CRCT Study Guide

Reading
English/Language Arts
Mathematics

Grade 2

Georgia
Criterion-Referenced Competency Tests

Table of Contents

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.

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

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

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

Overview of the CRCT

What is the CRCT?

The CRCT is a series of state-mandated achievement tests for students in Grades 1 through 8. In Grades 1 and 2, the subject areas of reading, English/language arts, and mathematics are covered.

What does the CRCT measure?

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

The tests accomplish the following:

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

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

How are CRCT questions scored?

The CRCT currently uses only selected-response (multiple-choice) questions. In Grades 1 and 2, there are three choices for each question, labeled A, B, and C.

Students are not compared to each other. Each student is measured on his or her achievement in meeting the standards. Scores are reported according to three performance levels: Does Not Meet the Standard, Meets the Standard, and Exceeds the Standard. For more information, visit **www.gadoe.org/ci_testing.aspx?PageReq=CI_TESTING_CRCT** and click the link for "2008 CRCT Interpretive Guide."

Preparing for the CRCT

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

What steps were taken to ensure the age-appropriateness of the CRCT?

To ensure that test results from younger students are reliable and accurate, the state reviewed educational research and surveyed how other states tested students in the early grades. Key factors in age-appropriate testing include the number of answer choices, breaks during testing, and having sections of the test read aloud by teachers.

Preparing for the CRCT

Test-Taking Strategies

Weeks Before the Test	Tell students about the test they will be taking. Make sure students know what to expect on the day of the test.
	Give students a chance to practice filling in bubbles before the test day.
	Help students develop strategies for matching questions to the correct set of bubbles on the answer grid.
Day Before the Test	Remind students to get a good night's rest.
	Give students a chance to talk about how they are feeling about the test.
	Remind students that this test is only one way for them to show what they know.
During the Test	*Remind students of the following strategies to use during the test:*
	Relax by taking slow, deep breaths.
	Listen carefully to the teacher's instructions.
	Look at each question carefully.
	Look at each answer choice for a question, then choose the one you think is best.
	Fill in the whole circle next to your choice.
	Don't try to find a pattern in the circles you fill in. There isn't one!
	Leave a question blank if you are unsure of the answer, then go back to it at the end.
	Don't spend too much time on one question.

Only change an answer if you are sure you picked the wrong one before. Then erase the old answer completely.

Answer all of the questions, even if you aren't sure every answer is correct.

Related Links

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

Georgia Performance Standards:
www.georgiastandards.org/

CRCT Content Descriptions:
www.gadoe.org/ci_testing.aspx?PageReq=CI_TESTING_CRCT

GPS Frameworks:
www.georgiastandards.org/

Lexile Framework for Reading:
www.gadoe.org/lexile.aspx

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

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

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

Reading

Chapter 1

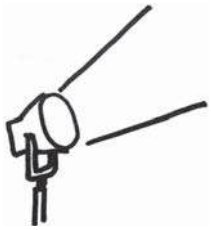
Reading

Students in Grade 2 begin a transition from learning to read to reading to learn. They begin to read more fluently. Having a firmer grasp on phonics, they begin more complex word studies. They read longer, more complex texts, including chapter books. They continue to read every day and have books read to them.

The Reading activities are focused on some of the concepts that are assessed on the Grade 2 CRCT Reading domains. The domains are as follows:

1. **Vocabulary**
2. **Comprehension**

Activities



❶ Vocabulary

Georgia Performance Standards ELA2R3 and ELA2R4

The Vocabulary domain addresses students' abilities to read, interpret, and acquire new vocabulary from a variety of texts. Grade 2 students will recognize grade-level words with multiple meanings and use context clues to define words above grade level. They will identify antonyms (opposites) and synonyms (words with similar meanings). They will also match homophones (words that sound alike, such as *to*, *too* and *two*) with their correct meanings and homographs (words with different meanings that are spelled alike, such as the noun *light* and the verb *light*) with their correct pronunciations and usage. In addition, Grade 2 students will use word parts, such as suffixes and inflectional endings, to uncover the meanings and functions of words.

The following activities develop skills in this domain:

– To build students' abilities to use context clues and apply the appropriate usage of homographs (different words with the same spelling), play *Guess My Word*. Begin by writing a list of homographs on the board (see table below). Say a meaningful sentence that uses one of the homographs in context. However, instead of pronouncing the homograph, clap so that students know that a word is missing. Then students will guess the word that was left out. For example, *Last week I [clap] a rainbow*. Once students correctly identify the missing word—in this case, *saw*, the past tense of the verb *to see*—they should explain how they arrived at their answer. Ask helpful, guiding questions, such as, *What clues in the sentence helped you find the missing word?* Also, discuss which homographs have different pronunciations and which sound exactly the same. After some practice, students should create their own context-filled sentences and challenge others to fill in the blanks.

Homographs

Address Mail it to my new *address*. She will *address* the crowd.	**Moped** He rode his *moped* to work. He *moped* around the house.	**Ruler** Use the *ruler* to measure. They will elect a *ruler*.
Ball Have fun at the *ball*. Throw the *ball*.	**Nail** Hammer the *nail*. I clipped my *nail* too short.	**Saw** The *saw* is sharp. I *saw* my friend on the bus.
Duck The *duck* quacked. *Duck* under the rope.	**Object** A block is an *object*. I *object* to your behavior.	**Tear** Don't *tear* that piece of paper. A *tear* fell from her eye.

Light	**Play**	**Wind**
Turn out the *light*. He can carry the *light* bag.	Let's *play* volleyball. Yesterday I saw a *play*.	Fly the kite in the *wind*. *Wind* the clock.

