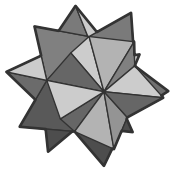
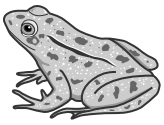
CRCT Study Guide

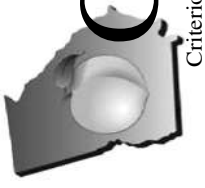




Reading
English/Language Arts
Mathematics
Science
Social Studies

Grade 4

Georgia
Criterion-Referenced Competency Tests



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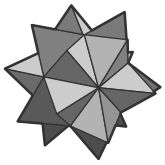

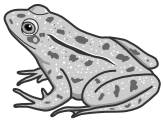

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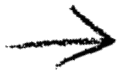
Using the CRCT Study Guide

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**/ to find further information about and support for the CRCT.

The following section of this guide, "About the CRCT," contains an overview of the CRCT and test-taking strategies to review with your students.

– The content tested on the CRCT is based on Georgia's state-mandated content 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.

This document is intended as a student resource. Photocopying is allowed as needed for student use.

Overview of the CRCT

What is the CRCT?

The Grade 4 CRCT is a state-mandated achievement test that measures the subject areas of Reading, English Language Arts, Mathematics, Science, and Social Studies.

What does the CRCT measure?

The CRCT is designed to measure student acquisition and understanding of the knowledge, concepts, and skills set forth in the state-mandated content 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
- Provide data for use in Georgia's accountability measures and reports.

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. They are measured on their 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 CRCT website **http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/CRCT.aspx**.

Since the spring of 2006, performance on the Reading portion of the CRCT has been linked to the Lexile® Framework for Reading. Visit **www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/Lexile-Framework.aspx** for more information on this national reading measure.

Preparing for the CRCT

Test-Taking Strategies

Weeks Before the Test

Set academic goals with students for the upcoming weeks and months (short and long term). Write down and post students' goals where they can be seen at least once a day.

Help students gather study materials ahead of time.

Set up a place to work that is free of distractions.

Build in time to review what was learned in the last study session.

Divide assignments into manageable chunks. Studying for a long time non-stop is not productive!

Model and have students mark the main idea of each paragraph with a pencil as they read. This will help them focus on what they are reading.

Have students ask questions that arise while they are studying and encourage them to find the answers.

At the end of each study session, review what they have learned.

Day Before the Test

Remind students to get a good night's rest.

Remind students that they can talk to a teacher or parent if they are feeling nervous about the test.

Assure students that this test is only one measure of their knowledge.

During the Test

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

Relax by taking slow, deep breaths.

Read the directions carefully. Make sure you understand what you need to do. If you are not sure, ask the teacher.

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 locations on your answer sheet.

Fill in the corresponding circle fully when you choose your answer. Erase any marks outside of the circle.

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

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. This is a chance for you to show what you know. Do the best you can!

Related Links

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

CCGPS/GPS Resources:
www.georgiastandards.org

CRCT Content Descriptions:
www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/CRCT.aspx

CCGPS/GPS Frameworks:
www.georgiastandards.org

Lexile Framework for Reading:
www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/Lexile-Framework.aspx

The Study Guides are intended to serve as a resource for parents and students. They contain a few activities and short practice quizzes for each content area. They also provide teachers an additional tool for student practice. The standards identified in the Study Guides address a sampling of the state-mandated content standards. For the purposes of day-to-day classroom instruction, teachers should consult the wide array of resources that can be found at **www.georgiastandards.org**.

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

Students in Grade 4 expand and deepen their knowledge of reading, writing, and speaking, as well as their understanding of the connections among different types of communication. Students read and comprehend texts from a variety of genres (fiction, nonfiction, poetry, and drama), and they can understand and learn from texts without having a teacher preview the material for them. Grade 4 students also read and understand informational texts from other subject areas in addition to language arts. As they read, students in Grade 4 independently use a variety of meta-cognitive strategies to deepen and expand their understanding of the material. These strategies include using self-questioning techniques when reading materials seem contradictory or hard to understand.

The Reading activities are focused on some of the concepts that are assessed on the Grade 4 CRCT Reading domains. These domains are as follows:

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

Activities

❶ Reading Skills and Vocabulary Acquisition

Common Core Georgia Performance Standards ELACC4.L.4 and ELACC4.L.5

Within the Reading Skills and Vocabulary Acquisition domain, students learn the skills necessary to read, interpret, and apply difficult text. Students in Grade 4 will distinguish among and apply the appropriate usage of antonyms (opposites) and synonyms (words with similar meanings). Students in Grade 4 will determine the meaning of unknown words and phrases by using reference materials, context clues, and roots and affixes. They will recognize and explain synonyms and antonyms, figurative language, as well as common idioms and adages.

The following activities develop skills in this domain:

– To increase students' understanding of antonyms and synonyms, play a game of *Fishing for Words*. Write the words from the tables below on index cards, one word per card. Students should sit in a circle with the cards spread out, face up, in the middle. Call out a clue such as *Which word is the opposite of deep? Which word means the same as humorous?* or *Which word means a flat piece of wood?* Students should raise their hands if they spot the target word. Call on a student to fish the word out of the pond. If the student chooses the right word and uses it correctly in a sentence, he or she can keep the word. The student with the most word cards at the end of the game wins.

Antonyms

deep / shallow	gigantic / small
fortunate / unfortunate	silent / loud
rapid / slow	entertaining / dull
careful / careless	possible / impossible
tall / short	spicy / bland
awake / asleep	noisy / quiet
laughing / crying	above / below
boiling / freezing	bright / dark
bendable / rigid	play / work

Synonyms	
talk / speak	humorous / funny
probable / likely	excellent / superb
remember / recall	believe / think
listen / hear	foreign / unfamiliar
clever / smart	hard / difficult
job / task	thin / slim
filthy / dirty	ill / sick
wealthy / rich	listen / hear
strange / weird	late / tardy

– To develop students' understanding of root words and prefixes, present students with word-building tasks. Write prefixes (e.g., *un-*, *re-*, *dis-*, *in-*) and root words on index cards. Create task cards that direct students to form words based on the definitions. For example, *Make a word that means to find something for the first time.* Students should combine prefixes and root words until they build the word that fits the given meaning (in this case, the word *discover*). Students should write their own sentences using the newly formed word. They will see how a word's meaning is often the sum of its parts.

– To familiarize students with dictionary entries, set up a word hunt. Assign each student one word that has multiple definitions. Students will look up the words using a dictionary or a dictionary website. They will copy the word's pronunciation, parts of speech, and corresponding definitions onto a piece of lined paper. At the bottom of the paper they will write a sentence using the word. They will present their word and definitions, share the sentences they wrote, and explain which definition of the word they used. Students should tell whether they found their words in a dictionary or on the Internet and explain the steps they took to find their words. Once the presentations are finished, students should discuss the pros and cons of using an actual dictionary versus looking up a word on a dictionary website.

Activities

❷ Literary Comprehension

Common Core Georgia Performance Standards ELACC4.RL.1, ELACC4.RL.2, ELACC4.RL.3, ELACC4.RL.4, ELACC4.RL.5, ELACC4.RL.6, ELACC4.RL.7, and ELACC4.RL.9

Within the Literary Comprehension domain, Grade 4 students learn a variety of skills to comprehend and explore literary works. Skills in this domain include using evidence from the text to make inferences and draw conclusions; determining a theme from details in the text; summarizing; describing in depth a character, setting, or event in a story or drama; drawing on specific details in the text; determining the meaning of words and phrases that allude to significant characters found in mythology; explaining major structural differences between poems, drama, and prose; making connections between the text and a visual or oral presentation of the text; and comparing and contrasting the treatment of similar themes and topics in stories, myths, and traditional literature from different cultures.

The following activities develop skills in this domain:

– To help students analyze the setting of a literary work, provide time for them to draw their favorite scene from a book containing no pictures. Students should reread passages that describe where and when their favorite event takes place. They should visualize what the text describes and draw what they imagine. While students work, write the following questions on the board: *Could your favorite scene have taken place anywhere else or at any other time? Why or why not?* Students should think about these questions and prepare to present their answers to the class. When presenting, students should begin with a brief overview of the book (title, author, and characters) and a short summary of the scene they have drawn (where and when it takes place, who is there, and what is happening). Next, students should explain whether they think the scene they drew could have taken place anywhere else or at any other time. Have students make inferences or draw conclusions about how the picture reflects or relates to different characters or events in the story.

– To build students' abilities to recognize connections between events and characters in a literary text, retrace the steps that lead to a plot's culminating event. After students read a short story, fable, folktale, or drama, work together to identify the text's main ending event. Write it down on a piece of construction paper labeled *Main Event* and tape it high up on a wall. Students should reread the text looking for clues leading up to the event. Clues may tell how a character was feeling, explain how an event occurred, or describe the setting in which an event takes place. Trace footprints on construction paper so that students can cut them out. Students will write each clue they found on a separate footprint. They will group any repeated clues together and arrange the rest in the order that they occurred in the text. Attach the

footprints to the wall starting with the first clue at the bottom so they lead up to the culminating event.

– To develop students' summarizing skills, present them with three different summaries of a text they have read and let them judge which summary is best. One summary should be too general, one summary should be too specific, and one summary should provide the key details and a general overview of the story's main idea. Write the summaries from scratch, or use unidentified and retyped samples of student work. Students should vote for the summary they think is best and be ready to explain their reasoning. Engage students in a discussion about the differences between the three summaries. Remind students that a summary should only include information found in the text. It should neither be too specific nor present false information. Repeat this activity with different texts and post the best summaries on the wall. Students can use them as models when they write their own summaries.

Activities

❸ Information and Media Literacy

Common Core Georgia Performance Standards ELACC4.RI.1, ELACC4.RI.2, ELACC4.RI.3, ELACC4.RI.4, ELACC4.RI.5, ELACC4.RI.6, ELACC4.RI.7, ELACC4.RI.8, and ELACC4.RI.9

Within the Information and Media Literacy domain, students in Grade 4 learn to analyze details and information from various texts such as informational essays, articles, subject-area texts, and reference sources. They also learn the skills required to analyze and evaluate various types of workplace, consumer, and media reading materials. Grade 4 students will analyze text to summarize the main idea and supporting details, determine relationships between events, procedures, ideas, or concepts, determine the meaning of general academic language and domain-specific words or phrases, describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text, compare and contrast a firsthand and secondhand account of the same event or topic, interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on webpages) and explain how the information contributes to an understanding of the text in which it appears, and integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

The following activities develop skills in this domain:

– To help students analyze text structure, challenge them to put the scrambled sentences of a chronological paragraph in order. Type a short paragraph that describes a sequence of events or explains the steps necessary to complete a task. Reorder the sentences and leave two blank lines after each sentence so that students can cut them out. Students should look for chronological language such as *first, then, next,* and *finally* as they move the sentences around to find the original order. They should look for a sentence that introduces the topic in a broad way and position it as the topic sentence. They should look for a sentence that closes the topic and position it as the concluding sentence. Students will order any remaining sentences using other context clues. After students have tried the challenge on their own, come together and arrange the paragraph as a group. Students will share their reasoning for the order they chose and discuss why the original sequence makes sense.

– To develop students' abilities to recognize and explain cause-and-effect relationships, create two-part posters. Students should read an informational text that describes cause-and-effect relationships (e.g., a science article that explains why a species became extinct, a history text that explains the causes of a war, or a biography that explains what contributed to a leader's success). They will fold a piece of paper in half and label the top left *Cause* and the top right *Effect*. They will locate an effect in the text and write it on the top right side of their papers. Next, they will reread the text looking for causes that

lead to the effect they chose. They will write them on the top left side of their papers. Finally, they will draw pictures to illustrate the cause(s) and effect and present their posters to the class.

– To help students identify the best supporting details for a given main idea, provide them with supporting details to sort. Prepare a worksheet with a list of the supporting details contained in an informational text they have read. Include one sentence that summarizes the main idea, and add details that are not relevant to the topic at hand. Students should read the sentences on the worksheet and decide which one represents the main idea. They will cut out that sentence, place it at the top of a piece of construction paper, and draw a line underneath it. Next, they will read the rest of the sentences, cut out those that support the main idea, and place them at the bottom part of their papers. Before gluing any of the sentences in place, students should make sure they have the main idea above and all relevant supporting details below. Go over the sentences together so that students can explain how each detail supports the main idea.

– To develop students' ability to compare and contrast a firsthand and secondhand account of the same event or topic, present them with a picture of an event or a written account of an event. Working in groups of three, allow one student to write a paragraph describing the picture/text while he or she looks at it. This will be the firsthand account. Working together, the other two students will have one student describe the picture/text to the other student. The second student should not see the picture/text but should write the description based on what the partner tells him or her. This will be the secondhand account. Have each group then share their descriptions. Compare the depth of details and accuracy between the firsthand and secondhand accounts by comparing the writing to the picture. Discuss what factors cause the variation in descriptions. Repeat this activity with different pictures or texts. Post the accounts that show the best variations on the wall.

Practice Quiz

Genre: Fiction
Read the passage below and answer the questions that follow.

The Fair

Jenna always looked forward to the annual "School's Out!" Fair. It was the best part about the end of the school year. Whenever Jenna went to the fair, she usually went with Grandma. Grandma would walk with Jenna and her friends and laugh as they explored the colorful booths and rides with the blinking lights. As Jenna and her friends ran off to play the games, Grandma would always joke, "Win the stuffed giraffe for me!"

When the day of the fair came, Jenna was excited. All day, she waited impatiently for school to end. On the way home from school, she could see people setting up the rides in the park. She tried to imagine the smell of popcorn and the bright rides, like necklaces of lights in the night sky. She couldn't wait for evening to come!

However, when Jenna got home, her mother had bad news. Grandma had called. She had to babysit for Jenna's new cousin Andrew. Since Andrew wasn't old enough to go to the fair yet, Grandma wouldn't be able to take Jenna to the fair that night. Right away, Jenna was very upset. She knew that her mother was busy and wouldn't be able to take her. That meant that she wouldn't be able to go to the fair at all!

Jenna's mother tried to console her. "I'm sorry, dear," Jenna's mother said. "You can always go next year. You can go keep Grandma company tonight, though."

"But, Mom," Jenna said, "I don't want to miss the fair!"

After seeing how disappointed Jenna was, Jenna's mother made a phone call. Jenna's older cousin Rachel said that she would be able to take her. When Jenna found out, she felt better. At first, Jenna thought it would be strange to be at the fair without Grandma. When she thought of all the fun she would have at the fair, though, she forgot all about it.

Once Jenna got to the fair, she had an empty feeling. She talked to her friends, ate cotton candy, and rode the fast rides, but something was missing.

"Something is not right," Jenna thought to herself as she roamed through the fair.

Jenna didn't really feel like playing the games, but she played them anyway. She barely even noticed when she won a prize at the Frisbee toss. Before she knew it, a man was handing her a big, stuffed giraffe. When she saw the giraffe, Jenna suddenly realized what was wrong. Without Grandma there, the fair just wasn't the same. Jenna knew what she had to do.

