receive half of their genes from each parent, so they have similarities, including physical traits, to both parents. Choices (B), (C), and (D) are incorrect because they have little effect on physical appearance aside from weight and grooming.</p>



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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
5	<b>A</b>	<p><i>Compare and contrast that organisms reproduce asexually and sexually (bacteria, protists, fungi, plants, and animals). (S7L3b)</i></p> <p>The correct answer is <b>Choice (A) The two plants have identical genetic material.</b> By leaving a section of roots, the plant reproduced by vegetative propagation, an asexual process. Since only one parent's genes were passed on, the original plant and offspring are genetically identical. Choice (B) is incorrect because it describes a plant that is not related to the original plant. Choices (C) and (D) are incorrect because the amount of genetic material is conserved during reproduction.</p>
6	<b>A</b>	<p><i>Categorize relationships between organisms that are competitive or mutually beneficial. (S7L4d)</i></p> <p>The correct answer is <b>Choice (A) The bee and the flower both benefit.</b> The symbiotic relationship between the bee and flower is called <i>mutualism</i> because the bee receives nourishment from the flower, and the flower gets pollinated by the bee. Choice (B) is incorrect because it does not represent a symbiotic relationship. Choices (C) and (D) are incorrect because they represent commensalism, not mutualism.</p>
7	<b>B</b>	<p><i>Describe ways in which species on Earth have evolved due to natural selection. (S7L5b)</i></p> <p>The correct answer is <b>Choice (B) The bacteria have inherited a mutation.</b> When bacterial infections are treated by antibiotics, all the bacteria are killed except for those with mutations that are immune to the antibiotic. These immune bacteria reproduce at high rates with the inherited mutation, and are no longer susceptible to the antibiotics. Choices (A), (C), and (D) are incorrect because they have no positive effect on antibiotic resistance of bacteria.</p>

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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
8	<b>A</b>	<p><i>Recognize that selective breeding can produce plants or animals with desired traits. (S7L3c)</i></p> <p>The correct answer is <b>Choice (A) To produce offspring with certain traits</b>. By choosing the parents of offspring, breeders have created organisms that have special traits like speed, size, and color that make the organism more attractive or better in some way. Choices (B) and (D) are incorrect because they are the opposite of what breeders want. Choice (C) is incorrect because selective breeding has no effect on the amount of offspring.</p>
9	<b>D</b>	<p><i>Relate cell structures (cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria) to basic cell functions. (S7L2b)</i></p> <p>The correct answer is <b>Choice (D) nucleus</b>. The nucleus directs all cellular activities through directions held in DNA. Choices (A), (B), and (C) are incorrect because they have distinct functions that are directed by the nucleus with no control.</p>
10	<b>A</b>	<p><i>Explain that cells are organized into tissues, tissues into organs, organs into systems, and organ systems into organisms. (S7L2c)</i></p> <p>The correct answer is <b>Choice (A) cell</b>. The cell is the basic unit of structure and function of an organism. Choice (B) is incorrect because it is a group of tissues working together. Choice (C) is incorrect because it is a group of organs working together. Choice (D) is incorrect because it is a group of cells working together.</p>

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# **Social Studies**





## Chapter 5

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# Social Studies

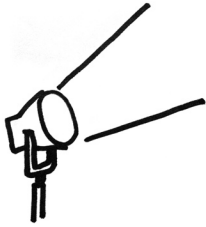
Grade 7 students conclude the study of major world regions with a focus on the cultures of Africa and Asia. The four domains (History, Geography, Government/Civics, and Economics) are integrated, with History and Geography the primary domains. The History domain, after focusing on the recent history of a region, examines specific historical developments essential to understanding the region today. The Geography domain relates the importance of both human and physical geography to each region's development. The Government/Civics domain examines selected modern political structures in each region. The Economics domain continues to build basic economic concepts and introduces students to the economic issues in each region.