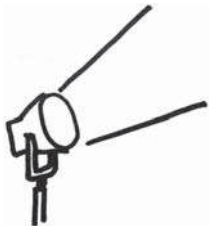
To highlight the different meanings of commonly confused words, create homophone posters. Provide students with a list of common homophone pairs (see table below). Discuss the different meanings of the words in each pair. Then give students paper to fold in half. Students should choose a homophone pair and write one of the words at the top left and one of the words at the top right of their papers. Students should illustrate the homophones' different meanings in the spaces below each word. Drawings of the homophone pair *be/bee*, for example, may include a picture of what someone is going to be when they grow up, and an illustration of a bee on a flower. When students are finished drawing, they should write sentences that refer to their pictures. Sentences for the examples described above might be: *Emma is going to be a doctor*, and *A bee landed on a flower*. Hang the posters up as visual reminders of the different meanings of words that sound the same.

ant/aunt	hi/high	soared/sword
ate/eight	hole/whole	some/sum
be/bee	I/eye	son/sun
bear/bare	mail/male	stare/stair
blue/blew	meet/meat	tail/tale
cent/sent/scent	night/knight	there/they're/their
clothes/close	no/know	threw/through
deer/dear	not/knot	tide/tied
dew/do/due	one/won	to/too/two
flea/flee	pale/pail	tow/toe
flour/flower	pear/pair	waist/waste
four/for	plain/plane	we'll/wheel
groan/grown	principle/principal	week/weak
hair/hare	right/write	where/wear
hear/here	sail/sale	which/witch
heard/herd	sea/see	your/you're

– To increase students' abilities to use word parts to determine meaning, introduce a new suffix (e.g., *-er, -est, -y*) or a new inflectional ending (e.g., *-s, -es, -ing, -ed*) each week. First, show an example of a word with the suffix or inflectional ending, use it in a sentence, and explain what the word means.

For example, in the sentence, *Joan was the happiest girl at her birthday party*, *happiest* means "the most happy." Then, present other words with the same suffix or inflectional ending. Continuing with the example above, additional words could include *biggest*, *brightest*, *funniest*, etc. Students should guess what these other words mean based on their understanding of the suffix or inflectional ending attached. Explain irregular spelling patterns as they arise (e.g., doubling the final consonant in words such as *run* or *stop* before adding *-ing*, changing the *y* to an *i* in words such as *cry* before adding *-ed* or in words such as *funny* before adding *-est*). Students should look for more words with the featured suffix or inflectional ending as they read throughout the week. Individually or as a class, students should also keep lists of these words and endings.

Activities



❷ Comprehension

Georgia Performance Standard ELA2R4

Within the Comprehension domain, students apply vocabulary skills and learn a variety of strategies to read, recall, comprehend, and explore various types of text, including narratives, stories, poems, and fables. Students in Grade 2 will recognize the basic elements of a variety of genres (e.g., poetry, fables, folktales). They will recognize plot, setting, and character within a text, and compare and contrast these elements among texts. They will summarize and make predictions from text content. They will distinguish between fantasy and reality, and they will identify and infer cause-and-effect relationships. Grade 2 students will also learn to gather and interpret material from a wide range of informational texts. They will recall explicit facts, infer implicit facts, and interpret information from illustrations, diagrams, charts, graphs, and graphic organizers. Students in Grade 2 will identify and infer the main idea and supporting details of an informational text and determine the author's purpose.

The following activities develop skills in this domain:

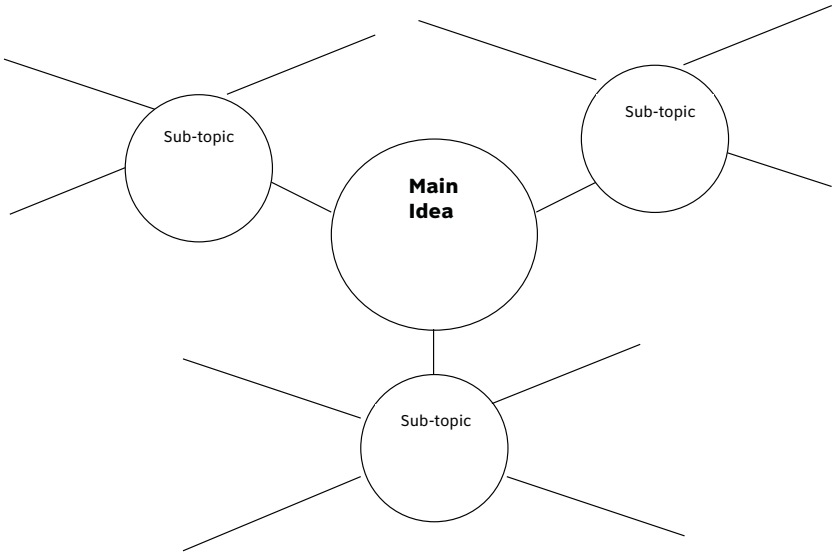
- Help students make predictions by reading narratives, stories, or fables, and stopping at various points in the text. Students should draw or act out what they think is going to happen next. Ask questions such as, *What do you think [character] is going to do next? What in the story makes you think that?* Students should share their predictions and explain their reasoning. Once all the predictions have been shared, students should evaluate which of their predictions are most likely to occur.

- To increase students' ability to summarize what they have read, provide daily practice in retelling the main events of a text before challenging students to summarize the text as a whole. When reading a long story or a chapter book over a few days, start each reading session by asking students to recall what was read the day before. Use prompts such as, *In your own words, tell me what happened in the story*. Model the strategies of looking back at pictures or skimming text to help remind students about events in the story. To help students focus on the central events of the text, ask them guiding questions such as, *What was the most important event that happened in the story yesterday?* Then, at the end of the text, challenge students to write a short paragraph that summarizes the entire text. Without mentioning names, read some of the students' best summaries and discuss why they are good examples of summaries.

- To build students' abilities to distinguish the genres of nonfiction and fantasy, read a nonfictional and a fictional text about the same topic. (Useful texts include informational articles about animals and folktales about those animals.) Before the lesson, select ten sentences from one text and write them on sentence strips of the same color. Then, select ten sentences from

the other text and write them on sentence strips of a different color. Next, prepare a large chart that is divided into two columns: *Facts/Events that could really happen* and *Fantasy/Events that could not really happen*. During the lesson, pass the sentence strips out to students who should decide on which side of the chart to place their sentences. Once all of the sentences are posted, students should discuss the differences between the texts. Make sure that students see that fictional texts may contain some facts.