She immediately said goodbye to Rachel and ran to Grandma's house. When she got there, she used her key to let herself in. Grandma was sitting on the couch, holding the baby. She was surprised to see Jenna. Jenna walked over to Grandma with a huge smile on her face.

"Here, Grandma. This is for you," Jenna said proudly, as she presented Grandma with the big giraffe. Grandma's eyes lit up, and a smile of surprise spread across her face.

"Oh, Jenna!" Grandma said. "What a wonderful gift!"

Suddenly, everything felt right.

1 **This story is told from the point of view of which character?**

A Andrew
B Grandma
C Jenna
D Mom

2 **When does the story take place?**

A at the end of summer
B in the middle of summer
C at the end of the school year
D in the middle of the school year

3 **What is the MAIN problem in the story?**

A Grandma cannot take Jenna to the fair.
B Jenna needs to win a prize for Grandma.
C Jenna does not want to give Grandma the giraffe.
D Grandma forgets about going to the fair with Jenna.

4 **What does the underlined phrase in the sentence MOST LIKELY mean?**

> She tried to imagine the smell of popcorn and the bright rides, like necklaces of lights in the night sky.

A The rides form a necklace of lights on the ground.
B Jenna wants a necklace to remember the bright lights.
C Jenna sees bright lights in the sky when she goes on the rides.
D The lights on the rides look like they are linked together in the sky.

5 **Which of these is the BEST title for the story?**

A Grandma Babysits
B Girls' Day at the Fair
C Mom Saves the Day
D Why the Fair Is Special

6 **Why does the author MOST LIKELY include the following sentences?**

> At first, Jenna thought it would be strange to be at the fair without Grandma. When she thought of all the fun she would have at the fair, though, she forgot all about it.

A to show that Jenna does not want to go to the fair
B to suggest that Jenna will not enjoy herself at the fair
C to show that Jenna cannot go on the rides without Grandma
D to suggest that Jenna has not spent much time with Grandma

7 **Which of these is MOST LIKELY true about Grandma?**

A She is tired of going to the fair.
B She likes visiting the fair by herself.
C She likes spending time with Jenna.
D She wants Jenna to help with the baby.

8 **Which sentence from the story BEST explains why Jenna winning the stuffed giraffe is important to the story?**

A As Jenna and her friends ran off to play the games, Grandma would always joke, "Win the stuffed giraffe for me!"
B Before she knew it, a man was handing her a big, stuffed giraffe.
C When she saw the giraffe, Jenna suddenly realized what was wrong.
D "Here, Grandma. This is for you," Jenna said proudly, as she presented Grandma with the big giraffe.

9 **What does the word *console* mean in the sentence?**

> Jenna's mother tried to console her.

A tell someone a story
B give a gift to someone
C make someone feel better
D explain a problem to someone

10 **Based on the prefix *im-*, what is the meaning of *impatiently?***

All day, she waited impatiently for school to end.

A not patiently
B half patiently
C patiently again
D patiently against

Solutions

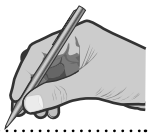
Number	Correct Answer	Explanation
1	**C**	*Describes a character. (ELACC4.RL.3)* The correct answer is **Choice** (**C**) **Jenna.** The story is told from Jenna's point of view. Choice (A) is incorrect because this is only a minor character in the story. Choice (B) and (D) are incorrect because while each is an important character, it misinterprets the point of view from which the story is told.
2	**C**	*Describes a setting. (ELACC4.RL.3)* The correct answer is **Choice** (**C**) **at the end of the school year.** The story describes the "School's Out!" Fair, which takes place at the end of the school year. Choices (A) and (B) are incorrect because the end of the school year does not take place in the summer. Choice (D) is incorrect because the "School's Out!" Fair does not take place in the middle of the school year.
3	**A**	*Describes an event in a story. (ELACC4.RL.3)* The correct answer is **Choice** (**A**) **Grandma cannot take Jenna to the fair.** The main problem of the story is that Grandma cannot take Jenna to the fair because she has to babysit for Jenna's new cousin. Choice (B) is incorrect because Jenna does not *need* to win a prize for Grandma—that is just something they joke about. Choice (C) is incorrect because Jenna *does* want to give Grandma the giraffe—she wants to do it so badly she leaves the fair early. Choice (D) is incorrect because Grandma does not forget about going to the fair with Jenna.
4	**D**	*Explains the meaning of simple similes and metaphors. (ELACC4.L.5a)* The correct answer is **Choice** (**D**) **The lights on the rides look like they are linked together in the sky.** In the sentence provided, a simile is used to help the reader understand how the lights on the rides appear to an observer. Choice (A) is incorrect because it presents a meaning that is too literal. Choice (B) is incorrect because it represents a misunderstanding of what the simile is referring to in the sentence. Choice (C) is incorrect because it represents a misunderstanding of the meaning of the target sentence.

Number	Correct Answer	Explanation
5	**D**	*Summarizes the text. (ELACC4.RL.2)* The correct answer is **Choice** (**D**) **Why the Fair Is Special.** This title correctly summarizes the important message of the story. Choice (A) is incorrect because it focuses on only the problem in the story. Choice (B) is incorrect because it focuses on only a minor detail. Choice (C) is incorrect because it focuses on only the solution in the story.
6	**B**	*Refers to details when drawing inferences. (ELACC4.RL.1)* The correct answer is **Choice** (**B**) **to suggest that Jenna will not enjoy herself at the fair.** The author includes the sentences to foreshadow that Jenna will not enjoy herself at the fair because she will miss her grandmother. Choice (A) is incorrect because these sentences do not show that Jenna does not want to go to the fair—in fact, they show her thinking of all the fun she will have there. Choice (C) is incorrect because these sentences do not show that Jenna cannot go on the rides without Grandma. Choice (D) is incorrect because these sentences do not suggest that Jenna has not been able to spend much time with Grandma.
7	**C**	*Describes a character. (ELACC4.RL.3)* The correct answer is **Choice** (**C**) **She likes spending time with Jenna.** The first paragraph of the story explains how "Grandma would walk with Jenna and her friends and laugh as they explored the colorful booths and rides with the blinking lights." It also describes how she would joke. Choice (A) is incorrect because there is nothing in the story that states or implies that Grandma is tired of going to the fair. Choice (B) is incorrect because there is nothing in the story that states or implies that Grandma likes visiting the fair by herself. Choice (D) is incorrect because there is nothing in the story that states or implies that Grandma wants Jenna to help her with the baby.

Number	Correct Answer	Explanation
8	**C**	*Refers to details when drawing inferences. (ELACC4.RL.1)* The correct answer is **Choice** (**C**) **When she saw the giraffe, Jenna suddenly realized what was wrong.** This answer correctly links the important message of the story to Jenna and Grandma. Choice (A) is incorrect because it only relates to a joke they shared. Choice (B) is incorrect because it is only a minor detail. Choice (D) is incorrect because it only relates to the resolution of the message, not to the message itself.
9	**C**	*Determine the meaning of words and phrases. (ELACC4.RL.4)* The correct answer is **Choice** (**C**) **make someone feel better.** The context for the sentence provided can be found in the third and fourth paragraphs. Jenna's mother tries to make Jenna feel better after she finds out her grandmother won't be able to take her to the fair. Choices (A), (B), and (D) are incorrect because "console" does not mean to *tell someone a story,* to *give a gift to someone*, or to *explain a problem to someone*.
10	**A**	*Use common Greek and Latin affixes as clues to the meaning of a word. (ELACC4.L.4b)* The correct answer is **Choice** (**A**) **not patiently.** The prefix *im-* is derived from Latin and means not. Choices (B), (C), and (D) are incorrect because they are based on the meanings of different Latin prefixes.

English/Language Arts

Chapter 2



English/Language Arts

Students use writing as a tool for learning, and they write for a variety of purposes and audiences. Grade 4 students write daily in order to maximize and formalize their writing skills. Students communicate their personal voices in writing, expressing ideas through journals, notes, and e-mail. Students are aware of the connections between reading and writing, and they begin to use reading and writing strategies interchangeably. Grade 4 students are ready for opportunities to discuss books and to expand their vocabularies for deeper comprehension of texts. They understand and articulate how authors use a variety of techniques and craft in their writing, and they show evidence of the author's craft in their own writing.

The English/Language Arts activities focus on some of the concepts that are assessed on the Grade 4 CRCT English/Language Arts domains. These domains are as follows:

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

Activities

❶ Grammar/Sentence Construction

Common Core Georgia Performance Standards ELACC4.L.1, ELACC4.L.2, and ELACC4.L.3

Within the Grammar/Sentence Construction domain, students understand and control the rules of the English language to use correct capitalization and punctuation. They can spell grade-level words correctly and can correctly use frequently confused words (e.g., *to, too, two*). Students are able to use complete sentences, recognizing and correcting fragments and run-ons. They are able to use commas before a coordinating conjunction in a compound sentence, and use commas and quotations to mark direct speech. Additionally, students are able to use relative pronouns and adverbs as well as form and use prepositional phrases. Finally, students are able to use precise language to communicate ideas.

The following activities develop skills in this domain:

- To give students practice spelling words correctly, play the *Tic-Tac-Toe Spelling Game.* Using masking tape, make a large tic-tac-toe board on the floor. Divide the students into two teams: Xs and Os. Give students index cards with their team symbol written on one side. Say a word to spell. If the student writes it on the chalk board with correct spelling, he or she gets to choose a square on the game board. The student will hold up the card showing an X or an O and place it on the game board. If the word is misspelled, the other team gets a chance to spell it correctly and choose a square. This activity may be adapted to review syllables, word parts, and proper use of punctuation symbols. Using either a large or small hand-drawn tic-tac-toe board, the review game is also effective when played one-on-one.

- Help students understand the two parts of a sentence—the subject and predicate—by playing *Break Point.* Write a series of sentences on the board, one at a time. For each sentence, students take turns going up to the board and marking a slash where the break between the subject and predicate occurs. Here are some examples:

  - *Chelsea / ate her dinner quickly.*
  - *Daniel and his puppy / walked to the park, the store, and to the neighbor's house.*
  - *The sisters / needed to finish their homework before playing outside.*

  After students mark the slashes, ask other students to identify which words form the subject and which form the predicate. Continue with the activity until each student understands the two necessary parts of a complete sentence.

- Using correct homophones is an essential part of accurately expressing ideas in writing. To help students with this skill, divide them into two teams and read aloud a sentence with a common homophone such as there/their/

they're or too/to/two. Teams will get one point for each round by sending a representative up to the board to write the correct homophone. If the team representative writes the incorrect homophone, the other team gets its chance at the board. To conduct the activity one-on-one, simply read sentences to a student and ask him or her to write the correct homophone on a sheet of paper. After the game is over, discuss the experience using guiding questions such as the following: *Which homophones are easy to confuse? What are some ways to remember them more easily?*

– To practice forming and using prepositional phrases, students will review and answer questions about a teacher-created preposition poem. Then students will create original preposition poems in small groups, sharing their poems with the entire class as a culminating activity.

  Sample Practice Poem:

  In the Fall

  in the fall
  amid the golden leaves
  in the crisp, cool air
  with a steaming mug of cider
  on a Saturday afternoon
  is my favorite time of year!

  Practice Questions:

  – *What is the preposition in the first line of the poem? (in)*
  – *What is the preposition in the second line of the poem? (amid)*
  – *What preposition could replace* amid *in the second line of the poem? (among, and other plausible, logical prepositions)*
  – *In which line could the preposition* by *replace a preposition? (line 2 – amid)*

  Divide students into groups of 4–5 students each. Each group will need paper, pencils, chart paper, and markers. In their groups, students will select a topic. Each student will write a prepositional phrase to describe or explain the topic, and will then pass the paper to the next student in the group. When all students have written a prepositional phrase, a recorder will write the poem on chart paper. When all groups are finished, the entire class will share the completed poems. The teacher-led discussion will focus on prepositions and prepositional phrases in the poems. Sample questions could be as described for the sample poem.

– To give students practice identifying errors in grammar and mechanics, pair students up, and hand each student a red pencil. Then, using a regular pencil, each student should write a sentence that his or her partner will proofread

and correct with the red pencil. When writing sentences, students should give their partners opportunities to find different types of errors and to recognize correctly written sentences. Students should switch papers each time both partners have finished their writing or proofreading tasks. This activity may also be used when working one-on-one with a student.

Activities

❷ Research/Writing Process

Common Core Georgia Performance Standards ELACC4.W.1, ELACC4.W.2, ELACC4.W.3, ELACC4.W.4, ELACC4.W.7, and ELACC4.W.8

Within the Research/Writing Process domain, students select a focus, organizational structure, and point of view for their writing. Students use transition elements, sensory details, and concrete language to ensure coherence and develop reader interest. Students determine main ideas and relevant details, as well as appropriate topic sentences and closing sentences. To achieve clarity, students reorganize sentences in a paragraph. Students use various reference materials (electronic information, almanacs, atlases, magazines, newspapers, and key words). Students revise drafts by consolidating and rearranging text, excluding extraneous details, editing to correct errors in punctuation, and giving closure to their writing.

The following activities develop skills in this domain:

– To help students identify unnecessary details and extraneous information in a text, modify several newspaper articles and magazine features by adding sentences that do not belong. These sentences should be off-topic or unnecessary. Hand out the revised versions to students and challenge students to eliminate extraneous sentences. Encourage students to help each other and discuss their reasoning. At the end of the activity, clear up any sentences students missed or that caused confusion during the discussion.

– To practice understanding and using sensory details to convey experiences and events precisely, present students with a few sentences that use vague or ineffective language. Explain that effective sentences use words that communicate clearly and help the reader see what is happening or what is being described.

  Sample Practice Sentences:

  The little girl thought the food tasted bad.

  In my honest opinion, it seemed to me that the man looked ill.

  Discuss how these sentences lack sensory details and how they rely on words that are vague and ineffective.

  Sample Questions:

  – *Which words in the first sentence could be replaced to provide sensory detail and more precise language? (little, bad; food could be replaced to be more precise)*
  – *What are some possible words to replace* little *to be more precise? (tiny, petite, other descriptive adjectives)*

- *What are some possible words to replace* the food *to be more precise? (the undercooked carrots, the runny brown gravy, other descriptive adjectives)*
- *What are some possible words to replace* bad *to be more precise? (unappetizing, other descriptive adjectives)*

Repeat the activity with *In my opinion, it seemed to me that the man looked ill.*

This sentence lacks sensory details, but it also includes language that is unnecessary to the meaning of the sentence.

- *Which words in the sentence could be removed as they are unnecessary? (In my opinion)*
- *How could the phrase "it seemed to me that" be reworded to be clearer? (I thought that)*

After discussing the two sentences, present students with another sentence that uses vague language. Have students individually revise the sentence to include more sensory details and precise wording without adding unnecessary language. As a group, discuss student sentences. A good revision will use sensory details and precise language while avoiding words that are unnecessary.