The Social Studies activities focus on some of the topics that are assessed on the Grade 7 CRCT Social Studies domains. These domains are as follows:

- 1 History**
- 2 Geography**
- 3 Government/Civics**
- 4 Economics**



## Activities



### 1 History

*Georgia Performance Standards SS7H1, SS7H2, SS7H3, SS7H4, SS7H5, SS7H6, SS7H7, SS7H8 and SS7H9*

Grade 7 continues a student's introduction to the world beyond the United States. Students want to know more about how they fit into the larger global picture. The History domain provides students with relatively recent history of a particular region. It also examines how specific historical events prior to modern times shaped a region. The History domain is not addressed chronologically; rather, it attempts to help students understand why things are the way they are within a specific region. Students will examine many of the important events and people who influenced modern times throughout Africa and Asia. The goal in the History domain is for students to begin to understand the major events and people who have shaped the modern era.

The following activities develop skills in this domain:

- Creating lists to compare and contrast modern independence movements in the regions studied will help students understand the historic roots of independence movements. First, students should find Internet and periodical articles that highlight current reasons for and against independence in the regions studied. As students read, they should make two lists: one describing arguments for independence; the other describing arguments against independence. Next, divide students into small research teams or pairs and have them gather information from the Internet and textbooks that trace the historic roots of each side of the issue. Finally, in the same groups, students will use the information they have found to debate each side of the issue.
- To help students understand conflict and change within the regions studied, students will create a visual concept map. Draw a large concept map with a central rectangle with lines radiating out, connecting to eight ovals. In the center rectangle, write the name of a specific regional conflict chosen by students. Students should share aloud all the consequences, ideas, events, or feelings they associate with the issue. Record each student contribution in one of the ovals branching out from the center rectangle. After all student contributions are filled in on the concept map, students should discuss the way in which each consequence, idea, event, or feeling resulted from the conflict. The information in each oval should be assigned to an individual or small group of students. Students will do research using the Internet, textbooks, or library resources to find information to support the listed conclusions about changes resulting from the conflict. After each individual or small group of students has completed research, they should present their findings to the class.



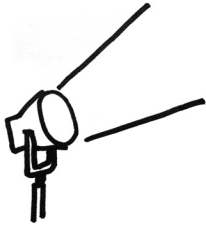
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- Students will better understand factors influencing the development of empires within the regions studied by playing the role of tour guide. Students should use the following questions to guide their research as they prepare to lead a group of tourists on a virtual tour.
    - What role did religion play in each empire?
    - How did each empire influence trade and learning?
    - How was geography important in the development of each empire?
    - What factors led to the decline of each empire?
    - If you were to visit the regions once ruled by each empire, what lasting influence might you find?

After completing their research, each student should choose one empire they would like to represent as a tour guide. Using the information they gathered, students should create a five- to ten-minute presentation, using maps or other visual resources as needed. The student assuming the role of tour guide will offer an engaging commentary on the features and history of the empire to the group of “virtual tourists” in the classroom.

The Social Studies Framework documents are available at  
**[www.georgiastandards.org/socialstudiesframework.aspx](http://www.georgiastandards.org/socialstudiesframework.aspx)**



## Activities



### 2 Geography

*Georgia Performance Standards SS7G1, SS7G2, SS7G3, SS7G4, SS7G5, SS7G6, SS7G7, SS7G8, SS7G9, SS7G10, SS7G11 and SS7G12*

The Geography domain of Grade 7 Social Studies introduces students to important physical and human characteristics of specific regions in the world (Africa and Asia). Students will also interpret the impact of government policies and individual behaviors on each region's development. This domain will help students better understand the relationship of geography to culture, history, and economics. Students will also begin to understand their interdependence with other peoples of the world. Students should be able to analyze and evaluate the role of geography, both physical and human, in shaping the region under study.