– To help students identify the main idea and supporting details of nonfiction texts, select an informational article or small section of a textbook. Read the text with the students and, together, construct a concept web (see diagram below). First, draw a circle in the center of a large sheet of paper and title the circle Main Idea. (For a book about zoo animals, the main idea could be the *types of animals at the zoo*.) Discuss the main idea of the text and write it in the center circle. Next, draw three or four lines leading out from the center circle. At the end of the lines, draw smaller circles and label each of those circles Sub-topic. List any sub-topics in the sub-topic circles. (In a zoo animal book, possible sub-topics could include *mammals at the zoo, reptiles at the zoo*, etc.) Finally, draw lines extending out from the subtopic circles, or cut strips of paper that may be attached with tape to the smaller circles. Review the text and find the supporting details for each sub-topic. Write these supporting details on the new blank lines or on the paper strips, which



should then be attached to the sub-topic circles. (A supporting detail for the example above might be, *Monkeys are mammals that can be found at the zoo*.)

Practice Quiz

Read the following passage and answer the questions below.

On Your Feet

Look at your feet. What do you see? Do you have something on your feet? You probably do. You probably have shoes on your feet. People wear shoes to protect their feet. People have worn shoes for a long time. There are many kinds of shoes.

Long ago, people wore shoes because the ground could hurt their feet. The ground could have sharp rocks on it. The rocks could cut people's feet. The ground could also be very hot. The heat could burn people's feet. People wore shoes so their feet would not get cut or burned.

The first kinds of shoes were sandals. Sandals have straps that go over the feet. Sandals are made in different styles. Some are made from leather, and others are made from plant parts. People often wear sandals in hot places.

In cold places, people wear different shoes. They wear shoes made of leather. These shoes do not have straps. They need to cover the whole foot. They also come in different colors and sizes.

People still wear shoes to protect their feet. But they also want shoes to look nice. Some people still wear sandals. Others still wear shoes made from leather. Now people also wear shoes with high heels or shoes for playing sports. Some museums even show what shoes from different times look like. As long as people walk, they will need shoes for their feet.

1 **What does the word <u>sharp</u> mean in the sentence?**

> The ground could have <u>sharp</u> rocks.

A quick
B clever
C cutting

2 **Which word sounds the same as <u>wear</u>?**

A were
B worn
C where

3 **What is the meaning of <u>protect</u> as it is used in the sentence?**

> People wear shoes to <u>protect</u> their feet.

A hide
B guard
C measure

4 **Why would someone MOST LIKELY wear shoes during the summer?**

A The ground could be hot.
B Leather helps keep feet warm.
C Special shoes are needed for sports.

5 **What kinds of shoes do people wear in cold places?**

A shoes with straps
B shoes with high heels
C shoes that cover the whole foot

6 **Why did people start wearing shoes?**

A to make their feet look pretty
B to be able to play sports better
C to keep their feet from getting hurt

7 **What is the story MOSTLY about?**

A why people wear shoes
B how people make shoes
C where people buy shoes

8 **Which sentence tells an important reason for wearing shoes?**

A People have worn shoes for a long time.
B People wear shoes so their feet will not get cut or burned.
C Some people still wear sandals.

9 **Why do museums MOST LIKELY show different kinds of shoes?**

A to show how shoes have changed over time
B to help people decide what kind of shoes to buy
C to tell people why it is important to protect their feet

10 **Why did the author MOST LIKELY write the story?**

A to explain why people wear shoes
B to describe different types of shoes
C to teach people how to make shoes

Solutions

Number	Correct Answer	Explanation
1	**C**	*Recognizes grade appropriate words with multiple meanings. (ELA2R3b)* The correct answer is **Choice** (**C**) **cutting.** In the sentence "The ground could have sharp rocks," *sharp* means *cutting* because it is used to describe rocks. According to the passage, "Rocks could cut people's feet." In this context, *sharp* cannot mean *quick*, as in Choice (A), and it cannot mean *clever*, as in Choice (B), because rocks cannot be *quick* or *clever*.
2	**C**	*Recognizes and applies the appropriate usage of homophones, homographs, antonyms, and synonyms. (ELA2R3c)* The correct answer is **Choice** (**C**) **where.** *Where* sounds the same as *wear*. Choice (A) is not correct because although *were* looks as if it would sound the same as *wear*, it is not pronounced the same as *wear*. Choice (B) is not correct because, although *worn* has a similar meaning to *wear*, it does not sound the same as *wear*.
3	**B**	*Determines the meaning of unknown words on the basis of context. (ELA2R3d)* The correct answer is **Choice** (**B**) **guard.** In the sentence, "People wear shoes to protect their feet," the word *protect* means *guard*. Support for this definition is found in the last sentence of the second paragraph of the passage, "People wore shoes so their feet would not get cut or burned." Choice (A) is incorrect because, although shoes do hide feet, that is not their purpose according to the passage. Choice (C) is incorrect because although feet are measured when people buy shoes, people do not wear shoes to measure their feet.

Number	Correct Answer	Explanation
4	**A**	*Makes predictions from text content. (ELA2R4b)* The correct answer is **Choice** (**A**) **The ground could be hot.** According to the passage, people long ago wore shoes because the ground could be "very hot." It makes sense to wear shoes in the summer because the ground could be hot. Choice (B) is not correct. People do not wear shoes in the summer because the leather helps keep feet warm. People would want shoes that keep their feet cool in the summer. Choice (C) is also incorrect. Although special shoes are needed for sports and many sports are played in the summer, it is not the MOST LIKELY reason someone would wear shoes in the summer.
5	**C**	*Recalls explicit facts and infers implicit facts. (ELA2R4d)* The correct answer is **Choice** (**C**) **shoes that cover the whole foot.** According to the passage, the shoes people wear in cold places "need to cover the whole foot." Choice (A) is not correct because the passage states that shoes people wear in cold places "do not have straps." Choice (B) is also not correct. Although people may wear high heels in cold weather, the passage does not mention high heels when describing shoes for cold weather places.
6	**C**	*Recalls explicit facts and infers implicit facts. (ELA2R4d)* The correct answer is **Choice** (**C**) **to keep their feet from getting hurt.** According to the passage, "Long ago, people wore shoes because the ground could hurt their feet." Choice (A) is incorrect. Although the passage states that people today wear shoes to "look nice," it neither states nor implies that people started wearing shoes "to make their feet look pretty." Choice (B) is also incorrect. Although the passage states that people today wear shoes for "playing sports," it neither states nor implies that people started wearing shoes "to be able to play sports better."