– To help students learn to revise text for coherence and logical progression, students will play *Paragraph Puzzle*. First, copy and paste a paragraph from an Internet site into a blank document and increase the font size. Put each sentence in the paragraph on its own line. Print out the paragraph and cut up the sentences into individual strips. Working together, students will put the strips in the correct order. When the activity is complete, facilitate a discussion about how students figured out the correct order of their sentences. Ask guiding questions such as, *What clues did you use? Can any of the sentences in the paragraph be removed altogether?* and *What organizational pattern does this paragraph use (chronological, similarity and difference)?* As extension activities, students should play *Paragraph Puzzle* using paragraphs their classmates have written. They should also practice writing paragraphs according to specified organizational patterns.

Practice Quiz

1 **Which sentence is written correctly?**

A The girl walked her dog in snow boots around the block.
B Mom from the store carried the groceries into the house.
C The swimmer pulled his goggles before the race over his eyes.
D Dan dove in front of the ball to prevent the other team from scoring.

2 **Which sentence uses the homophone correctly?**

A Mom told us that she had seen the small rabbit over there.
B Dad said that their coming over for dinner tomorrow evening.
C Their is a chance for rain this afternoon, but we still plan to go to the zoo.
D The boys enjoy playing with they're dog at the local park on the weekend.

3 **Where is the BEST place to separate the run-on sentence into two sentences?**

Stuart has the key he will have to unlock the door.

A after *Stuart*
B after *key*
C after *he*
D after *unlock*

4 **The sentence below has a spelling error. Which of the underlined words in the sentence is spelled incorrectly?**

The mysterious man with the mustache sat on the stool and drank a gallen of milk.

A mysterious
B mustache
C stool
D gallen

5 **Which sentence uses a comma correctly?**

A The kitten played with the ball of yarn and, then it wanted to go to sleep.
B The girl was going to clean her room before going to practice, but forgot.
C Joey wanted to ride his bike, but he needed to put air in his back tire first.
D Cara was going to help her brother build a sandcastle, or find some seashells.

6 **Mary is writing a report about the history of kites. Where should Mary look to find information to use in her report, and why is it the BEST source?**

A an encyclopedia, because it has information about early kites
B a newspaper, because it tells about people who like to fly kites as a hobby
C an almanac, because it has facts about where kites are popular in the world
D an atlas, because it contains maps that show places where kites were first introduced

7 **What is the BEST way to organize the sentences into a paragraph?**

1. Look around your yard to find a spot where your plants will get plenty of sunlight.
2. Once you have finally chosen the ideal place, the real gardening can begin.
3. Choosing the best spot is the first step to growing a great garden.
4. Usually a spot that is on the south side of a building will receive plenty of sun and works well.
5. Next, plan your garden so that it will not be in the way of people walking through the yard.

A 1,4,5,3,2
B 1,2,3,5,4
C 3,1,4,5,2
D 3,2,1,4,5

8 **Which sentence should be added to the paragraph to support the topic?**

> After the Louisiana Purchase in 1803, President Jefferson sent Lewis and Clark to explore the new land bought by the United States. A Native American woman, Sacagawea, agreed to help them on their journey. Together, they led a group of explorers through the new territory west of the Mississippi River, over the Rocky Mountains, and on to the Pacific Ocean.

A The travelers drew maps of the land that they explored.
B Lewis and Clark brought their dog along for the journey.
C The Rocky Mountains are the great backbone of North America.
D It is interesting to visit the places that Lewis and Clark explored.

9 **Which sentence is unrelated to the paragraph?**

> [1]I learned many new things during my week at camp. [2]I learned to paddle a canoe and to sail a sailboat. [3]I learned how to make a campfire. [4]I also learned how to identify the footprints of the animals in the woods. [5]I did not see a skunk. [6]My week at camp was fun and full of learning.

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

10 **Which of these is the BEST closing sentence to add to the end of the paragraph?**

> Cezar waited patiently for his parents to come home from the pet store. They were bringing home a new puppy! Cezar made a soft bed for the puppy to sleep in. The water and food bowls were filled. A basket of puppy toys sat on the front porch.

A Cezar's parents were always on time.
B Cezar was prepared for his new puppy.
C The food and water bowls were made out of plastic.
D The pet store had everything that the new puppy needed.

Solutions

Number	Correct Answer	Explanation
1	**D**	*Form and use prepositional phrases. (ELACC4.L.1e)* **The correct answer is Choice (D) The player dove in front of the ball to prevent the other team from scoring.** This sentence correctly uses and orders the prepositional phrases. The prepositional phrases in choices (A), (B), and (C) need edits to prepositional phrase placement. Choice (A) should be *The girl in snow boots walked her dog around the block*. Choice (B) should be *Mom carried the groceries from the store into the house*. Choice (C) should be *The swimmer pulled his goggles over his eyes before the race*.
2	**A**	*Correctly use frequently confused words (e.g., to, too, two; there, their). (ELACC4.L.1g)* The correct answer is **Choice** (**A**) **Mom told us that she had seen the small rabbit over there.** The homophone *there* is used correctly. The homophones in choices (B), (C), and (D) are incorrectly used. Choice (B) should be *Dad said that they're coming over for dinner tomorrow evening. They're* is correct because it is replacing the words *they are*. Choice (C) should be *There is a chance for rain this afternoon, but we still plan to go to the zoo. There* is correct because it is introducing the sentence (*There* is acting as a pronoun). Choice (D) should be *The boys enjoy playing with their dog at the local park on the weekend. Their* is correct because the sentence requires a possessive pronoun (*their* indicates that the dog belongs to the boys).

Number	Correct Answer	Explanation
3	**B**	*Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons. (ELACC4.L.1f)* The correct answer is **Choice** (**B**) **after *key*.** You can break up a run-on sentence by separating two thoughts or ideas. "Stuart has the key" has both a subject and a predicate. A period can be added after this phrase to create a complete sentence. "He will have to unlock the door" can also stand alone as a complete sentence because it has both a subject and a predicate. Choice (A) is incorrect because placing a period after *Stuart* creates an incomplete sentence. Sentences must have a subject and a predicate, and *Stuart* by itself is only a subject. Choice (C) is also incorrect because a period placed after *he* creates another incomplete sentence. "Will have to unlock the door" does not have a subject, so it is not complete. Choice (D) is incorrect because if a period is placed after *unlock*, it creates the incomplete sentence "the door."
4	**D**	*Spell grade-appropriate words correctly. (ELACC4.L.2d)* The correct answer is **Choice** (**D**) **gallen.** *Gallen* is an incorrect spelling of the word *gallon*. Choices (A), (B), and (C) are all incorrect because these words are spelled correctly.

Number	Correct Answer	Explanation
5	**C**	*Use a comma before a coordinating conjunction in a compound sentence. (ELACC4.L.2c)* The correct answer is **Choice** (**C**) **Joey wanted to ride his bike, but he needed to put air in his back tire first.** The sentence is a compound sentence, and the comma is correctly placed before the coordinating conjunction *but*. Choices (A), (B), and (D) contain comma errors. Choice (A) is a compound sentence but incorrectly places the comma after the coordinating conjunction *and*. Choice (A) would be correctly written as *The kitten played with the ball of yarn, and then it wanted to go to sleep*. Choice (B) is not a compound sentence and does not require a comma before the coordinating conjunction *but*. Choice (B) would be correctly written as *The girl was going to clean her room before going to practice but forgot*. Choice (D) is not a compound sentence and does not require a comma before the coordinating conjunction *or*. Choice (D) would be correctly written as *Cara was going to help her brother build a sandcastle or find some seashells*.
6	**A**	*Conduct short research projects that build knowledge through investigation of different aspects of a topic. (ELACC4.W.7)* The correct answer is **Choice** (**A**) **an encyclopedia,** because it has information about early kites. This is the best choice because it will give information about the history of kites. The resources listed in (B), (C), and (D) are not the best sources for finding historical information on kites. Choice (B), a newspaper, would be a good source for finding current information on kites. It might also contain some historical information, but that information would most likely be limited. Choice (C), an almanac, would be a good source for finding statistical information, but it would not be a good source for finding comprehensive historical information. Choice (D), an atlas, would be useful for locating places, but it would not be a good historical reference source.

Number	Correct Answer	Explanation
7	**C**	*Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. (ELACC4.W.2a)* The correct answer is **Choice** (**C**) **3, 1, 4, 5, 2.** This answer choice correctly sequences the sentences into a paragraph. The sentences in choices (A), (B), and (D) are not correctly sequenced.
8	**A**	*Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. (ELACC4.W.2b)* The correct answer is **Choice** (**A**) **The travelers drew maps of the land they explored.** This detail gives relevant information about an action directly connected to the purpose of Lewis and Clark's expedition. Choice (B) is incorrect because it is not important whether the explorers brought a dog with them. Choice (C) is incorrect because it is an opinion about the Rocky Mountains instead of a relevant fact about the explorers. Choice (D) is incorrect because it speaks to a modern-day tourist instead of giving information about Lewis and Clark and what they did, like the rest of the paragraph.
9	**D**	*Use dialogue and description to develop experiences and events or show the responses of characters. (ELACC4.W.3b)* The correct answer is **Choice** (**D**) **sentence 5.** "I did not see a skunk" does not support the main idea of the paragraph. The topic sentence states that the paragraph will be about things learned at camp. Choices (A), (B), and (C) are incorrect because these sentences each give an example of something learned at camp, which means that these sentences fit with the main idea and give relevant details.

Number	Correct Answer	Explanation
10	**B**	*Provide a conclusion that follows from the narrated experiences or events. (ELACC4.W.3e)* The correct answer is **Choice** (**B**) **Cezar was prepared for his new puppy.** The closing sentence should summarize the paragraph. The paragraph describes Cezar preparing for the arrival of his new puppy, so this sentence is the summary of that process. Choice (A) is incorrect because it gives an irrelevant detail about Cezar's parents. Choice (C) is incorrect because it gives an unnecessary detail about the food and water bowls instead of summarizing the paragraph. Choice (D) is incorrect because it gives an unnecessary detail about the pet store instead of summarizing what Cezar did in the paragraph.

Mathematics

Chapter 3

Mathematics

By the end of Grade 4, students will develop understanding and fluency with multi-digit multiplication, and develop understanding of dividing to find quotients involving multi-digit dividends. They will develop an understanding of fractions with like denominators, and multiplication of fractions by whole numbers. Students will generate and analyze patterns. They will understand that geometric figures can be analyzed and classified based on their properties. Students will represent and interpret data and understand concepts of angles and measure angles.

The Mathematics activities focus on some of the concepts that are assessed on the Grade 4 CRCT Mathematics domains. These domains are as follows:

1. **Number and Operations**
2. **Measurement and Data Analysis**
3. **Geometry**
4. **Algebra**

The Standards for Mathematical Practices are integrated across the four domains.

Mathematical Practices are listed with each grade's mathematical content standards to reflect the need to connect the mathematical practices to mathematical content in instruction.

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations, and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently, and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

Activities

❶ Number and Operations

Common Core Georgia Performance Standards MCC4.OA.1, MCC4.OA.3, MCC4.OA.4, MCC4.NBT.1, MCC4.NBT.2, MCC4.NBT.3, MCC4.NBT.4, MCC4.NBT.5, MCC4.NBT.6, MCC4.NF.1, MCC4.NF.2, MCC4.NF.3, MCC4.NF.4, MCC4.NF.5, MCC4.NF.6, MCC4.NF.7

Within the Number and Operations domain, students will use the four operations with whole numbers to solve problems and gain familiarity with factors and multiples. Students generalize place value understanding for multi-digit whole numbers. They use place value understanding and properties of operations to perform multi-digit arithmetic. They extend understanding of fraction equivalence and ordering. Students build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. They understand decimal notation for fractions, and compare decimal fractions.

The following activities develop skills in this domain:

– Students will use place value blocks to represent numbers to 1,000 in expanded form. They will use different kinds of expanded form to represent the same number, e.g., 512 could be 500 + 10 + 2 OR 4 hundreds + 11 tens + 2 ones OR 500 + 12. They will then extend this concept to numbers through 1,000,000 without using the place value blocks.

  Group the students in small groups of two to four students. Give each group a set of place value blocks with at least 9 hundreds flats, 30 tens rods, and 30 unit cubes.

  Have the students work together to represent several different numbers between 100 and 1,000 using the place value blocks. Challenge them to find three different ways to represent each number and then use the expanded form to represent each way.

  For example:

  638 = 600 + 30 + 8
  500 + 130 + 8
  400 + 230 + 8

  302 = 3 hundreds + 0 tens + 2 ones
  302 = 2 hundreds + 10 tens + 2 ones
  302 = 2 hundreds + 102 ones

  Once the students understand this process, collect the place value blocks and have them use the same strategies to make expanded forms of numbers between 1,000 and 1,000,000. A place value chart may be provided if some scaffolding is needed.

For Example:

Number	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
3,064						
271,890						

Number	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
3,064			3	0	6	4
			2	10	6	4
			3	0	5	14
271,890	2	7	1	8	9	0
	2	5	21	8	9	0
	2	7	1	8	0	90

Student groups could be challenged to find the most different equivalent combinations for the same number.

– Students will improve their understanding of addition and subtraction of fractions and mixed numbers by using counters and egg cartons. Gather 12 egg cartons, about 140 small counters (e.g., dried beans or popcorn kernels), and about 100 cotton balls. Prepare the cartons for the denominator used by filling unnecessary cups with cotton balls. For example, to show fractions with

a denominator of 8, you would fill 4 cups with cotton balls. The 8 open cups would each represent one equal part $\frac{1}{8}$ of the whole $\frac{8}{8}$. The fraction $\frac{3}{8}$ would then be shown by placing counters in 3 of the 8 open cups. The cartons can be adjusted in this way to accommodate fractions with denominators ranging from 2 to 12. Arrange the egg cartons on a large table so there are a few inches between two sets of 6 cartons each. Make two index cards, one labeled with a plus sign (+) and the other with a minus sign (−). Place the appropriate card between the two sets of cartons to show addition or subtraction. Students will use this arrangement to perform manipulatives-based addition and subtraction of fractions, improper fractions, or mixed numbers with like denominators. (All numbers should be less than 6 to fit into 6 cartons.) Give students a problem to solve, building to include the need for regrouping. Students should fill each set of egg cartons with enough counters to represent the number. For improper fractions and mixed numbers, you will need more than one egg carton to represent the number. For example, to represent the number $3\frac{3}{4}$ students should fill the 4 open cups in each of three cartons and 3 open cups in a fourth. Students will use the same process for the second number and then tally the result of the addition or subtraction by combining or removing counters. They should check to confirm that the results match their paper calculations and discuss any differences.