The following activities develop skills in this domain:

- To understand the importance of geography to the selected region, students will locate and label the major physical features of the land (rivers, deserts, mountains, etc.) on maps as identified in the appropriate Georgia Performance Standards. Students will then explain how these physical features affect human geography. Students should consider such factors as trade, where people live, and economic activities (farming, mining, fishing, manufacturing, etc.). Finally, working in small groups or individually, the students should answer the following questions.
  - How might location, climate, and natural resources prompt the growth of the cities and major civilizations?
  - What impact might major bodies of water have on the development of trade and industry in the regions studied?
  - What geographical features are found near many major cities? Why is that the case?
  - How does the physical environment in your area affect the way you live?
- To help students understand customs, religions, traditions, and lifestyles of people from different cultures, students should prepare a collage. Students will work independently or in small groups to select cultural groups from the regions studied. Each student or group should work with a different cultural group. They will prepare a collage related to the religions, customs, traditions, and other features that make each cultural group unique. Students or groups will share their collage presentations with classmates or family members who will ask questions of the student artists. Students should be able to answer the following questions about their chosen cultural groups.
  - What cultural characteristics make the region you studied different from your own?
  - What similarities exist across many cultures, including the one you studied?



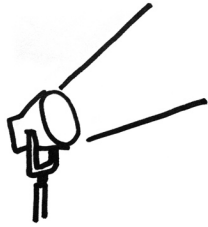
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- What long-established cultural customs and traditions exist today in the region you explored? How do they affect the region?
  - What cultural characteristics does the United States have that are different from the region you studied?
- To help students more easily recognize the consequences resulting from major disasters, students should examine particular examples (such as hurricanes, earthquakes, typhoons, nuclear accidents, or the impact of global warming) and answer questions about those examples and the issues surrounding them. Students should explore major disasters and environmental issues that have occurred or are taking place within the regions being studied, and use the following questions to guide their research.
- How did/do humans use our natural environment? What changes have occurred/are occurring in the environment as a result?
  - What is the environmental cost resulting from this major disaster or environmental issue?
  - What can we learn from this disaster or environmental issue?
  - How do human activities currently affect the environment in the region being studied, in your community, and in the larger global community?

Once each student has researched major disasters using the previous questions, students should write one-page papers on particular disasters or environmental issues from one of the regions being studied. Students should use the papers to examine causes and effects, as well as draw generalizations and present ideas about how to more effectively deal with the disaster. They should also consider ways in which a disaster could have been prevented or an environmental issue could be handled.

The Social Studies Framework documents are available at  
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## Activities