Number	Correct Answer	Explanation
7	**A**	*Summarizes text content. (ELA2R4e)* The correct answer is **Choice** (**A**) **why people wear shoes.** Choice (B) is not correct because, although the story mentions what some shoes are made of, it is not about how people make shoes. Choice (C) is not correct because the story is not about where people buy shoes; in fact, where people buy shoes is never mentioned in the text.
8	**B**	*Identifies and infers main idea and supporting details. (ELA2R4i)* The correct answer is **Choice** (**B**) **People wear shoes so their feet will not get cut or burned.** Although both Choice (A) *People have worn shoes for a long time* and Choice (C) *Some people still wear sandals* are stated in the passage, only Choice (B), which includes the cue word *so*, tells a *reason* for wearing shoes.
9	**A**	*Identifies and infers cause-and-effect relationships. (ELA2R4k)* The correct answer is **Choice** (**A**) **to show how shoes have changed over time.** According to the story, "Some museums even show what shoes from different times look like." Choice (B) is incorrect because the story neither states nor implies that museums show shoes to help people decide what kind of shoes to buy. Choice (C) is also incorrect. The story neither states nor implies that museums show shoes to tell people why it is important to protect their feet. Museums are only mentioned with respect to shoes from different times.
10	**A**	*Recognizes the author's purpose. (ELA2R4o)* The correct answer is **Choice** (**A**) **to explain why people wear shoes.** Choice (B) is incorrect because although the story describes different types of shoes, this is not the central purpose of the text. In addition, the story does not describe *all* types of shoes. Choice (C) is incorrect because the story does not teach people how to make shoes.

English/Language Arts

Chapter 2

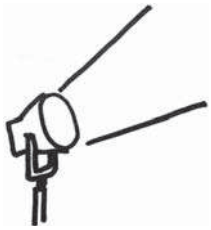
English/Language Arts

In Grade 2, students will build upon the skills learned in Grade 1 and broaden their knowledge in English/Language Arts. Students do more independent writing in Grade 2, and they become more conscientious about editing and revising their work. They begin to use more symbolic language to discuss concepts (i.e., courage, freedom, time, seasons) in their writing. Conventions become a part of the everyday writing experience. Students learn important parts of speech (nouns, verbs, and pronouns) and how to manipulate language to suit their contexts. They expand sentences, and they learn new sentence structures and the punctuation that occurs with them. Written and spoken language becomes much more complex. Students engage in a variety of language and literary activities as they gain independence and mastery of reading, writing, speaking, and listening. They should also expand their research skills by using different sources to gather information.

The English/Language Arts activities focus on some of the concepts that are assessed on the Grade 2 CRCT English/Language Arts domains. The domains are as follows:

1. **Grammar/Phonics**
2. **Sentence Construction**
3. **Research**

Activities



❶ Grammar/Phonics

Georgia Performance Standard ELA2W1

Within the Grammar/Phonics domain, students learn to identify and work with words to form increasingly complex sentences. They begin to understand and apply the conventions of standard English. Students should also correctly use nouns and singular possessive pronouns (*his* and *her*), as well as singular and plural personal pronouns (*he*, *she*, *we*). Some of the key skills in this area include using parts of speech correctly, spelling grade-level words in the context of a sentence, using correct ending punctuation, using correct formatting conventions, following capitalization rules, and using commas, periods, and quotation marks.

The following activities develop skills in this domain:

– Help students practice using quotation marks with the following activity. Copy dialogue from texts onto the board and remove all of the quotation marks. Ideal texts include classroom read-aloud stories and grade-level reading texts. Invite students to put quotation marks into the text using a color that stands out. Provide as much help as necessary while students complete the task. Talk about where students put the quotation marks to encourage them to think through their reasoning. When the activity is complete, refer back to the actual reading passage to see if students placed all the quotation marks correctly. Repeat the activity with new dialogue passages.

– Develop students' grammar and punctuation skills by engaging them in editing tasks. First, find an appropriate, one-page, reading passage and recreate it for students with several capitalization, grammatical, or punctuations errors. Independently or in pairs, students should edit and revise the paragraphs by rewriting them correctly. After students routinely correct one type of writing error, they should edit passages having another type of writing error. Eventually, present students with passages that combine several types of errors. This activity will build proper writing skills and confidence. Appropriate passages appear in grade-level reading material available in print and on the Internet. See the following example:

  Original: My sister is lucky. She is three years older than I am. She goes to bed at nine o'clock.

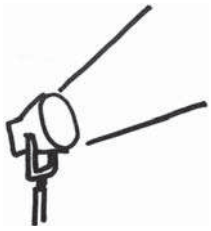
  Errors added: *my sister is lucky She is three years older than me is. She goes to bed at nine o'clock*

– Help students practice their spelling skills with the following *Spelling Treasure Hunt* activity. Cut paper into large strips, and write one word on each strip. Then place the strips in a large pile. (The words should be weekly spelling words or words found in students' favorite books.) On every third strip,

include a misspelled word. Students should find the misspelled words in the word pile and rewrite the words correctly. If more than one student is playing, students should place their initials on each word strip they correct. Provide five minutes for the students to finish the treasure hunt. At the end of five minutes, review the corrected words and give a point for each accurate correction. Spend some time talking about the words and their corrections. If students missed some of the spelling errors, find the errors and model fixing them. Be sure to describe the spelling mistake and explain why the correct spelling is correct. For example, change *feild* to *field* by saying, *We know that **i** comes before **e**, except after **c***. Similarly, change *tryed* to *tried* by saying, *If the word ends in a consonant plus the letter **y**, change the **y** to **i** and add –**ed***. Also, change *giveing* to *giving* by saying, *If the word ends in a silent **e**, drop the **e** before adding –**ing***.