- To improve skills solving problems involving division by a one-digit number, students will play a game with number cubes. Create a game board on a piece of paper or cardboard. Draw a series of 20–30 boxes that form a winding pathway from one corner of the board to the opposite corner. Write a 3-digit number in each space. To play the game, students will roll a six-sided number cube one time. The roll will show how many squares to move forward and determine the divisor. For instance, a student rolling a 3 will move 3 spaces and divide the numbers in the box by 3 to calculate the result on a piece of paper, including remainder. If the calculation is correct, the student rolls again. The goal is to make it all the way across the game board in the fewest turns.

- The following application gives opportunities for students to use values from hundredths to millions. Tell students to imagine that they just won a contest. The prize will be awarded in one of two ways. They can choose to receive:

  - One million dollars in cash immediately
  - One penny on the first day, two pennies on the second day, and so on, doubling the amount they receive each day for a month

  Students should write down their choices before starting any calculations. To increase suspense, students will calculate the amount one week at a time, using a table like the one on the next page. Students should explain the operation used in each column and read amounts aloud for practice

identifying place values. Ask if any students would like to round the value to the nearest dollar (from $1.28 to $1.00) at the beginning of the second week so they don't have to keep track of so many pennies. Students who choose this will continue the same process with whole dollar amounts, knowing that they might lose some money. At the end of the activity, discuss the difference between the results for those who opted for a million up front, those who rounded after week 1, and those who continued doubling the original amount without rounding.

Week 1

Day	Amount collected each day	Total amount collected
1	$0.01	$0.01
2	$0.02	$0.03
3	$0.04	$0.07
4	$0.08	$0.15
5	$0.16	$0.31
6	$0.32	$0.63
7	$0.64	$1.27

– To compare fractions, students should use randomly chosen fractions. Label three index cards with the symbols for less than ($<$), greater than ($>$), and equal to ($=$). Give students 15–20 index cards to use for writing down fractions of their choice, one fraction per side. Expectations are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. The fractions should have different denominators. All numerators and denominators should be one- or two-digit numbers. Display the symbol cards with plenty of space between them. Put all the index cards with written fractions in a container and have students draw two at random. Students should place the fractions on either side of the appropriate symbol card ($<$, $>$, or $=$) in order to make the equation true. If students are unsure of the relationship between the two fractions, they should create or use a visual model, use a benchmark fraction, or determine a common denominator.

– The following story problems use the basic operations including the order of operations. Students will write a mathematical expression to demonstrate how they solved the problems along with their solutions.

A veterinarian wants to be sure that she has enough dog food available. She will be taking care of four dogs. The amount of food each dog eats per day is as follows:

– *one pug: 1 cup of food*
– *two terriers: 2 cups of food each*
– *one German shepherd: 4 cups of food*

How many cups of food will she need to feed all four dogs for the day?

Students will determine the proper operations and remember to follow the order of operations as they calculate the answer. After they have finished, students will discuss their results and the expressions they wrote to solve the problem. Students will then write mathematical expressions to demonstrate how they solved the problem along with their solutions.

The next day the veterinarian will be taking care of five dogs. The amount of food each dog eats per day is listed below:

– *the same two terriers: 2 cups of food each*
– *one collie: 3 cups of food*
– *two Tibetan mastiffs: 7 cups of food each*

The veterinarian has 30 cups of food remaining. How many cups will she have left after feeding all five dogs for the day? If she splits the remaining food equally among three containers, how many cups of food will there be in each container?

Activities

❷ Measurement and Data Analysis

Common Core Georgia Performance Standards MCC4.MD.1, MCC4.MD.2, MCC4.MD.3, MCC4.MD.4, MCC4.MD.5, MCC4.MD.6, MCC4.MD.7

Within the Measurement and Data Analysis domain, students will solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. They will represent and interpret data. Students will understand the concepts of angle and measure angles.

The following activities develop skills in this domain:

– Students will know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

– Students will use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

– Students will create a conversion table for ounces and pounds. They will use the conversion table to solve word problems expressing pounds in terms of ounces.

  Place the students in groups of four to six. Give each group a balance scale, a one pound weight and a set of around 20 one ounce weights. (If you do not have enough balance scales and weights, you can do this as a class demonstration instead. If you have a class set of balance scales, this can be done individually or in pairs.) If you do not have a set of weights, you can use 1 lb bags of sugar, and one ounce packages of snacks such as chips.

  Have students use the balance scale to find the number of 1 ounce weights that will equal 1 pound.

  Then have students create a conversion table that shows the number of ounces in 1 to 10 pounds.

For example:

Pounds to Ounces Conversion Table

Number of Pounds	1	2	3	4	5	6	7	8	9	10
Number of Ounces										

Have students use the conversion table to help them answer questions such as the following:

- Taylor's puppy weighed 5 ounces when it was born. It weighed $5\frac{1}{2}$ pounds when it was 18 months old. How many ounces of weight did Taylor's puppy gain?
- Paul bought $3\frac{1}{2}$ pounds of steaks. A serving of steak is 6 ounces. Does Paul have enough steak to feed his family of 6 plus 4 guests?
- Melanie bought 3 pounds of almonds and 4 pounds of cashews. She puts 4 ounces of nuts in each snack bag. How many snack bags can Melanie fill?

You may extend this activity by having student groups write their own word problems for the other student groups to solve.

- Students will compare different units of weight within the standard system using an everyday object. Tell students the following about what happened to the penny before they were born. Explain that even though all pennies look alike, they are not all the same. Pennies made before 1983 are 95% copper and 5% zinc. To cut the cost of making them, pennies made after 1983 are 2.4% copper and 97.6% zinc. (Pennies made in 1983 can be either.) If there is access to a scale that can measure ounces, weigh 25 pennies from 1984 or later and compare them with 25 pennies from 1982 or earlier. If not, use the following base weights:

  - 1982 or earlier pennies: 25 pennies weigh about 2.7 oz
  - 1984 or later pennies: 25 pennies weigh about 2.2 oz

From this information, students should work out why the pennies weigh different amounts. They should ascertain, through questioning, that zinc weighs slightly less than copper.

Students will use these base weights to determine the weights of larger groups of pennies. Students should find answers to the following questions:

- *If you had $1.00 in 1979 pennies, what would be the total weight in ounces?*
- *If you had $5.00 in 1999 pennies, what would be the total weight in pounds? In ounces?*
- *If you had $20.00 in pennies with half from 1979 and half from 1999, how much would they weigh in pounds? In ounces?*

To extend the activity, students should figure out how much one ton of each type of penny would be worth in dollars.

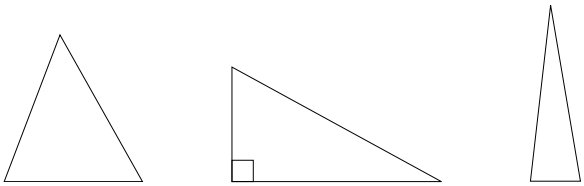
- Using the weights of common objects is a fun way to estimate with standard and metric units. Choose a number of objects that cover a wide range of weights and find or print pictures of them from a magazine, a newspaper, or the Internet. Here are a few examples:

  - Hen's egg (large): about 2 oz or 57 g
  - Mobile phone: about 8 oz or 227 g
  - Gallon of milk: about 8.5 lbs or 3.9 kg
  - Refrigerator: about 150 lbs or 68 kg
  - Mid-size motorcycle: about 450 lbs or 204 kg
  - Adult milk cow: about 1,400 lbs or 635 kg
  - 62-passenger school bus: about 10 tons or 9,071 kg
  - Mid-size passenger jet: about 45 tons or 41,145 kg

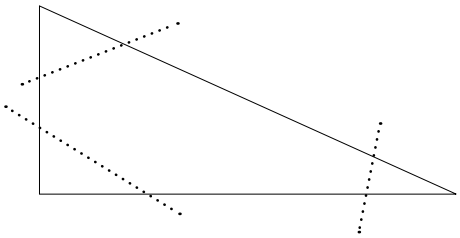
  Show students the objects without listing their weights. Students should choose the appropriate unit of weight for each, in both metric (grams, kilograms) and standard (ounces, pounds, tons) measures. Students will share results and discuss the reasoning behind each of their choices. Share the actual weights with students and confirm the appropriate unit for each.

- Students will develop skills measuring angles with tools using drawings of real-world structures. Provide copies of drawings of buildings or other everyday items found in books and magazines on architecture and interior design at the local library or on the Internet. Choose images that contain a variety of shapes and angle measures distinct enough for students to work with. Use a magic marker to outline common shapes and various angles found on each drawing. Students will identify each shape and use a protractor or angle ruler to measure each angle. Students should compare and discuss their findings.

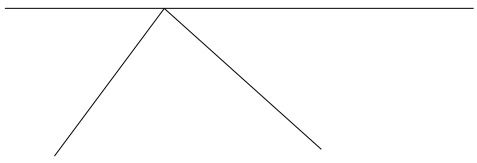
– To reinforce knowledge of the measurement of angles, students will practice using a protractor and discuss the sum of a triangle's angles as always being 180°. Prepare ahead of time by cutting a number of triangles of different sizes and shapes out of construction paper, similar to the following samples (templates of triangles can be found online and as part of some word processing programs). Make sure that the angles of your triangles have whole-number measures.



Distribute a paper triangle, protractor, and work paper to each student. Explain or review with the class that the sum of the measures of the three angles of a triangle always equals 180°. Students will use the protractor to measure and record two angles of their triangles. Next, students will find the measurement of the third angle by subtracting the sum of the first two angles from 180. Have students check their work by using the protractor to measure the third angle. Extend the activity by having students prove, in another way, that the sum of the angles of a triangle equals 180°. First review or explain to the class that a straight line is also a straight angle and that a straight angle measures 180°. Then students will tear off the three angles of a triangle, as shown by the dashed lines in the figure below.



Finally students will lay the angle vertices edge-to-edge, as shown in the diagram below, and observe that a straight line is formed, reinforcing that the sum of a triangle's angles is 180°.



Activities

❸ Geometry

Common Core Georgia Performance Standards MCC4.G.1, MCC4.G.2, MCC4.G.3

Within the Geometry domain, students will draw and identify lines and angles, and classify shapes by properties of their lines and angles.

The following activities develop skills in this domain:

– To describe parallel and perpendicular lines, students will use toothpicks to create shapes with parallel and perpendicular sides and justify that the sides are parallel/perpendicular.

  Group the students in small groups of two to four students. Give each group a protractor and a set of toothpicks.

  Review the definitions of parallel and perpendicular lines/sides.

  Have the students work together to create as many different shapes as possible with a given number of parallel and/or perpendicular lines.

  For example:

  Create shapes with:

  – 2 pairs of parallel sides
  – 1 pair of parallel sides and 1 pair of perpendicular sides
  – 4 perpendicular sides
  – 1 perpendicular side and no parallel sides

  Once each set of shapes has been made, have students test the parallel sides by using toothpicks to lengthen the pair of parallel sides to prove that they will not connect.

  Have students test the perpendicular sides by using a protractor to measure the angle formed or by giving them a rectangular piece of paper to fit in the corner to establish that it is a right angle.

– Students will use pattern blocks to create line-symmetric figures and they will justify the lines of symmetry using mirrors.

  Group the students in pairs. Give each pair a set of pattern blocks and a small hand mirror.

  Explain that if held along the line of symmetry, the reflection in the mirror will show the other half of the pattern block.

  Have students test this by finding the line of symmetry on individual pattern blocks and placing the mirror along that line of symmetry to see if the mirror reflects the other side.

  Challenge them to find as many lines of symmetry as they can.

  Next, have students build a symmetric shape using 2 pattern blocks and again test the line of symmetry with the mirror. Again, have them check to see if there is more than one line of symmetry for the shape.

  Have the students build increasingly complex symmetric shapes and test for their lines of symmetry.

  As an extension, paper pattern block shapes could be used to recreate the shapes and glued to a piece of paper. The paper could then be folded along the lines of symmetry to further prove the line of symmetry.

Activities

❹ Algebra

Common Core Georgia Performance Standards MCC4.OA.2, MCC4.OA.3, MCC4.OA.5

Within the Algebra domain, students will use the four operations with whole numbers to solve problems. They will generate and analyze patterns.

The following activities develop skills in this domain:

– Students will use counters to represent and solve word problems using multiplicative comparison and write equations to represent these problems.

  Give each student a set of 81 small counters such as unit cubes or paper circles.

  Start with multiplication problems that use multiplicative comparison to find the product. Have the students act out the problem with their counters. Before they find the solution, have them write out what they have done as an equation using a given variable in place of the product. Then have them solve the problem.

  For example:

  Jim has 5 tulips in his front yard. He has 4 times as many tulips in his backyard. How many tulips does Jim have in his backyard.

  Students would start with a group of 5 tulips. They would then make 4 groups of 5 tulips and write the equation $4 \times 5 = b$. They would then solve the problem as 20 tulips in the backyard.

  Do a few problems in that style and then switch to word problems using multiplicative comparison where the product is given and students must find the original amount. Students would again use the counters to solve the problem and write a multiplication equation with a variable to represent the problem before solving it.

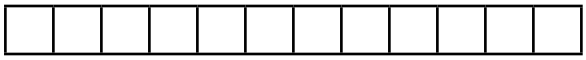
  For example:

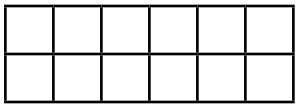
  Patti picked 48 apples. She picked 6 times as many apples as pears. How many pears did Patti pick?

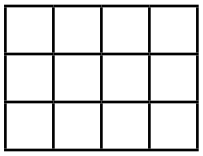
  Students would start with 48 counters and separate them into groups of 6 until they had a total of 8 groups OR they might create 6 groups and place one in each group until all 48 were used. They would write the equation $p \times 6 = 48$ or $6 \times p = 48$. Finally, they would solve the problem as having picked 8 pears.

For these problems, you may want to also ask students what other equation could be used to solve the problem to reinforce the inverse relationship between multiplication and division.

– Students can understand and derive factors by working with manipulatives. Give students a large set (100 or more, if possible) of linking cubes, square wooden tiles, or squares cut from posterboard. Choose a number for students to work with, starting with a number like 12. Students will draw 12 squares from the pile and use them to make as many different rectangles as possible. Students should start with one long row of squares to form a rectangle and then try adding rows to find other combinations that form a complete rectangle. With 12 squares, they can form 1 row of 12 squares, 2 rows of 6 squares, 3 rows of 4 squares, 4 rows of 3 squares, 6 rows of 2 squares, and 12 rows of 1 square (see examples below). Attempting to form 5 rows will result in an incomplete rectangle or leftover squares. Students will eliminate any rectangles with repeated dimensions (e.g., a rectangle with 2 rows of 6 squares is the same as a rectangle with 6 rows of 2 squares). The remaining pairs of dimensions represent the factors of the number 12: {1, 12, 2, 6, 3, 4}.

1×12 

2×6 

3×4 

Students should repeat this with a variety of numbers, looking for patterns in the results. For instance, numbers for which students can only form one rectangle, such as 7 or 13, represent prime numbers. And for any even number, students can form a rectangle with two rows; while for any odd number, students cannot form a rectangle with two rows.