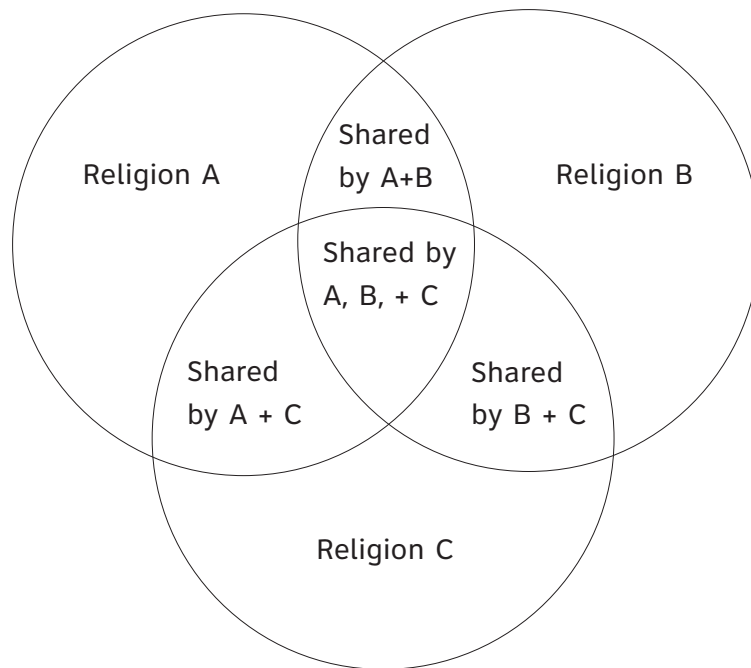
### 3 Government/Civics

*Georgia Performance Standards SS7CG1, SS7CG2 and SS7CG3*

Within the Government/Civics domain of Grade 7 Social Studies, students will learn that there is diversity in political systems and governments in Africa and Asia. Students will also learn that unique and special political relationships sometimes exist between nations, and that countries may experience political transition or change over the course of time. Through the study of the Government/Civics domain in Grade 7 Social Studies, students will be able to describe and compare political systems and modern national structures of government within the regions studied.

The following activities develop skills in this domain:

- To help students understand the structures of different national governments, they will complete a grid. Students should create an appropriate number of columns and label each with the name of a nation in a given region of study (e.g., Morocco, Kenya, Libya, and South Africa in Africa; Turkey, Jordan, Iran, Saudi Arabia, and Israel in Southwest Asia; India, Indonesia, China, and Japan in Southern and Eastern Asia). Next they should create four rows and label each of them with one of the following: Type of Government, Form of Leadership, Type of Legislature, and Role of the Citizens. Students will complete the charts by doing necessary research to fill in the appropriate information for each country. Each student should then use the chart to explain to a partner or parent how the governments are similar, how they are different, and why. Finally, students should attempt to persuade his or her partner or parent to see the advantages of living under one of the listed systems of government.
- To help students understand the role religion plays in government, students will compare the major religions studied within each region. Students will research the importance of either Judaism, Christianity, and Islam in the Middle East or Hinduism and Buddhism in Southern and Eastern Asia. Students will create a large Venn diagram (see sample below, which could be used to compare three religions) and label each circle. Students should use the following questions to help guide their thinking as they gather information for the diagram.
  - Where did each of the religions begin, who founded it, and on what ideas was it based?
  - How did the beliefs of each religion spread?
  - In which ways, if any, have these religions led to conflict?
  - How has each religion played a role in government and politics?
  - How does religion play a role in the conflict today in the regions being studied?



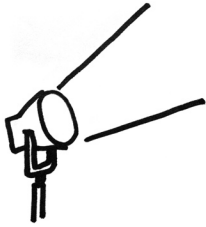
Once students have completed their diagrams they should compare their results with a partner and discuss any differences.

- To help students become familiar with civil war and conflict in the regions being studied, students will play the role of foreign students and write letters to "pen pals" in America. First, each student will choose a country that has been studied. Next, each student should assume the role of a fictitious student from that nation. The student should address the letter to one of his or her actual classmates or to his or her parent. The student will start the letter by giving a brief description of the fictitious student's country (location, interesting facts, etc.) Next, the student will write about the problems and impacts of civil war or conflict in that country. Finally, in a postscript (P.S.) to the pen pal letter, the fictitious student should explain whether or not he or she thinks his or her country's government has been or was successful in solving the problems. Students should use facts learned in the study of the fictitious student's country to explain and support the stated opinions. Students will share the letter with the class and discuss whether or not the conclusions expressed in the letter are well-supported.

The Social Studies Framework documents are available at  
[www.georgiastandards.org/socialstudiesframework.aspx](http://www.georgiastandards.org/socialstudiesframework.aspx)



## Activities



### 4 Economics

*Georgia Performance Standards SS7E1, SS7E2, SS7E3, SS7E4, SS7E5, SS7E6, SS7E7, SS7E8, SS7E9 and SS7E10*

Throughout the Economics domain of Grade 7 Social Studies, students will build upon previously learned concepts. The emphasis will ensure that students understand the processes of national and international economic growth, and the nature of global economic systems and interdependence. A study of the economic development of Africa and Asia will be introduced during Grade 7. By the end of Grade 7, students should be able to demonstrate the understanding of factors that influence economic growth in Africa and Asia. Students will recognize factors such as human and capital investments, and the benefits of trade. Students will also understand the various physical and economic factors that influence the movement of goods and services across international and regional boundaries.