– Help students use personal pronouns and different parts of speech in their correspondence with pen pals. For this activity, pair students with students from another class or school. (Long distance and international pen pals may prove to be particularly exciting and interesting.) Once students have pen pals, model how to write letters, address envelopes, and replace nouns with pronouns. This activity will give students practice writing for a purpose, using correct grammar and spelling, using letter-formatting conventions, and addressing envelopes.

Activities



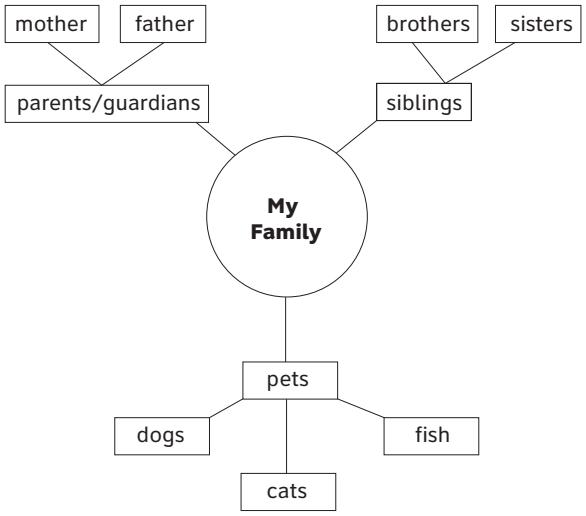
❷ Sentence Construction

Georgia Performance Standard ELA2W1

Within the Sentence Construction domain, students learn to demonstrate competency in the writing process by using strategies such as pre-writing and planning to produce a rough draft. They learn to distinguish between complete and incomplete sentences, apply knowledge of transition words (e.g., first, next), correctly use subjects and verbs (subject-verb agreement), and classify sentences with two subjects and/or two verbs. They also learn how to combine two simple sentences into one concise sentence. Finally, students organize their writing with traditional organizational patterns (e.g., chronological order).

The following activities develop skills in this domain:

– Pre-writing and creating rough drafts are important writing steps that help students produce quality pieces of writing. For this activity, students should choose a topic related to material they are studying in school. Brainstorm (or, come up with) a collection of ideas that relate to the topic and place them in a word cluster like the example below. During brainstorming, accept all answers and suggestions that students provide. Make revisions as needed after students have had a chance to make their suggestions. Note that the cluster you create may be bigger or smaller than the example below.



When the word cluster is complete, talk with students about using it to help them organize their rough drafts.

– To develop an understanding of the parts of speech within a sentence, students will color-code words in sentence-strips. In advance, write sentences (that may be copied from a book or text) on strips of paper, and provide two markers or colored pencils. Model for students how to underline subjects

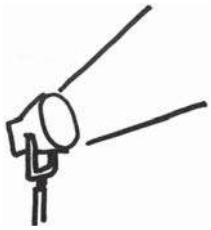
(nouns) in one color and predicates (verbs) in the second color. Talk about how each sentence must have a subject and a predicate. Explain that some sentences have two subjects and two predicates. Students will then identify the subjects and predicates of various sentences. Next, students will rewrite the sentences using different words or orders of words. In the rewritten sentences, students need to include the original subjects and predicates. For example, the sentence *Sheila and her brother decided they didn't want dessert because they were too full* can be correctly rewritten as, *Because they were too full, Sheila and her brother decided they didn't want dessert*.

– To help students understand transition words, students will practice writing directions for completing a task. First, model an activity and brainstorm common transition words with students, such as *first*, *then*, *next*, and *also*. Ask students to choose a recipe, a familiar activity, such as brushing their teeth, or a game they like to play. Finally, using appropriate transition words, students will practice stating and writing the steps needed to complete their chosen task or game.

– Help students consistently produce complete sentences by playing *Complete-Sentence Hunt*. Give students a modified one-page short story in which some of the sentences have been changed into incomplete sentences. On the board, create two columns, as shown below. Working together, students will classify the sentences in the story by writing them under the correct headings. When this part of the game is complete, students will rewrite the sentences listed in the Incomplete Sentences category. They will add subjects or predicates to make the sentences complete. For example:

Incomplete Sentences	Complete Sentences
Waited all day to see her family.	*Julia waited all day to see her family.*
For lunch, Henry.	*For lunch, Henry ate two slices of pizza.*

Activities



❸ Research

Georgia Performance Standard ELA2W1

Within the Research domain, students are introduced to a variety of resources such as encyclopedias, books, the Internet, dictionaries, and thesauruses. They learn to use tables of contents, glossaries, indexes, and search engines to locate information that interests them.

The following activities develop skills in this domain:

– To help students become comfortable with a thesaurus, use the following activity. Model looking up two or three words. Write their synonyms (words with the same or similar meaning) and antonyms (words with opposite or nearly opposite meaning) on the board or chart paper. Show students that, like a dictionary, a thesaurus has guidewords at the top of the pages. The words people look up fall alphabetically between the two guidewords. Spend a few minutes discussing why writers use thesauruses—to express ideas using different words. Students will complete a table, like the following, with words of their choice:

Word	Synonym	Antonym
happy	joyful	unhappy
maybe	perhaps	definitely

– Help students learn the purpose of different resources by playing a resource-identification game. Present research questions to teams of students or to an individual student. Students should decide which resources or Internet sites would best answer each question. To earn a point, students need to correctly explain the reasons for their choices. Specific types of references could include encyclopedias, the Internet, other reference books, tables of contents, glossaries, and dictionaries. Possible questions include, *What is the capital of Canada? What is the meaning of the word* ***alert****? How many people live in Georgia? On which page (of a story) does the last chapter begin? What is the weather forecast for the next five days?*

– To help students understand how to use a table of contents, model using one in a reference book. (A helpful text for this purpose would be a biography written at the Grade 2 reading level.) Then students should discuss how they might use a table of contents themselves. Ask, *If you were going to read a book about bears, what would you want to see in the table of contents? How does a table of contents help if you are in a rush?* Finally, present an actual table of contents to students and ask them specific questions about

the information in the table. For example, ask, *On what page can you find information about _____? How many chapters does the book have? How long is Chapter 3?*

Practice Quiz

1 **What is the correct spelling of the word that completes the sentence?**

The funny clown made me _____.