Practice Quiz

1 **Milton bought a video game for $50.25 and a pack of trading cards for $5.55.**

How much, to the nearest dollar, did Milton spend in all?

A $50.00
B $55.00
C $56.00
D $60.00

2 **Mira is putting 100 colored pencils into boxes. Each box holds 5 pencils.**

How many boxes are needed to hold ALL of Mira's pencils?

A 4
B 5
C 20
D 25

3 **Look at the expression.**

$$\frac{3}{10} + \frac{4}{10}$$

Which number is CLOSEST to the sum of this expression?

A 1
B 2
C 7
D 9

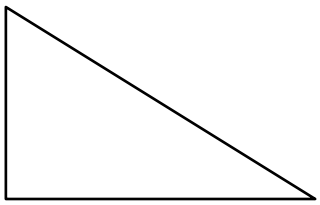
4 **Jordan picked 8 times as many strawberries as Aiden.**

If Aiden picked 56 strawberries, which expression can be used to find the number of strawberries Jordan picked?

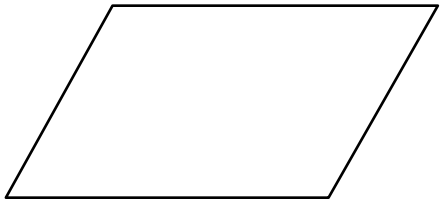
A $8 + 56$
B 8×56
C $56 - 8$
D $56 \div 8$

5 **Which of these shapes is line symmetric?**

A



B



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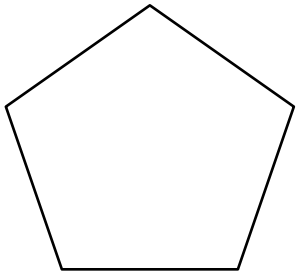

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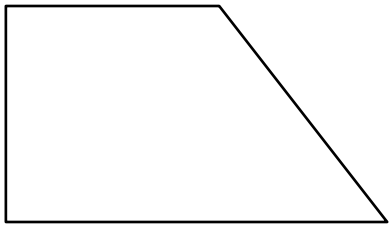


6 **Lenny took three of his textbooks home one night. He wanted to find how much his backpack weighed.**

Which of these units is MOST appropriate for measuring the weight of Lenny's backpack?

A tons
B grams
C pounds
D ounces

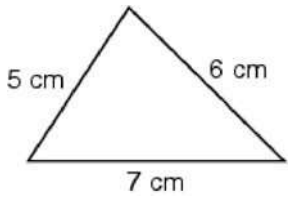
7 **Wanda drew a triangle that had two 45° angles and one 90° angle.**

What type of triangle did Wanda draw?

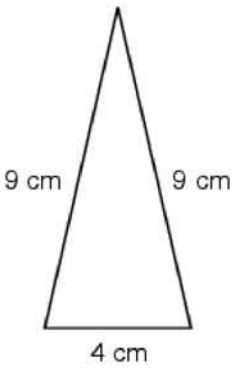
A right
B acute
C obtuse
D equilateral

8 **Which of these is an equilateral triangle?**

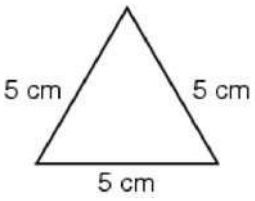
A



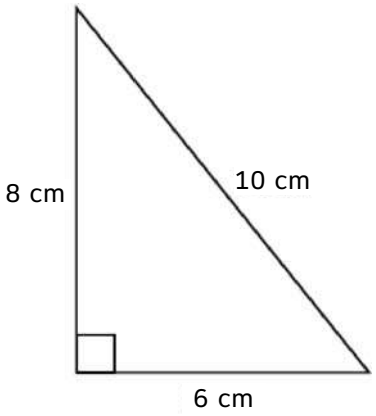
B



C



D



9 **What is the sum of $\frac{7}{10} + \frac{3}{100}$?**

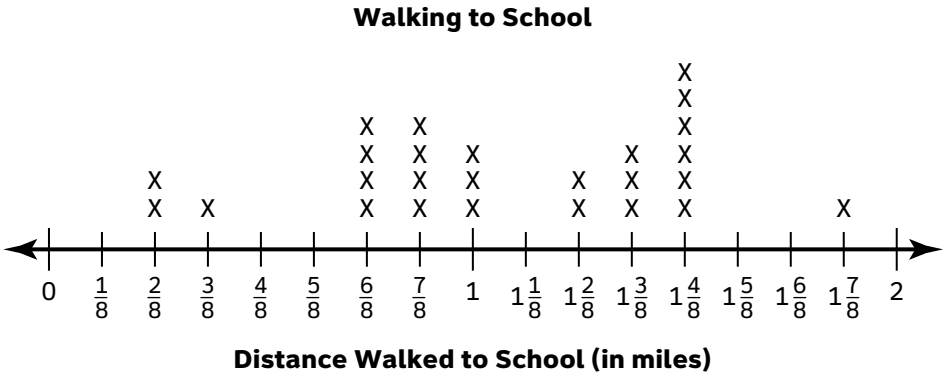
A $\frac{10}{100}$

B $\frac{20}{100}$

C $\frac{37}{100}$

D $\frac{73}{100}$

10 **The line plot below shows the number of miles different students in Ms. Frank's class walk to school.**



Of all the students, Eric walks the longest distance to school and Layna walks the shortest distance to school.

How many MORE miles does Eric walk to school than Layna?

A $1\frac{1}{8}$ miles

B $1\frac{2}{8}$ miles

C $1\frac{4}{8}$ miles

D $1\frac{5}{8}$ miles

Solutions

Number	Correct Answer	Explanation
1	**C**	*Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (MCC4.MD.2)* The correct answer is **Choice** (**C**) **$56.00.** The sum of $50.25 and $5.55 is $55.80. Dollar values ending in .50 or greater are rounded up, so the total rounded to the nearest dollar is $56.00. Choice (A) is incorrect because $50.00 is the result of rounding only one number. Choice (B) is incorrect because $55.00 is the result when rounding down, not up. Choice (D) is incorrect because $60.00 is rounded to the nearest ten dollars, not the nearest dollar.
2	**C**	*Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (MCC4. NBT.6). (MCC4.OA.2)* The correct answer is **Choice** (**C**) **20.** To find out how many boxes Mira needs, divide the number of pencils by the number of pencils each box can hold: 100 ÷ 5. Choices (A) and (B) are incorrect because they are all too small. Choice (D) accounts for a box not needed.
3	**A**	*Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. (MCC4.NF.3a/b)* The correct answer is **Choice** (**A**) **1.** When you add $\frac{3}{10} + \frac{4}{10}$, you get $\frac{7}{10}$, which is closest to the whole number 1. Choices (B), (C), and (D) are incorrect because they are significantly too high.

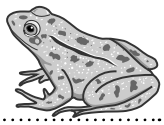
Number	Correct Answer	Explanation
4	**B**	*Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (MCC4.OA.1)* The correct answer is **Choice** (**B**)**.** It is the multiplication expression that should be used to compare the number of strawberries that Aiden and Jordan picked. To compare "times as many as", multiplication is the operation that is used. Choice (A) is incorrect because it uses addition as the operation. Choice (C) is incorrect because it uses subtraction as the operation. Choice (D) is incorrect because it uses division as the operation.
5	**C**	*Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (MCC4.G.3)* The correct answer is **Choice** (**C**)**.** It is the figure that has line symmetry. It has a line of symmetry along which the figure can be folded to form two matching parts. Choice (A) is incorrect because it has no line of symmetry. Choices (B) and (D) are incorrect because they have no line of symmetry.

Number	Correct Answer	Explanation
6	**C**	*Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36)…. Students do not need to compare customary with metric units. (MCC4.MD.1)* The correct answer is **Choice** (**C**) **pounds.** The weight of three textbooks and a backpack is most likely between 5 and 10 pounds. Choice (A) is incorrect because tons is a unit used for very large weights (1 ton = 2000 lb). Choices (B) and (D) are incorrect because grams and ounces are units used for very small weights.
7	**A**	*Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. (MCC4.G.2)* The correct answer is **Choice** (**A**) **right.** The measure of a right angle is 90° and any triangle containing a right angle is a right triangle. Choice (B) is incorrect because in an acute triangle all angles must be less than 90°. Choice (C) is incorrect because in an obtuse triangle one angle must be greater than 90°. Choice (D) is incorrect because an equilateral triangle must have three equal angles of 60°.

Number	Correct Answer	Explanation
8	**C**	*Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles (MCC4.G.2)* The correct answer is **Choice** (**C**)**.** An equilateral triangle is characterized by 3 equal sides. Choice (A) is incorrect because the triangle shown is a scalene triangle, with three sides of different lengths. Choice (B) is incorrect because it is an isosceles triangle, with two equal sides. Choice (D) is incorrect because it is a scalene right triangle, with three sides of different lengths.
9	**D**	*Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express* $\frac{3}{10}$ *as* $\frac{30}{100}$*, and add* $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$*. (MCC4.NF.5)* The correct answer is **Choice** (**D**) because the sum of $\frac{7}{10} + \frac{3}{100}$ is $\frac{73}{100}$. When you convert the addends to the common denominator of 100, the $\frac{7}{10}$ becomes $\frac{70}{100}$ and the sum of $\frac{70}{100} + \frac{3}{100}$ is $\frac{73}{100}$. Choice (A) is not correct because the numerator was not changed when the first addend was converted to the common denominator. Choice (B) is not correct because 10 was added instead of multiplied to make $\frac{17}{10}$. Choice (C) is not correct because the numerator 3 was multiplied by 10 instead of the numerator 7.

Number	Correct Answer	Explanation
10	**D**	*Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. (MCC4.MD.4)* The correct answer is **Choice** (**D**)**.** It is the difference between the greatest number of miles walked by a student and the least number of miles walked by a student. This is determined by subtracting the lowest value with an x ($\frac{2}{8}$) from the highest value with an x ($1\frac{7}{8}$) for a difference of $1\frac{5}{8}$. Choice (A) is incorrect because it subtracts the lower value with the least number of x's from the value with the most x's. Choice (B) is incorrect because it subtracts the lowest value with an x from the value with the most x's instead of the highest value with an x. Choice (C) is incorrect because it subtracts the lowest value with a single x from the highest value with a single x.

Science



Science

Grade 4 students differentiate between observations and ideas, and speculate about observations they make. They list common materials for making simple mechanical constructions and for repairing things. Grade 4 students use records, tables, or graphs to identify patterns of change. They write instructions and make sketches that allow others to carry out a scientific procedure. They determine whether or not a comparison is fair if conditions are different for each thing being compared and question claims or statements made by people outside their field of expertise (such as "4 out of 5 dentists say…."). They know that safety is a fundamental concern in all experimental science and adhere to rules and guidelines to show they are responsible with materials and equipment. Grade 4 students gather and interpret data. They add, subtract, multiply, and divide whole numbers on paper, mentally, and with calculators. They are able to construct meaningful models that allow them to gain understandings of the natural world and are active learners. They do not simply read about science; they *do* science. As a result, they are able to differentiate observations from ideas and engage in investigations inside and outside the classroom.

Students in Grade 4 will use models in the study of interactions and interdependence of ecosystems. They will gain a basic understanding of how weather relates to the stages of the water cycle. Students will investigate the stars in the universe and our Solar System. They will look at characteristics of sound and light and how they interact with the environment.

The Science activities focus on some of the concepts that are assessed on the Grade 4 CRCT Science domains. These domains are as follows:

❶ **Earth Science**

❷ **Physical Science**

❸ **Life Science**

The *Characteristics of Science* standards are integrated throughout the domains. These standards are co-requisites for understanding the content of each science domain.

The *Characteristics of Science* standards refer to the understanding of 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. The *Characteristics of Science* standards also refer to understanding how science knowledge grows and changes and the processes that drive those changes.

Activities

❶ Earth Science

Georgia Performance Standards S4E1, S4E2, S4E3, and S4E4

Within the Earth Science domain, students are expected to investigate the stages of the water cycle and how each stage is formed. They will understand how clouds are formed and learn about the use of weather instruments in predicting weather. Students will use various texts, media resources, and observations of the night sky to learn about the number, colors, sizes and positions of stars. They will also identify constellations and planets in the night sky according to their appearance and position. They should describe relationships involving Earth, the Moon, and the Sun. Students will use models, graphic displays, and written reports to explain Earth's day/night cycle, phases of the moon, and seasonal changes on Earth.

The following activities develop skills and understandings in this domain:

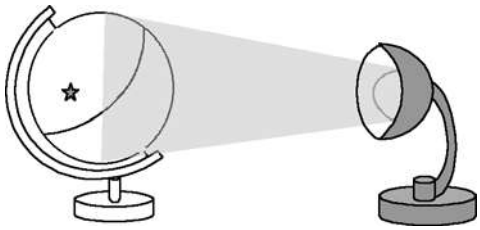
– Creating a display about the solar system will help students understand the differences among planets and their order from the Sun. Students will use a large garbage bag to represent the sun and use food items to represent the comparative sizes of the planets. The "Sun" can be placed at one end of a classroom table and the suggested food items set out along the table in the order of the planets from the Sun. The table on the next page may serve as a guide for food items to use.

Object	Suggested Items
Sun	a large garbage bag (filled with crumpled newspaper) formed to a rounded shape
Mercury	a coffee bean
Venus	a large blueberry
Earth	a cherry
Mars	a pea
Jupiter	a large grapefruit or cantaloupe
Saturn	a very large orange
Uranus	a kiwi fruit
Neptune	an apricot or nectarine

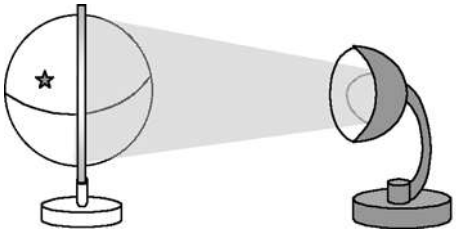
– Hands-on activities that demonstrate the evaporation and condensation of water will allow students to understand the water cycle. Students should fill a wide-mouth glass jar one-quarter full with room-temperature water. They should fill a second jar with the same amount of water that has been heated to a temperature of 55°C and then mark the water levels on the outside of the jars. Students will find that more of the warmer water will evaporate in a given amount of time. Students will also explore condensation using a chilled glass rod (or small glass, spoon, etc.) and a warm one. They will partially fill two jars with hot water, and then insert a glass rod into each. The cooler rod will have more water droplets on it. If a heat source is not available, placing one jar in a sunny window and one away from the window may show the same principle due to the heat from the Sun. Next, demonstrate fog formation by filling a jar with a half-inch of very hot water and placing a strainer with crushed ice over the mouth of the jar. (First rinse the jar with hot water to equilibrate its temperature and prevent it from cracking.) Discuss how cooler temperatures lead to more condensation, while warmer temperatures encourage evaporation. Relate these observations to the water cycle. Ask, *Will more water evaporate in cool or warm weather? When will clouds be more likely to form?*

– A hands-on demonstration will help students better understand how Earth's tilt causes seasonal changes. Required materials for this activity include a small desk lamp or flashlight, a globe, and a marker (piece of clay or small flag) placed at Georgia's location on the globe. In a darkened room, position the lamp on a table so that the light is centered on the globe. Ask students, *What causes the seasons?* and discuss how the Northern and Southern Hemispheres have opposite seasons. Position the globe as on June 22 (the northern tip of the axis is toward the lamp) and spin the globe on its axis. Students should notice that Georgia spends more time in daylight than in darkness. Discuss how the reverse phenomenon occurs in the Southern Hemisphere, such as in South America. Repeat the demonstration for the remaining solstice (the northern tip of the axis positioned away from the lamp) and equinoxes (the axis tilted to the left and right of the lamp). See diagram below.