The following activities develop skills in this domain:

- To help students illustrate and understand how international trade requires a system for exchanging currency between and among nations, students will create and play a game. Students will explore currency exchange, trade unions, and the balance of trade as each student writes four quiz questions for each of these topics. Each question and its answer should be written on a separate note card. The four questions should increase in difficulty. Point values of 10, 20, 30, and 40 should be assigned according to difficulty. Have four cardboard boxes or other containers available, one for questions of each point value. Once students complete their questions, they will give them to a teacher or parent who will place them in the appropriate container. Students will choose a point value and the teacher or parent will pull a random question out of the appropriate box. The following questions are effective examples.
  - What is the term used to describe a country that exports more than it imports? (10 points)
  - What is one benefit of having a system for exchanging different currencies? (20 points)
  - What is the importance of the Pacific Rim in trade and economic development? (30 points)
  - What is the function and purpose of the South African Development Community (SADC) in relation to international trade? (40 points)
- To help students identify different economic systems and how they answer basic economic questions, students should compare and contrast features of economic systems. After studying four different types of economic systems (traditional, command, market, and mixed) students will label each of four posters with the name of one country being studied: Nigeria, Morocco, Egypt, and South Africa. Students should write the answers to the following questions on each poster and report their findings.



- 
- What type of economic system does the country function under?
  - What are three goods or services the country produces?
  - How does the government control what is produced?
  - What are citizens allowed to privately own or have total control over?
  - What rights do people have under each economic system?
- To help students understand different types of trade barriers—both physical and economic—students will create lists drawn from specific examples. Students should come up with a list of physical and economic trade barriers that the countries studied might face or impose. Next, students should choose at least two physical and two economic barriers from the lists and write a paragraph about each explaining why they are considered barriers and what consequences they might have on the countries studied. Finally, students should answer the following questions to help gain an understanding of the effects these barriers have on buyers and sellers in different countries.
- How can a physical barrier affect the value of particular goods for buyers and sellers?
  - What is an example of a man-made barrier, and why might this type of barrier be imposed on international trade?
  - What economic barrier might the government of a country put in place to limit foreign trade?
  - Why would a country want to impose an economic trade barrier on imports when the goods being traded are also produced within that country? How might this type of barrier affect the progress of a country?
  - How do trade barriers influence which countries become trade partners with one another?

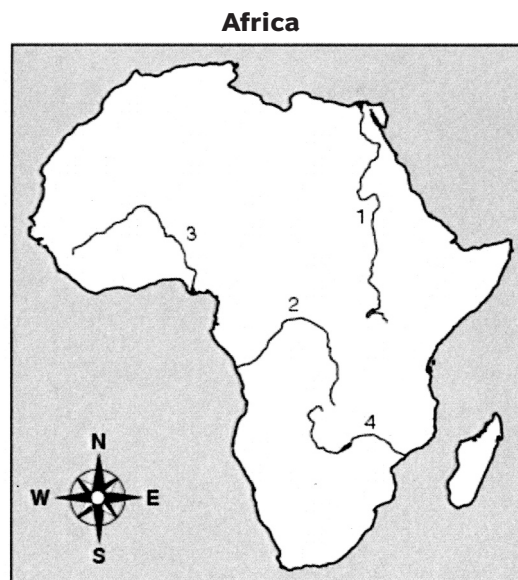
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## Practice Quiz



- Which statement BEST explains the importance of Zanzibar?**
  - It is the oldest city in Africa.
  - It was a major center of commerce in Africa.
  - It was an important center of learning in Africa.
  - It was located along a desert trading route in Africa.
  
- Which of these describes the result of the collapse of the Ottoman Empire after World War I?**
  - Communism spread throughout the Middle East.
  - The United States and Russia became involved in the Cold War.
  - Ottoman people were forced to leave their land, and they settled in northern Europe.
  - The land that the Ottoman Empire had ruled was partitioned, and new nations were created.
  