A smile
B smiel
C smil

2 **Which word in the sentence needs a capital letter?**

Can you go to the farm on monday?

A you
B farm
C monday

3 **Which sentence uses commas correctly?**

A Do you like circles, squares, or triangles?
B Do you like circles, squares or, triangles?
C Do you like circles squares, or triangles?

4 **Which sentence uses quotation marks correctly?**

A "I can't wait until recess, the girl shouted."
B "Lee told her friend," I made you a brownie.
C Jim told his teacher, "I saw a jellyfish on the beach."

5 **Which word in the sentence refers to both Susan and Kim?**

When Susan and Kim went to the library together, they found a great book.

A and
B went
C they

6 **What is the noun in the sentence?**

The flower is yellow.

A The
B flower
C yellow

7 **Which sentence uses a transition word?**

A Next, we will clean up the yard.
B Monday, March 3, is my snack day.
C Our class will visit a museum in Atlanta, Georgia.

8 **Which is the BEST way to make the two sentences into one sentence?**

> We always put onions in our stew. We always put carrots in our stew.

A We always put onions in our stew and carrots in our stew.
B We always put onions in our stew and also carrots.
C We always put onions and carrots in our stew.

9 *Use the information in the box to answer the question***.**

> **squash:**
> **1**. A vegetable.
> **2**. To make something flat.
> **3**. A game played with a small ball and paddles.

Which definition of *squash* is used in the sentence?

> Walter loves to put squash in his salad.

A definition 1
B definition 2
C definition 3

10 **In which chapter would Marla MOST LIKELY find information about feeding her pet?**

> **Table of Contents**
> Chapter 1: Kinds of Pets..... page 2
> Chapter 2: Taking Care of Your Pet..... page 8
> Chapter 3: Naming Your Pet.....page 12
> Chapter 4: Training Your Pet.....page 15

A Chapter 1
B Chapter 2
C Chapter 4

Solutions

Number	Correct Answer	Explanation
1	**A**	*Use common rules of spelling. (ELA2W1q)* The correct answer is **Choice** (**A**) **smile.** The word *smile* has a long *i* and a silent *e*. Choice (B) is incorrect because the *l* and *e* are reversed. *Smiel* is not a word. Choice (C) is incorrect because it has no *e* on the end of the word to make the *i* long. *Smil* is not a word.
2	**C**	*Use appropriate capitalization and punctuation marks (periods, question and exclamation marks) at the end of sentences (declarative, interrogative, exclamatory, simple, and compound). (ELA2W1r)* The correct answer is **Choice** (**C**) **monday.** *Monday* is a proper noun. Choice (A) *you* and Choice (B) *farm* are incorrect because neither is a proper noun nor the first word in the sentence.
3	**A**	*Begin to use commas (e.g., in a series, in dates, after a friendly letter greeting, in a friendly letter closure, and between city and state names) and periods after grade-appropriate abbreviations. (ELA2W1s)* The correct answer is **Choice** (**A**) **Do you like circles, squares, or triangles?** This choice correctly uses commas to separate three or more items in a series. Choice (B) is incorrect because it places a comma after *or* instead of after *squares*. Choice (C) is incorrect because the comma is missing between *circles* and *squares* in the series.
4	**C**	*Recognize appropriate use of quotation marks. (ELA2W1u)* The correct answer is **Choice** (**C**) **Jim told his teacher, "I saw a jellyfish on the beach."** This choice correctly places the quotation marks around what Jim said. Quotation marks are placed around the parts of a sentence that are someone's spoken words. Choices (A) and (B) are incorrect because they do not place quotation marks around the parts of the sentence that are someone's spoken words.

Number	Correct Answer	Explanation
5	**C**	*Use singular and plural personal pronouns. (ELA2W1o)* The correct answer is **Choice** (**C**) **they.** The names in the subject, "Susan and Kim", are nouns. The plural pronoun *they* can replace these nouns. Choice (A) is incorrect because the word *and* is a conjunction; it cannot stand in for the nouns. Choice (B) is incorrect because *went* is a verb. It also cannot stand in for the nouns.
6	**B**	*Use nouns (singular, plural, and possessive) correctly. (ELA2W1m)* The correct answer is **Choice** (**B**) **flower.** Nouns name people, places, animals, things, or ideas. *Flower* names a thing and is the noun in the sentence. Choice (A) is incorrect because *The* does not represent a person, place, thing, animal, or idea. It is an article. Choice (C) is incorrect because *yellow* describes a noun (the flower), which means it is an adjective.
7	**A**	*Use transition words and phrases. (ELA2W1c)* The correct answer is **Choice** (**A**) **Next, we will clean up the yard.** Transition words are words such as *first*, *second*, *next*, *finally*, or *last*, that describe the order in which something is done. Choices (B) and (C) are incorrect because neither sentence includes a word that describes the order in which something is done.
8	**C**	*Use increasingly complex sentence structure. (ELA2W1p)* The correct answer is **Choice** (**C**) **We always put onions and carrots in our stew.** This choice is best because it combines the two sentences without using extra words. Choices (A) and (B) are incorrect because they do not combine the two sentences in the most clear and concise manner. Both have unnecessary words (*also* and *stew*).

Number	Correct Answer	Explanation
9	**A**	*Use the dictionary and thesaurus to support word choices. (ELA2W1v)* The correct answer is **Choice** (**A**) **definition 1.** The sentence states, "Walter is putting squash in his salad." *Squash* in this sentence is referring to the vegetable. Choice (B) is incorrect because *squash* is not a verb in the sentence. Choice (C) is incorrect because one cannot put a game in a salad.
10	**B**	*Use a variety of resources (encyclopedia, Internet, books) to research and share information on a topic. (ELA2W1t)* The correct answer is **Choice** (**B**) **Chapter 2: Taking Care of Your Pet.** Marla wants to find information on feeding her pet. She would most likely find this information in Chapter 2, as care of a pet would include feeding it. Choice (A) is incorrect because a chapter on "Kinds of Pets" would probably not include information on feeding a pet. Choice (C) is also incorrect because a chapter on "Training Your Pet" would probably not include information on feeding a pet.