The December 22 solstice



The September 22/23 equinox



Activities

❷ Physical Science

Georgia Performance Standards S4P1, S4P2, and S4P3

Within the Physical Science domain, students are expected to describe how tools such as mirrors, prisms, and lenses affect light, and how sound is produced and changed. They are also expected to explain how simple machines are used. They will have a variety of experiences in getting objects to move or to stop moving, in changing the direction or speed of objects that are already in motion, and in exploring how simple machines use motion to make work easier. Students will understand that forces are the "pushes and pulls" that are responsible for movement in our world.

The following activities develop skills and understandings in this domain:

– Students can better understand the nature of forces by observing their effects in familiar situations, such as playground activities. Students will play tug-of-war to demonstrate pulling forces. (Note: In the interest of safety, this activity is best done in cooperation with an experienced physical education teacher.) Vary the number of students on each side of the rope to show the effect of unequal forces. Ask, *How did the different forces move the rope? What happened when there were more students on one side? Why?* Next, students will use swings to demonstrate how forces add together. Push a student on the swing and compare the effect to having a smaller student push a larger person on a swing. Ask, *Which caused the person on the swing to go higher? Why?* Student volunteers should hang by their arms from monkey bars or other climbing structures to observe the force of gravity acting on them. Students should feel the force on their arms as they pull themselves against gravity. Ask, *How does this compare to the tug of war? What force are you pulling against?* Discuss how gravity is a force pulling everything toward Earth's center.

– Observing simple machines in everyday use will help students better understand the function of these devices. Students will observe one simple machine (lever, pulley, wedge, inclined plane, screw, or wheel and axle) in use around them each day. In their journals, students will record answers to the following questions: *Which simple machine was used in this device? What was its function? How did it make the job easier?* Students should draw or paste a picture of the device in their journals. For example, students may record that the lid on a jar of peanut butter features a screw (an inclined plane that winds around itself). Its function is to keep the lid attached to the jar. It makes the job easier by allowing the lid to be attached and removed by turning it many times, instead of applying a large force all at once. Other examples of simple machines include hammers, bottle openers, bicycle wheels, knives, window blind pulls, and access ramps.

- Students will investigate how light behaves when it hits transparent, translucent, and opaque surfaces. They will use materials that differ in these qualities, such as an aluminum pie plate, clear plastic from a picture frame, large sunglasses, a glass of milk, a piece of cardboard, or waxed paper. To begin, students will aim a lamp or flashlight beam at a surface, such as a wall. They should then place each of the materials in the path of the beam and observe the effects on the light hitting the surface. Discuss with students that these materials can also be reflective (like the aluminum and plastic) or absorbent (like the cardboard).

- Performing a hands-on investigation of changes in pitch will help students to understand the nature of sound waves. (Emphasize safety as students perform this activity, and ensure that students wear safety goggles.) Students will stretch a large, strong rubber band across two pencils held parallel by a partner. They will pluck the rubber band to observe the sound it produces. They should stretch the rubber band to varying degrees by moving the pencils farther apart or closer together. They also should pluck the rubber band and note the effect of distance on the sound produced. Keeping the pencils the same distance apart, the person holding the pencils should change the length of the rubber band by pinching it along its length. Students should again investigate the resulting sounds. Students should then repeat the procedure using thinner or thicker rubber bands. They should observe the bands' vibrations and draw diagrams of the motion. Following the activity, discuss how the variations affected the sounds the bands produced.

Activities

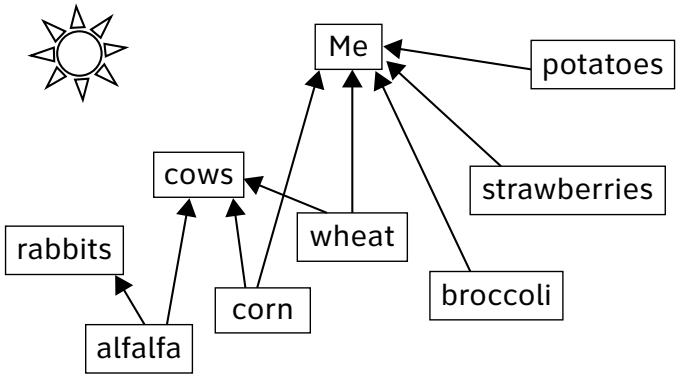
❸ Life Science

Georgia Performance Standards S4L1 and S4L2

Within the Life Science domain, students should understand the roles of organisms, explain how energy moves in an ecosystem, and predict how changes to part of the system affect the other parts. Students will identify features that affect the survival of organisms and factors that may lead to their extinction.

The following activities develop skills and understandings in this domain:

– Students will better understand the energy relationships depicted by a food web if they include themselves in a web. Students should think about what organisms they eat and create a food chain or web that includes them. They should start with the Sun and include some of their favorite foods. If students eat milk, eggs, or meat, they should include the foods that the animals feed on. (You may want to research with students common animal feed ingredients. For example, commercial chickens are fed anchovies, corn, and kelp, among other staples.) A sample food web is shown below. To find more specific or complex food webs, consult reference sources in a library or on the Internet.



– To learn about the relationships depicted by food chains and food webs, students will take part in an ecosystem simulation. Draw a food chain on an erasable board and write values representing population numbers beneath each organism or population. The numbers don't need to be exact, just an approximation (e.g., 100,000 for grass, 10,000 for crickets, 1,000 shrews, 100 hawks, etc.). Students will choose an event to begin the game (e.g., a drought reduces the amount of grass, more hawks are born one season, etc.). Change the relevant number (e.g., 50,000 for grass) and discuss how, because crickets eat grass, the cricket population will subsequently decrease. Ask, *Which other populations will now be affected? How will they change?* Simply estimate the numbers; the important point is that each population affects the other populations in the web. Reset the numbers when extinction occurs.

– Researching and characterizing adaptations will help students understand how specialized traits help organisms to survive. Students will create a *Wall of Adaptations* featuring various organisms with unusual traits. To create the *Wall of Adaptations*, divide a wall, bulletin board, or other large surface into the categories below. Throughout the year, students will use library and/or Internet resources to investigate organisms with various types of adaptations. Students will draw or find a picture of each organism and write a short description of how its adaptation helps it survive. Place students' work in the appropriate place on the wall. The chart below lists some common types of adaptations.

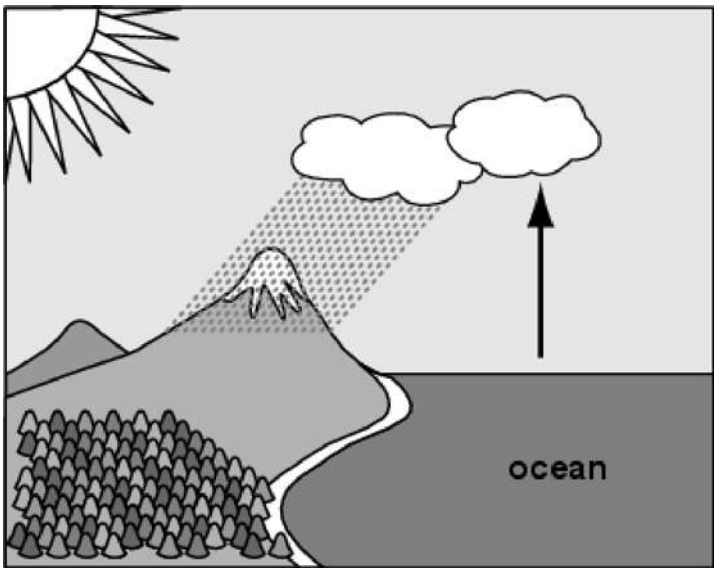
Common Types of Adaptations

Energy-Related	Defense	Camouflage/Mimicry	Sensory
hibernation	release unpleasant substances	skin or fur that blends in	sight
migration	hard outer shell	changing skin color to blend in	hearing
slow movement or specialized diet	poisonous bites or stings	body that looks like a common object	touch
heat-saving	bitter taste	body that looks like a similar, poisonous organism	smell
cooling	thorns or spines	other color or pattern that fools predators	

– Learning about native species and their interdependence will lead to a better understanding of how producers and consumers interact in an ecosystem. Students will choose a Georgia habitat or ecosystem (e.g., marsh, coastal plain, etc.) and research six to ten organisms that inhabit it. Students will create posters showing how each ecosystem's organisms interact in a food web. Students should include feeding relationships as well as other ways that organisms depend on other types of organisms (e.g., the gopher tortoise burrows are also used by other creatures). Posters should show information about threats to particular species (e.g., pollution, hunting, climate changes) and how this would affect other populations (e.g., with fewer gopher tortoises, animals that depend on their burrows will have a harder time surviving).

Practice Quiz

1 **The picture shows part of the water cycle.**



What causes the water vapor rising from the ocean to become a cloud?

A cooling of the air temperature
B warming of the air temperature
C cooling of the ocean temperature
D warming of the ocean temperature

2 **In a certain area, mice eat grass and snakes eat mice.**

Which statement describes what will MOST LIKELY happen to the snakes and mice if the grass population decreases due to a lack of rain?

A The populations of both mice and snakes will increase.
B The populations of both mice and snakes will decrease.
C The population of mice will decrease, and the population of snakes will increase.
D The population of mice will increase, and the population of snakes will decrease.

3 **Which of these shows the processes water goes through, in order, as it moves from the surface of the ocean to when it becomes part of the cloud?**

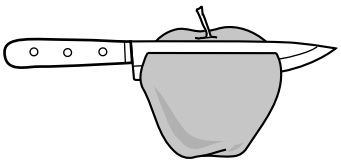
A evaporation, then precipitation
B precipitation, then evaporation
C evaporation, then condensation
D condensation, then evaporation

4 **Mauricio heard a horn honk. Later, he heard students whispering.**

Which statement BEST explains how each sound was made?

A Both sounds were made with vibrations.
B Both sounds were made with heat energy.
C The honking horn sound was made with vibrations, and the whispering sound was made with heat energy.
D The honking horn sound was made with heat energy, and the whispering sound was made with vibrations.

5 **Helen uses a knife to cut an apple in half.**



Which kind of simple machine is the knife blade as it cuts the apple?

A lever
B pulley
C screw
D wedge

6 **A student is using an encyclopedia to study the dodo bird, a bird that became extinct in the 1600s. She learns these facts.**

- Humans probably first saw the dodo about the year 1507.
- It was about one meter tall when full grown.
- It lived in forests on an island in the Indian Ocean.
- Animals brought to the island by humans escaped and ate the dodo's eggs.

Which sentence from the paragraph explains the MOST LIKELY reason dodo birds became extinct?

A Humans probably first saw the dodo about the year 1507.
B It was about one meter tall when full grown.
C It lived in forests on an island in the Indian Ocean.
D Animals brought to the island by humans escaped and ate the dodo's eggs.

7 **A cuttlefish can change its color to match the area around it.**

Which statement BEST explains how changing its color could help the cuttlefish to survive?

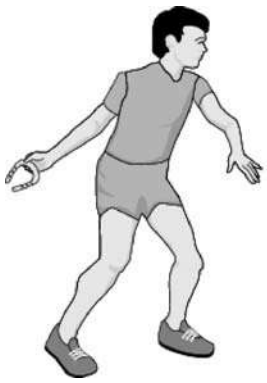
A It helps the cuttlefish to avoid predators.
B It helps the cuttlefish to find a place to live.
C It helps the cuttlefish to keep its body warm in the cold ocean waters.
D It helps the cuttlefish to see its prey more clearly in cloudy ocean waters.

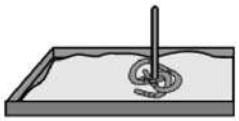
8 **Garlic mustard is a plant that is not naturally found in Georgia. When it is brought into an area, it causes a decrease in the population of some kinds of wildflowers.**

Which of these describes what will MOST LIKELY happen to other organisms in the area right after garlic mustard is planted in an area where these wildflowers now grow?

A The populations of trees in the area will increase.
B The populations of trees in the area will decrease.
C The populations of animals that eat wildflowers will increase.
D The populations of animals that eat wildflowers will decrease.

9 **The picture shows Eli throwing a horseshoe.**





Which force causes the horseshoe to curve downward after Eli throws it?

A friction
B gravity
C magnetism
D wind

10 **A student uses a telescope to look at different objects in the night sky.**

Which of these objects is farthest away from the student as she looks at it?

A the Sun
B the Moon
C the North Star
D the planet Mars

Solutions

Number	Correct Answer	Explanation
1	**A**	*Investigate how clouds are formed. (S4E3c)* The correct answer is **Choice** (**A**) **cooling of the air temperature.** When air temperature cools, water vapor in the air condenses to form clouds. Choice (B) is incorrect because warming of the air temperature allows the air to hold more moisture, not less. Choices (C) and (D) are incorrect because cooling or warming of the ocean temperature affects the rate of evaporation, not cloud formation.
2	**B**	*Predict effects on a population if some of the plants or animals in the community are scarce or if there are too many. (S4L1d)* The correct answer is **Choice** (**B**) **The populations of both mice and snakes will decrease.** Less grass to eat means fewer mice, which in turn means less food for the snake population. Choices (A) and (D) are incorrect because a shortage of grass will lead to a decrease, not an increase, in mice. Choice (C) is incorrect because fewer mice will cause a food shortage for the snakes, causing their population to decrease, not increase.
3	**C**	*Explain the water cycle (evaporation, condensation, and precipitation). (S4E3d)* The correct answer is **Choice** (**C**) **evaporation, then condensation.** Water droplets in the ocean evaporate to form water vapor, which then cools and condenses to form clouds. Choices (A) and (B) are incorrect because precipitation describes how water leaves a cloud. Choice (D) is incorrect because, in cloud formation, the evaporation allowing ocean water to move into the air must occur before condensation.
4	**A**	*Investigate how sound is produced. (S4P2a)* The correct answer is **Choice** (**A**) **Both sounds were made with vibrations.** All sound waves are vibrations in air or another medium. Choices (B), (C), and (D) are incorrect because sounds are not made by heat energy.