- Which of these is a cause of the continuing struggle between Israel and the Arab world?**
  - distribution of wealth from oil
  - historical claims to the same land
  - access to ocean ports and river systems
  - competition between agricultural industries
  
- Which number on the map indicates the location of the Niger River?**



- 1
- 2
- 3
- 4



- 
- 5 **Which of these describes the West Bank?**
- A It is located on the shores of the Nile River near the Great Pyramid.
  - B It is located on the shores of the Yangtze River near the Great Wall.
  - C It is located on the shores of the Indus River and is the source of conflict between Pakistanis and Indians.
  - D It is located on the shores of the Jordan River and is the source of conflict between Israelis and Palestinians.
- 6 **What is a unique characteristic of Indonesia?**
- A It is a landlocked country.
  - B It is located on two continents.
  - C It is the world's smallest nation.
  - D It is composed of thousands of islands.
- 7 **Which of these describes the type of government in Israel?**
- A monarchy
  - B democracy
  - C communist state
  - D military dictatorship
- 8 **Which one of these is the cause of most economic struggle and loss of life in Africa?**
- A civil war
  - B deforestation
  - C apartheid reform
  - D petroleum extraction
- 9 **Which natural trade barrier has historically isolated North African nations from African nations located south of the equator?**
- A the Sahara
  - B the Nile
  - C the Congo Basin
  - D the Mediterranean Sea
- 10 **Which of these must be present for international trade to be successful?**
- A a system for raising taxes
  - B a system for securing borders
  - C a system for exchanging currencies
  - D a system for imposing protective tariffs



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## Solutions

Number	Correct Answer	Explanation
1	<b>B</b>	<p><i>Explain the importance of cities such as Timbuktu as a center of learning, Djenne as one of the oldest cities in Africa, and Zanzibar as a center of commerce. (SS7H1b)</i></p> <p>The correct answer is <b>Choice (B) It was a major center of commerce in Africa</b>. Due to Zanzibar's location it was ideal as a center of trade for regions such as, the Middle East. Choice (A) is incorrect because Djenne is the oldest city in Africa. Choice (C) is incorrect because it was not known as a center for learning. The city referred to as the center of learning is Timbuktu. Choice (D) is incorrect because it is not located near a desert; it is an island off the coast of Tanzania.</p>
2	<b>D</b>	<p><i>Discuss the importance of the breakup of the Ottoman Empire after World War I. (SS7H5d)</i></p> <p>The correct answer is <b>Choice (D) The land that the Ottomans ruled was partitioned, and new nations were created</b>. As a member of the defeated Central Powers at the conclusion of World War I, the Ottoman Empire was divided among the victorious Allied Powers. Choice (A) is incorrect because the Allied Powers consisted of democratic nations and actually helped stop the spread of communism. Choice (B) is incorrect because the Cold War did not begin until after World War II. Choice (C) is incorrect because the Ottomans were not forced to leave, but in time did adopt a parliamentary form of government.</p>
3	<b>B</b>	<p><i>Describe the continuing conflicts between Israel and the Arab world. (SS7H6b)</i></p> <p>The correct answer is <b>Choice (B) historical claims to the same land</b>. Israelis and Arabs have been involved in an ongoing land claim dispute over the lands of Palestine. Choices (A) and (D) are incorrect because the dispute is centered on land claims and religion. Choice (C) is incorrect because the disputed area is landlocked.</p>