Mathematics

Chapter 3

Mathematics

By the end of Grade 2, students will understand place value and number relationships both in addition and subtraction, and they will use simple concepts of multiplication. They will measure length with appropriate units and determine perimeter. Students will classify shapes and see relationships among them by recognizing their geometric attributes. They will know the relationships of time and count back change in coins and bills. Students will collect, analyze, and interpret data using bar graphs and Venn diagrams.

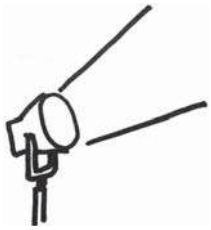
The Mathematics activities focus on some of the concepts that are assessed on the Grade 2 CRCT Mathematics domains. The domains are as follows:

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

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

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

Activities



❶ Number and Operations

Georgia Performance Standards M2N1, M2N2, M2N3, M2N4, and M2N5

Within the Number and Operations domain, students continue to develop their understanding of numbers and operations. Students will connect place value to money value, count back change from a given amount of money, use dollar and cent symbols and decimal notation appropriately. They will write numbers in expanded and standard forms using words and numerals. Students will deepen their understanding of addition and subtraction by adding and subtracting two whole numbers up to three digits each (with regrouping), using inverse operations to solve problems, and using properties of addition (commutative, associative, and identity) and mental math strategies to simplify and solve problems. Multiplication is understood as repeated addition. Students will construct and use a multiplication table, repeated addition, arrays, and skip-counting to multiply one-digit numbers. They will use repeated subtraction, equal sharing, and forming equal groups for division. Fractional parts of a whole will be recognized, represented, and compared using objects, pictures, and written fractions that show the numerator over the denominator. Students will represent and interpret quantities and relationships using mathematical expressions including equality and inequality symbols (=, >, <).

The following activities develop skills in this domain:

- Give students concrete experience with place value and with representing numbers in different ways by cutting up a sheet of notebook paper into 30 small pieces. Write one digit (0 through 9) on each piece of paper to create an equal number of pieces for each digit. Fold the pieces of paper and place them in a container. Have students randomly pick 4 digits from the container. For example, a student might choose 4, 2, 8, and 1. Students should first arrange all four digits to create the largest value possible (e.g., 8,421). Ask students, *How do you know this is the largest value possible? Explain your thinking. What is another way to represent this number?* Students will represent the number in expanded notation (e.g., 8,000 + 400 + 20 + 1). Next, they should arrange the digits to create the smallest value possible (e.g., 1,248). Ask students the same questions. After arranging the digits again, students will identify which digit is in each place value: ones, tens, hundreds, and thousands.

- Students will improve the ability to exchange money by shopping. Choose several small inexpensive items from around the room and place price tags on them. Students should record prices for items they wish to add to their shopping lists. They should use coins or representations of coins to show the cost of each item. Students will add these costs together and find a total cost using a decimal and a dollar sign (e.g., $4.68). After students calculate their

totals, they should round up to the next whole dollar and determine the amount of change they would receive if they gave that amount to the cashier. Students can also practice when saving for small purchases at home by making three columns on a piece of paper to keep track of the amounts. The columns could be labeled as follows: Column 1: *How much does it cost?* Column 2: *How much do I have?* Column 3: *How much more do I need?*

– Using counters with an array will help students develop an understanding of the connection between repeated addition and multiplication. An array is a rectangular grid divided into equal sections. Counters are used to cover up the sections of the array. Counters can be anything small like dried beans or pennies that will fit in each section of the array. (They can also be rectangular pieces of paper cut to match the size of the sections in the array.) Students will learn about arrays by creating them to match different numbers of counters. Give students 12 counters, a piece of paper, and a ruler. Then ask students to arrange their counters into 4 equal columns (on a piece of paper). Then they should draw horizontal and vertical lines to create a grid pattern around the counters (for the purpose of creating an array). An alternative could be to ask the students to draw 4 equal vertical columns on a sheet of paper that will match the number of counters they were given. Students should figure out that they need an array with 4 columns and 3 rows for a total of 12 equal sections. Then they should place the counters on the array. See the example below. Students should also figure out an alternate way to find the total. For instance, instead of counting one at a time, they could count the top row of 4, add the middle row of 4, and add the bottom row of 4. The total is still 12 (4 + 4 + 4 = 12). Students should also explore counting by using other operations (e.g., adding the number 4 three times is the same as multiplying 4 x 3 to get 12). Students should write down the addition and related multiplication sentences. Ask students if they can explain how three sets of 4 and four sets of 3 are different yet share the same total. Repeat the activity with different arrays and numbers of counters.

Array with 12 Counters

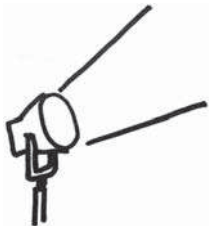
✪	✪	✪	✪
✪	✪	✪	✪
✪	✪	✪	✪

– Part-whole relationships in various fractions may be shown by using concrete manipulatives that can be moved or arranged by hand. Students may use fraction strips (see example below) for a hands-on connection to the concept of fractions. Using the sample below as a model, help students make two sets of fraction strips. Keep one set whole, and help students cut the other set into pieces along the lines. Students should start with the pieces, laying them on top of one another, and noting any relationships they find. For example, two $\frac{1}{6}$ strips will fit on one $\frac{1}{3}$ strip. Students can also rearrange the pieces to discover that two $\frac{1}{4}$ strips and one $\frac{1}{2}$ strip fit on the whole piece ($\frac{1}{1}$). Point out the relationships among the $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ pieces, and the relationships between the $\frac{1}{3}$ and $\frac{1}{6}$ pieces. Ask students why they think those sets work together to build a whole, while sets of $\frac{1}{3}$ and $\frac{1}{8}$ will not work together.