Number	Correct Answer	Explanation
5	**D**	*Identify simple machines and explain their uses (lever, pulley, wedge, inclined plane, screw, wheel and axle). (S4P3a)* The correct answer is **Choice** (**D**) **wedge.** A wedge is a modified inclined plane that can be used to force something apart or open. The knife acts as a wedge when it forces the two halves of the apple apart. Choice (A) is incorrect because the knife does not act as a lever in this example. Choices (B) and (C) are incorrect because a knife does not act as a pulley or a screw.
6	**D**	*Identify factors that may have led to the extinction of some organisms. (S4L2b)* The correct answer is **Choice** (**D**) **Animals brought to the island by humans escaped and ate the dodo's eggs.** Choices (A), (B), and (C) are incorrect because they do not give a reason that explains why the dodo birds became extinct.
7	**A**	*Identify external features of organisms that allow them to survive or reproduce better than organisms that do not have these features (for example: camouflage, use of hibernation, protection, etc.). (S4L2a)* The correct answer is **Choice** (**A**) **It helps the cuttlefish to avoid predators.** Choice (B) is incorrect because camouflage does not help the cuttlefish to find places to live. Choice (C) is incorrect because camouflage does not help the cuttlefish to regulate its body temperature. Choice (D) is incorrect because camouflage does not help the cuttlefish to see its prey more clearly in cloudy water.

Number	Correct Answer	Explanation
8	**D**	*Predict how changes in the environment would affect a community (ecosystem) of organisms. (S4L1c)* The correct answer is **Choice** (**D**) **The populations of animals that eat wildflowers will decrease.** A decrease in wildflowers will reduce the food available to animals that eat them, resulting in a population decrease for those animals. Choices (A) and (B) are incorrect because the introduction of garlic mustard will not initially affect the tree populations. Choice (C) is incorrect because the organisms that eat wildflowers would have a reduction in their food source and, as a result, the organisms that eat wildflowers would decrease in number.
9	**B**	*Demonstrate the effect of gravitational force on the motion of an object. (S4P3d)* The correct answer is **Choice** (**B**) **gravity.** Though the force from the throw propels the horseshoe toward the stake, the gravitational force pulls it toward the ground. Choice (A) is incorrect because friction may slow the motion of an object, but it does not pull objects toward the ground. Choice (C) magnetism is incorrect because magnets are not involved. Choice (D) is incorrect because wind does not pull things toward the ground.
10	**C**	*Compare the similarities and differences of planets to the stars in appearance, position, and number in the night sky. (S4E1b)* The correct answer is **Choice** (**C**) **the North Star.** The North Star is outside our solar system, which makes it the object that is farthest away from the student. Choices (A), (B), and (D) are incorrect because they all are objects within our solar system.

Social Studies

Chapter 5

Social Studies

In Grade 4, students begin the formal study of United States history. At this grade, the four domains (History, Geography, Government/Civics, and Economics) are fully integrated. Students begin their study of United States history with the development of Native American cultures and conclude with the antebellum period ending in 1860. The Geography domain emphasizes the influence of geography on early United States history. The Government/Civics domain examines concepts and rights development during the formation of our government. The Economics domain uses material from the History domain to further students' understanding of economic concepts.

The Social Studies activities focus on some of the topics that are assessed on the Grade 4 CRCT Social Studies domains. These domains are as follows:

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

Activities

❶ History

Georgia Performance Standards SS4H1, SS4H2, SS4H3, SS4H4, SS4H5, SS4H6, and SS4H7

Grade 4 begins students' formal study of the history of the United States. The main focus of this domain is United States history from the development of Native American cultures to the antebellum period ending in 1860. The History domain also examines life in America from the time of the Native Americans through the Colonial era. Throughout the History domain, students will examine key individuals, events, and documents and their influence on modern times. Knowledge and understanding will continue with a discussion of the changing American society in the 19th century, including westward expansion and the impact of key inventions during the century. The goal of the History domain is for students to begin to understand the people and major events that have shaped the modern era.

The following activities develop skills in this domain:

– Students will better understand the influence of geography in the development of the Native Americans by locating historic settlements on a map of North America and then predicting how this geography affected their society. Distribute physical maps of North America. Assist the students in highlighting the area inhabited by the Inuit. Students will discuss the geography of the region highlighted and make predictions about the food, clothing, shelter, tools, and animals that would be found useful in this region. Students will write their predictions on a graphic organizer similar to the one that follows. Provide students with factual information about the Inuit so they can complete the "Results" column of the organizer. As a class, students will discuss how their predictions compare to the facts, why their predictions were correct or incorrect, and how environment influenced the Inuit. Next, divide the class into five groups and assign each group one of the following cultures: Kwakiutl (Northwest), Nez Perce (Plateau), Hopi (Southwest), Pawnee (Plains), or Seminole (Southeast). First, groups will locate the areas settled by their assigned Native American nation on the physical map. Then using another copy of the graphic organizer, each group will make predictions and research their assigned Native American nation using grade-level appropriate websites (.edu, .gov, or .org) and reading materials, or library reference books. After a discussion of all the completed organizers, students will conclude the activity by writing a brief report/essay about the various Native American nations, comparing and contrasting how the different societies used their environments.

Name of Native American Group		
	My prediction	**Results from research and class discussion**
Type of Shelter		
Primary Foods		
Important Animals		
Tools and Weapons		

- Students will gain a better understanding of various events in the American revolutionary movement by completing cause-and-effect charts. Draw on the board or poster paper several cause-and-effect charts: a box labeled "cause" with an arrow pointing toward a box labeled "effect." Write one of the following events in the "cause" box (French and Indian War, British Imperial Policy, 1765 Stamp Act) or one of the following in the "effect" box (the slogan "no taxation without representation," the activities of the Sons of Liberty, the Boston Tea Party). As a class, research the information needed to complete each chart. For example, if you wrote the French and Indian War in the "cause" box, you would include the following effects: France had to give up its settlements in the New World, colonists could not settle lands west of the Appalachians, and Britain began taxing the colonists to pay for its war debts. Conclude the activity by tracing all these events on a timeline and discussing how the various events are related to each other. Include in the discussion the fact that events can have many causes and create many effects.

- Students will describe key individuals in American history and identify their important roles. First, list the following historical individuals: King George III, George Washington, Benjamin Franklin, Thomas Jefferson, Benedict Arnold, Patrick Henry, John Adams, James Madison, and Lewis and Clark. As a class, gather information for each individual as it relates to his importance to the American Revolution, the Constitutional Convention, or westward American expansion. Assign each student an individual. Each student will create a 3×5 clue card. First, they will write the name of their assigned individual on the card. Next, on the other side of the card, students will write clues as to the individual's identity. Explain that students are to write clues starting with the general and moving to the specific so as not to give away the identity with the first clue. For example:
  - *He was on the colonial side during the Revolution.*
  - *He led soldiers during battles.*

- *His soldiers spent time in Valley Forge.*
- *He was accused of committing treason.*

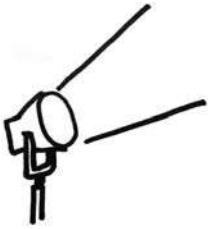
Each student will have a turn reading clues from his or her card. The class will guess the identity, giving reasons for their guesses. For example, for the clues above a guess might be "The person is Thomas Jefferson, because he was on the side of the colonists." Guessing will continue until the individual is correctly identified. Conclude the activity by using the clue cards to review key individuals and major leaders.

– Students will identify the three branches of government, describe their functions, and identify how a system of checks and balances is used. Explain to the class that in the United States, both the national government and state governments are made up of three branches. Identify these branches through a class discussion, and list them on poster paper. Group students into teams and assign each team one of the three branches. Students will complete an informational chart, similar to the one below, using their research skills and grade-appropriate reading materials.

Branch	Purpose	Responsibilities	Checks on the Other Branches

As a class, discuss all the information gathered by the teams. List, on a piece of poster paper, all the researched purposes and responsibilities for each branch. Next, teams will share with the class the various checks and balances they found for their particular branches. Discuss the checks and balances as a way to separate power. Students will conclude this activity by writing a brief summary essay explaining how the federal system of checks and balances helps safeguard the American people from having one branch of government become too powerful.

Activities



❷ Geography

Georgia Performance Standards SS4G1 and SS4G2

The focus of the Grade 4 Geography domain is to locate physical and man-made features in the United States and to understand how physical systems affect human systems. This domain will help students understand and explain the impact of geography on Native American groups, the early explorers, and on the economic development of the colonies. Students should be able to analyze and evaluate the impact geography had on key battles of the American Revolution, as well as its impact on westward expansion and development.

The following activities develop skills in this domain:

– To better understand the importance of major physical features of the United States, students will identify highlights of a particular feature and role play the part of a park ranger. First, each student will choose one of the following physical features: the Atlantic Coastal Plain, the Great Plains, the Continental Divide, the Great Basin, Death Valley, the Gulf of Mexico, the St. Lawrence River, or the Great Lakes. Next, using their research skills and grade-level appropriate reading materials, library resources, and websites (.edu, .gov, or .org), students will create a tri-fold brochure by folding an $8\frac{1}{2} \times 11$ piece of copy or construction paper into thirds horizontally. The brochure will include the location of the feature on a map of the United States, its description and unique characteristics, and drawings or reproduced images highlighting key qualities of the feature. The qualities will address the importance of geography on U.S. history to 1860. Each student will play the role of park ranger, introducing visitors to the location and pointing out distinguishing traits and little-known facts to make their visit more enjoyable. At the end of the presentation, the park ranger will lead a question-and-answer session for the group.

– Students will locate important man-made and physical features on a map of the United States. Give each pair of students a blank map of the United States and have them cut twelve two-inch square cards of paper or card stock. Students will label the front of each piece of paper with one of the following features: the Atlantic Coastal Plain, the Great Plains, the Continental Divide, the Great Basin, Death Valley, the Gulf of Mexico, the St. Lawrence River, the Great Lakes, New York, NY, Boston, MA, Philadelphia, PA, and the Erie Canal. Students should research each feature to identify an important fact about it and write that on the reverse of the cards. Pairs of students should partner with another pair and share their facts by placing their set of cards on a desk or table with the name of the feature face-down and the fact face-up. The pair of students who didn't create this set of cards will now use the information on each card to guess the feature. When a pair guesses a feature correctly, the card should be flipped over. Once all features have been guessed correctly, the pairs should switch and repeat with the

other set of cards. Finally, the students will take turns identifying the correct location of each feature on a map of the United States.

– Students will study the three regions of colonial America to connect a region's physical geography with the economic activities it developed. Divide the class into small groups. As a class, and using a blank map of the colonies posted on the board, identify which colonies comprised each region. Assign each group one of the following regions: New England, Mid-Atlantic, or the Southern Colonies. Discuss what would constitute an important physical feature. The discussion will include rivers, forests, natural harbors, mountains, sea coast, and flatlands. Each group will determine the important physical features of their assigned region and write their findings in a chart similar to the one below. Students will then determine the types of economic activities in which their assigned region participated during colonial times and complete the second column of the chart. Students will write and share with the class a short report describing what they learned about their region's geographic features and drawing conclusions as to how these affected the region's economic activities.

Region

Physical Geography	**Economic Activities**

– Students will gain a better understanding of physical barriers and gateways by discussing the roles each played in American westward expansion. First, introduce the concept of physical barriers and gateways. Ask students for definitions and examples of physical barriers. Information should include that a physical barrier is something in geography that makes travel difficult, such as a large river to cross, mountains to climb, or a desert to traverse. Explain that gateways are just the opposite: features that make travel easier. Have students suggest examples. Their examples will include navigable rivers and flatlands. Assign groups of students one of the following events from American territorial expansion: the Lewis and Clark expedition, traveling the Oregon Trail, and moving to and developing mining towns during the California Gold Rush. Provide students with grade-appropriate reading and Internet materials.

Students will gather information so that they can accurately draw on a blank map of the United States the travel route their group followed. Next, students will indicate and identify the barriers or gateways encountered along the way. Conclude the activity with each student pretending that he or she is making a westward trek and writing a letter home describing the journey and the barriers or gateways that were encountered.

Activities

❸ Government/Civics

Georgia Performance Standards SS4CG1, SS4CG2, SS4CG3, SS4CG4, and SSCG5

Within the Government/Civics domain of Grade 4 Social Studies, students will learn to explain important topics and rights developed during the formation of the United States government. Students should be able to describe the meaning of key passages of the Declaration of Independence and the Constitution and explain the important concepts they express. Students will also explore the role of government in relation to laws, rights, defense, power limits, fiscal responsibility, and civic life. Students will be able to identify positive character traits of important historical figures and government leaders.

The following activities develop skills in this domain:

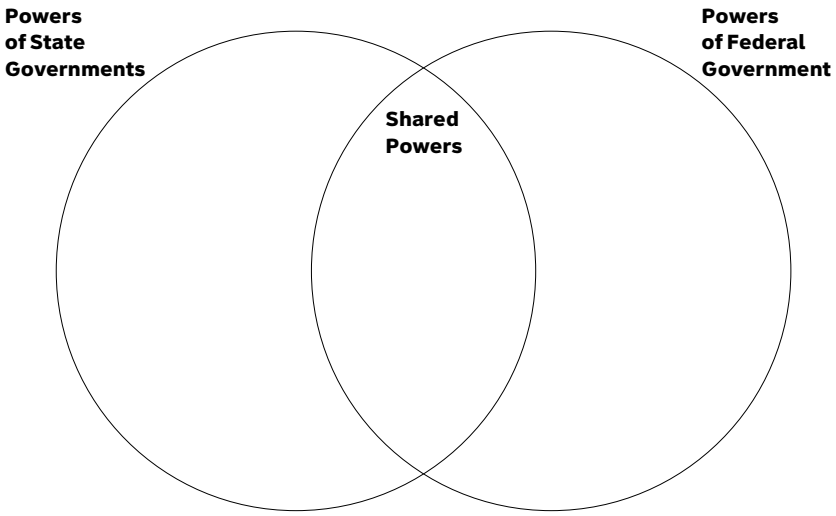
– To better understand the importance of freedoms granted to citizens, students will discuss the importance of the rights established by the First Amendment to the U.S. Constitution. First, students will research, using grade-appropriate materials and websites (.edu, .gov, or .org), the freedoms listed in the First Amendment. They will write each freedom on a 3 × 5 index study card. On the reverse of each card, students will describe their understanding of this freedom. Lead a class discussion to arrive at a clear, consensual definition of each freedom. Students should adjust their definitions as needed to reflect the outcomes of the class discussion. Post a chart on the board that is similar to the one below. Complete the first row using the consensual definition.

	Freedom of Religion	**Freedom of Speech**	**Freedom of the Press**	**Freedom to Assemble in Groups**	**Freedom to Address the Government**
What does this mean?					
Why did the Framers of the Constitution include this freedom?					
How would life be different without this freedom?					

Complete the second row of the chart while discussing the events that occurred during the time period of the framing of the Constitution. Complete the third row with various suggestions from the class. Conclude the activity with students selecting a suggestion for each freedom from the third row and including it on their study cards.