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Number	Correct Answer	Explanation
4	C	<p><i>Describe and locate major physical features; include Sahara, Savannah, Sahel, Tropic Rain Forest, Congo River, Nile River, Zambezi River, Niger River, East African Mountains (Ethiopian Highlands), Drakensberg Mountains, Atlas Mountains, Kalahari Desert, Lake Tanganyika, and Lake Victoria. (SS7G1a)</i></p> <p>The correct answer is <b>Choice (C) 3</b>. The Niger River is a principal river in western Africa that empties into the Gulf of Guinea via a delta in Niger. Choices (A), (B), and (D) are incorrect because they point to the Nile River, the Congo River, and the Zambezi River, respectively.</p>
5	D	<p><i>Describe and locate major physical features of the Middle East; include Jordan River, Tigris River, Euphrates River, Golan Heights, West Bank, Gaza Strip, Suez Canal, Strait of Hormuz, Persian Gulf, Black Sea, Caspian Sea, Red Sea, and Arabian Sea. (SS7G5a)</i></p> <p>The correct answer is <b>Choice (D). It is located on the shores of the Jordan River and is the source of conflict between Israelis and Palestinians</b>. The West Bank is a territory found along the Jordan River in the Middle East and has been an area of dispute between the Israelis and the Palestinians for many years. Choice (A) is incorrect because the Nile River is located on the African continent and is mostly associated with Egypt. Choice (B) is incorrect because the Yangtze River is located on the Asian continent in China. Choice (C) is incorrect because the Indus River is located in Pakistan on the Indian subcontinent.</p>
6	D	<p><i>Describe and locate the following nations in Southern and Eastern Asia: India, Bangladesh, Pakistan, Vietnam, Myanmar, Sri Lanka, Thailand, Indonesia, Malaysia, Philippines, Japan, China, North and South Korea, Russia, and Georgia. (SS7G9b)</i></p> <p>The correct answer is <b>Choice (D). It is composed of thousands of islands</b>. Indonesia is an archipelago of over 18,000 islands located in Southeast Asia between the Indian and Pacific Oceans. Choice (A) is incorrect because Indonesia is made up of islands, which are not landlocked. Choices (B) and (C) are incorrect because the thousands of islands that make up Indonesia cover thousands of square miles of land.</p>

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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
7	<b>B</b>	<p><i>Explain the basic structure of the national governments in Turkey, Jordan, Iran, Saudi Arabia, and Israel; include type of government, form of leadership, type of legislature, and role of the citizen. (SS7CG2a)</i></p> <p>The correct answer is <b>Choice (B) democracy</b>. The government of Israel is best described as a parliamentary democracy where the members of the legislative branch are elected by all Israeli citizens over the age of 18. Choices (A), (C), and (D) are incorrect because they name government systems that are characterized by giving very few rights to citizens and great control to the government.</p>
8	<b>A</b>	<p><i>Explain the problem and impact of civil war and conflict in Africa. (SS7CG1b)</i></p> <p>The correct answer is <b>Choice (A) civil war</b>. Africa is the only continent where the incidence of civil war continues to increase, due in large part to the dismal economic conditions of many African nations. Choices (B), (C), and (D) are incorrect because they are not causes of significant loss of life but are causes of economic struggle.</p>
9	<b>A</b>	<p><i>Explain how trade barriers (include the Sahara and the tropical rain forest) have affected development of trade within Africa. (SS7E2b)</i></p> <p>The correct answer is <b>Choice (A) the Sahara</b>. The Sahara Desert, located in northern Africa and measuring approximately 8.6 million square kilometers, has traditionally posed a major obstacle to trade and travel in northern Africa. Choices (B), (C), and (D) are water sources that promote trade by making it easier to move great distances.</p>



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<b>Number</b>	<b>Correct Answer</b>	<b>Explanation</b>
10	<b>C</b>	<p><i>Illustrate how international trade requires a system for exchanging currency between and among nations and identify examples of currencies from India, China, and Japan. (SS7E9f)</i></p> <p>The correct answer is <b>Choice (C) a system for exchanging currencies</b>. In order for countries using different currencies to develop trading partnerships, there must be a system in place to establish fair rates of exchange for those currencies. Choices (A) and (B) are incorrect because they do not address the issue of international trade. Choice (D) is incorrect because the typical effect of protective tariffs is to limit international trade.</p>

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