– Students will better understand the character traits of honesty, patriotism, courage, and trustworthiness by discussing events from the lives of key historic figures. Write each trait at the top of a sheet of chart paper. Students will decide upon a definition of each trait by proposing examples of actions that would demonstrate a particular quality. List these actions, and the class definition of each trait, on the appropriate chart. Assign groups one of the following figures: Christopher Columbus, Henry Hudson, George Washington, Benjamin Franklin, Thomas Jefferson, Benedict Arnold, Patrick Henry, John Adams, Harriet Tubman, Sojourner Truth, or Elizabeth Cady Stanton. Each group will research its figure, using grade-appropriate reading and informational materials, to find examples of actions demonstrating one or more of the positive character traits. As a class, groups will discuss the information they found. Conclude the activity with each student choosing a character trait and writing an essay discussing which historic figure best exemplified that trait.

– Students will gain a better understanding of the federal system of government in the United States by researching and discussing how the national and state governments work. Students will work in pairs with one student researching powers of the national government and the other student researching powers of state governments. As part of their research, pairs will also find shared powers. Once the students have completed their research, they will discuss the acquired information and fill in a two-circle Venn diagram like the one on the next page. The class will then share the information on their diagrams. Ensure that all pairs add to their diagrams examples of powers that their research did not provide. Each student will then find a current-events example of a power of his or her choice. The activity will conclude with the students creating a display of their examples of state powers, federal powers, and shared powers.



– Students will gain better understanding of the roles of government by developing definitions and researching examples of specific functions. Divide the class into four groups. Assign one of the following functions of the government to each group: making and enforcing laws, managing conflicts and protecting rights, limiting the power of people in authority, or fiscal responsibility of government. First guide a discussion of the meaning of each function. List each definition on separate poster paper. Groups will search various sources, such as newspapers, magazines, and grade-appropriate reading materials, research materials, and websites (.edu, .gov, or .org) for articles and examples of their assigned functions and write each example on paper. Collect all the papers and then randomly distribute one to each student. In turn, students will read the item they were given and explain which function they believe it addresses. A class discussion, especially eliciting responses from the group assigned the function, will determine if a student's answer is correct. Conclude the activity with a class display of all the examples found for each of the functions of government.

Activities

❹ Economics

Georgia Performance Standards SS4E1 and SS4E2

Throughout the Economics domain of Grade 4 Social Studies, students will focus on analyzing the effect of economics on historical events and explaining the importance of economics in students' lives. The Economics domain will emphasize the ability to apply economic principles such as opportunity cost, price incentives, voluntary exchange, and the benefits of specialization. Students will demonstrate an understanding of the importance of trade to the economy and of the key technological advances of the era. Students will also be able to identify and explain key elements of a personal budget.

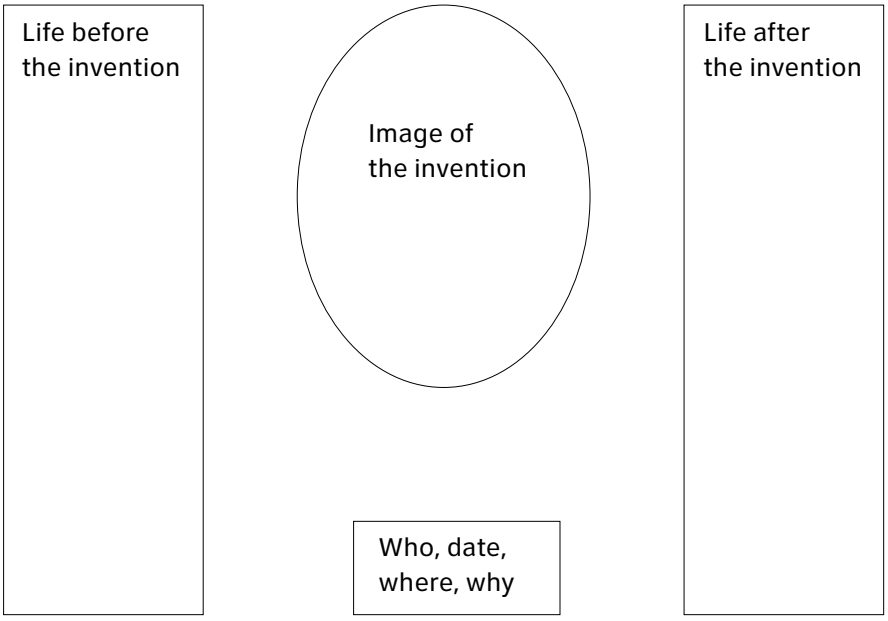
The following activities develop skills in this domain:

– To better understand specialization, voluntary exchange, trade, and effects upon the standard of living, students will participate in a role-playing exercise in which they will research the impact of geography and develop a specialized skill. Randomly assign each student a location in one of the three colonial regions. Each student will begin the activity by attempting to be a self-sufficient colonist. Students will research the geography of their areas in order to determine and list what products, crops, and necessities would be available there. Next, students will list items they might be able to sell or trade to other colonists. Then students will list things they need or want that are not available in their respective locations. Post all lists so that they can be examined by students during a class discussion. By region, students will share their three lists with the class. Discuss the availability and lack of certain items in particular regions and the resulting difficulties of being self-sufficient. Elicit from students suggestions for how unavailable items might be made available. These suggestions will include possible voluntary exchange and trade within and among regions. Discuss and explain the terms "specialization" and "standard of living." Students will conclude the activity with a short essay in which they each choose a colonial item that they will specialize in, explain their reasoning for choosing that item, and describe the effects upon their colonial standard of living through the exchange and trade of their item.

– Students will better understand how voluntary exchange benefits both buyers and sellers by participating in an open town-market simulation. Assign the students various roles: the roles of suppliers of raw materials (including farmers and hunters), craftspeople and manufacturers, and consumers in need of finished products. The suppliers will draw pictures of what they are going to provide (including wood, grain, fur, and food products). Craftspeople will create a "list of needed supplies" and draw pictures of what they are producing. Consumers will create a "family shopping list." Provide each person with an amount of colonial dollars. Explain that business can be conducted using money or that individuals can determine a fair trade for items. For example, a farmer brings his eggs to market, a baker needs eggs, and a family needs a loaf

of bread. How will each make exchanges? Open the town market for voluntary exchange. Allow enough time for individuals to make a number of purchases and/or exchanges. Conclude the activity with students describing their experiences in attempting to gain what they needed. Include in the discussion examples of individuals gaining payment that was not in the form of money.

- Students will analyze the ways that technological advances (steamboat, steam locomotives, telegraph) affected life in early America. Divide the class into three groups. Give each group one of the inventions listed above. Have the groups research the invention while answering these questions:
  - *What did the invention look like?*
  - *Who invented it (when, where, why)?*
  - *What was life like before this invention?*
  - *How did life change after this invention?*
- Groups will design and present a poster using the following format:



Lead a class discussion comparing and contrasting the inventions. Discuss the effects on life and conducting business during the development of the United States.

- Students will gain a better understanding of the elements of spending and saving by creating their own budget of time for the school day, minimizing time spent after school completing assignments. Make copies of the daily class schedule and distribute them to the students. As a class, identify times when there are no lessons or school activities scheduled. For example, students may wait to be dismissed at the end of the day. Discuss how this

time can be spent. Include in the discussion the use of this time to do a part of their homework or unfinished class assignments. For a week, each student will decide how to spend this unassigned time. At the end of the week, students will compare how they spent this time and discuss the implications. Analyze the elements of this personal time budget by discussing how spending the unassigned time doing some homework actually saved time after school for an activity other than homework. Include in the discussion the possibility of the unexpected and how this could affect a time budget. For example, students were expecting to use saved, unassigned time to complete an assignment, but the time was spent on an unexpected fire drill, or how time after school intended for homework was suddenly needed for an errand.

Practice Quiz

1 **Which Native American people settled in the Arctic?**

A Inuit
B Hopi
C Pawnee
D Seminole

2 **What did Native Americans teach early English settlers in Plymouth Colony?**

A how to use clay to make bowls
B how to grow new crops such as corn
C how to make homes from animal skins
D how to weave baskets from marsh grasses

3 **What did indentured servants agree to do in exchange for receiving a trip across the ocean to colonial America?**

A serve as soldiers
B bring their families
C help sail the ship that carried them
D spend several years working for no pay

4 **Which of these people played an important role in the American Revolution?**

A Patrick Henry
B Henry Hudson
C Harriet Tubman
D Sojourner Truth

5 **Which of these is the MAIN reason people moved to California in the late 1840s?**

A to find gold
B to claim land
C to start cattle ranches
D to seek religious freedom

6 **Which letter on the map shows the Gulf of Mexico?**

A A
B B
C C
D D

7 **Which of these was the GREATEST physical barrier for settlers heading to the West between 1801 and 1861?**

A the Great Plains
B the Great Salt Lake
C the Mississippi River
D the Rocky Mountains

8 **What must happen AFTER a bill is approved by Congress before it becomes a new law?**

A The Senate must veto the bill.
B The president must sign the bill.
C The governor must write a draft of the bill.
D The public must propose ideas for a new bill.

9 **Which people depend on freedom of expression to do their work?**

A store owners
B police officers
C cattle ranchers
D newspaper reporters

10 **Tina's friend invited her to a swim party on Saturday, but Tina's basketball team is playing in a championship game that same day. If Tina decides to play in the championship game, what is her opportunity cost?**

A a swim party
B a swimming suit
C a basketball game
D a first-place trophy

Solutions

Number	Correct Answer	Explanation
1	**A**	*Locate where Native Americans settled with emphasis on Arctic (Inuit), Northwest (Kwakiutl), Plateau (Nez Perce), Southwest (Hopi), Plains (Pawnee), and Southeastern (Seminole). (SS4H1a)* The correct answer is **Choice** (**A**) **Inuit.** The Inuit people settled and lived in the Arctic region. Choice (B) is incorrect because the Hopi lived in the Southwest. Choice (C) is incorrect because the Pawnee lived in the Plains region. Choice (D) is incorrect because the Seminole people lived in the Southeastern part of the present-day United States.
2	**B**	*Describe examples of cooperation and conflict between Europeans and Native Americans. (SS4H2b)* The correct answer is **Choice** (**B**) **how to grow new crops such as corn.** Squanto helped the Pilgrims learn to plant corn, catch fish, and gather fruit in order to survive in the early years. Choice (A) is incorrect because even though the New England area Native Americans did use clay for bowls and cooking pots, the Europeans already had these items. Choice (C) is incorrect because the Plymouth Colony was in a heavily forested area so the settlers built their homes from wood. The use of animal skins for homes was more common in the Plains. Choice (D) is incorrect because the Plymouth Colony was not near marsh lands.
3	**D**	*Describe colonial life in America as experienced by various people, including large landowners, farmers, artisans, women, indentured servants, slaves, and Native Americans. (SS4H3b)* The correct answer is **Choice** (**D**) **spend several years working for no pay.** People agreed to serve as indentured servants because they could not afford the cost of passage to the New World. Choice (B) is incorrect because the people who agreed to become indentured servants could not afford to pay for themselves alone. Choices (A) and (C) are incorrect because the people who agreed to become indentured servants were normally contracted to do household or field work in order to pay for the passage.

Number	Correct Answer	Explanation
4	**A**	*Describe key individuals in the American Revolution with emphasis on King George III, George Washington, Benjamin Franklin, Thomas Jefferson, Benedict Arnold, Patrick Henry, and John Adams. (SS4H4d)* The correct answer is **Choice** (**A**) **Patrick Henry.** Patrick Henry was one of the most influential advocates of the American Revolution. Choice (B) is incorrect because Henry Hudson was an explorer in the 17th century. Choice (C) is incorrect because Harriet Tubman gained fame as a "conductor" for the Underground Railroad in the 19th century. Choice (D) is incorrect because Sojourner Truth was an advocate for the abolition of slavery and for women's rights in the 19th century.
5	**A**	*Describe territorial expansion with emphasis on the Louisiana Purchase, the Lewis and Clark expedition, and the acquisitions of Texas (the Alamo and independence), Oregon (Oregon Trail), and California (Gold Rush and the development of mining towns). (SS4H6a)* The correct answer is **Choice** (**A**) **to find gold.** Following news of the discovery of gold in 1848, approximately 300,000 settlers came to California in search of gold. Choices (B), (C), and (D) are all incorrect because the primary reason people traveled across the country or around the tip of South America to get to California was to get rich by mining gold. They were able to farm the land, raise cattle, and practice religious freedom much closer to their homes in the east.
6	**C**	*Locate major physical features of the United States; include the Atlantic Coastal Plain, the Great Plains, the Continental Divide, the Great Basin, Death Valley, the Gulf of Mexico, the St. Lawrence River, and the Great Lakes. (SS4G1a)* The correct answer is **Choice** (**C**)**.** The letter C is located in the Gulf of Mexico on the map. Choice (A) is incorrect because it is located in the Pacific Ocean. Choice (B) is incorrect because it is located in Hudson Bay. Choice (D) is incorrect because it is located in the Atlantic Ocean.

Number	Correct Answer	Explanation
7	**D**	*Describe physical barriers that hindered and physical gateways that benefited territorial expansion from 1801 to 1861 (SS4H6a). (SS4G2e)* The correct answer is **Choice** (**D**) **the Rocky Mountains.** The Rocky Mountains were a physical barrier or hindrance to westward expansion of the United States. Choices (A) and (C) are incorrect because the Great Plains and the Mississippi River both served as gateways to the west. Choice (B) is incorrect because the settlers could travel westward without having to encounter the Great Salt Lake.
8	**B**	*Explain the process for making and enforcing laws. (SS4CG3a)* The correct answer is **Choice** (**B**) **The president must sign the bill.** If the president does not sign the bill, it must return to Congress and be passed by a two-thirds majority in both houses in order to become law. Choice (A) is incorrect because for the bill to become a law, the Senate must approve it with a majority vote. Choice (C) is incorrect because drafting a bill would occur at the beginning of the process, not at the end. A governor might write the draft for a new bill, but it would have to be introduced and passed by the legislature. Choice (D) is incorrect because the public would propose ideas for new bills to their legislators.
9	**D**	*The student will explain the importance of freedom of expression as guaranteed by the First Amendment to the U.S. Constitution. (SS4CG2)* The correct answer is **Choice** (**D**) **newspaper reporters.** Newspaper reporters depend upon freedom of speech to do their jobs. Choices (A), (B), and (C) are incorrect because while people in these occupations may enjoy freedom of speech at times, they do not depend upon this freedom to do their jobs effectively.

Number	Correct Answer	Explanation
10	**A**	*Describe opportunity costs and their relationship to decision-making across time (such as decisions to send expeditions to North and South America). (SS4E1a)* The correct answer is **Choice** (**A**) **a swim party.** The cost of choosing to play in the basketball game is the opportunity to attend the swim party. Choice (B) is incorrect because Tina won't need a swimming suit if she chooses to play basketball. Choice (C) is incorrect because she chose to play in the basketball game. Choice (D) is incorrect because a first-place trophy is the potential reward for playing in the basketball game. The trophy could be an opportunity cost if she had chosen to attend the swim party.