Fraction Strips

$\frac{1}{1}$							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$	
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{6}$	$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$		$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

Activities



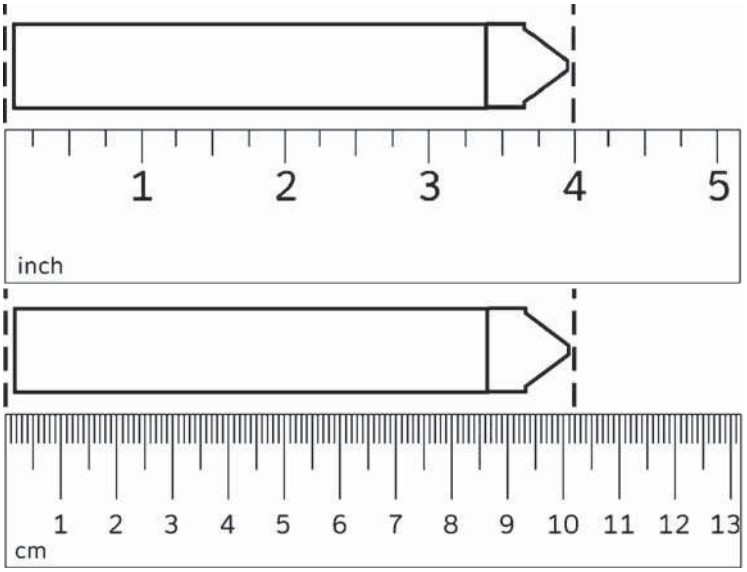
❷ Measurement

Georgia Performance Standards M2M1, M2M2, and M2M3

Within the Measurement domain, students will learn the units for measuring length in standard form (inch, foot, yard) and metric form (centimeter, meter) and measure to the nearest inch or centimeter. Students will compare the relationship of one unit to another, estimate length and temperature (using the Fahrenheit scale), and check whether estimations are reasonable using appropriate tools and measurement units. Students will also tell time to the nearest five minutes and understand relationships of time (such as the number of minutes in an hour and the number of hours in a day).

The following activities develop skills in this domain:

– Students will compare the relationship of one unit of measure to another by measuring (in both inches and centimeters) the lengths and widths of various household objects. Students should use objects with a flat linear surface that is easy to measure, like the sole of a shoe, the base of a stapler, or the handle of a hairbrush. Make sure that students align the left edge (or the *0* mark) of the ruler with the left edge of the object being measured. (See diagram below.) After students have practiced measuring these objects, students should practice estimating the measurements of other objects. Following each estimation, students should measure those objects and compare the actual measurements with their estimates.



– Students will relate temperature measurements to real-life experiences. To prepare for the activity, create two sets of index cards. The first set will show pictures of objects or experiences that students can associate with different temperatures. The second set will show temperatures to match each

card in the first set. For example, a picture of someone wearing shorts and sunglasses at the beach would have a matching card with a temperature of 85°F. A picture of a snowman and icicles would have to match a card showing 32°F or less. Use other common temperatures such as room temperature, the boiling point of water, the standard temperature for baking in the oven, and so forth. Place the picture cards face-down on the table and the temperature cards face-up. Students should flip over one picture card and match the picture with the appropriate temperature card. Correct matches are removed until all cards have been used.

– Students should tell time on a clock using situations drawn from children's everyday routines. Have each student create a list of the activities they generally do on a school day. Then ask students to share some of their activities and write them on the board. Once a list has been created on the board, assign a specific starting time for each activity. For instance, the student might have recess at 11:15 A.M., ride the bus home at 2:20 P.M., and read books at 8:00 P.M. after eating dinner and doing homework. Students will represent each time on the schedule by setting the hour and minute hands of a clock manipulative or by drawing the hands on a clock template.

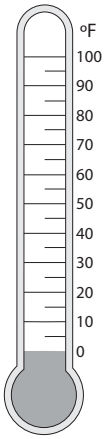
– Students will make observations during a water-cooling experiment and make guesses about seasonal and regional pictures to practice reading a thermometer and recording temperatures in degrees Fahrenheit.

  Create a worksheet (ahead of time) for students to record different temperatures of water. It should look similar to the following example:

	Temperature
Hot water	
1 ice cube added	
2 ice cubes added	
3 ice cubes added	
4 ice cubes added	
5 ice cubes added	

  As a class, fill a large cup $\frac{1}{2} - \frac{3}{4}$ full with hot tap water. Place a thermometer in the cup. After 30–60 seconds, students should read the thermometer and record the temperature on the first line of the chart labeled "Hot water."

– Next, place an ice cube in the cup of water and stir. Allow time for the ice cube to melt. Students will measure and record the temperature of the water again. Repeat this process at least four times, with students measuring and recording the temperature (in degrees Fahrenheit) of the water after each added ice cube has melted. As an additional activity, create several thermometers out of construction paper. Add degree marks to them so they look like mercury thermometers, similar to the example that follows.

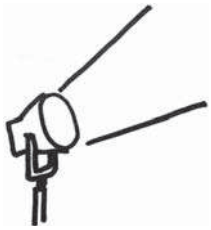


Cut out pictures of indoor and outdoor scenes from old calendars and/or magazines. For example, include a picture of children playing at the beach or swimming at a pool, snow falling, etc. Student volunteers will first attach one paper thermometer to each picture. Then they will determine an approximate temperature for the environment represented in each picture and note the temperature (in °F) on the paper thermometer. (There should be one paper thermometer per picture.)

Randomly choose pictures and have student volunteers read the thermometers to determine the temperature of the scenes.

Then, as a group, order the pictures from coolest to hottest temperature.

Activities



❸ Geometry

Georgia Performance Standards M2G1, M2G2, and M2G3

Within the Geometry domain, students will continue to develop an understanding of basic and compound geometric shapes, along with the elements from which they are composed. Students will describe and classify plane figures and solid geometric figures (prisms, cylinders, cones, spheres) according to the number of edges and vertices the figures have, and they will identify the type of angles (right, obtuse, acute). Students will also describe and classify solid geometric figures (prisms, cylinders, cones, spheres) according to the number of edges and vertices, as well as the number and shape of (plane) faces and types of angles. Students will describe the change in properties as two- and three-dimensional figures are cut and rearranged.

The following activities develop skills in this domain:

- Students will clarify and reinforce the names and properties of geometric figures by playing *Shape Solver*. Start by describing a geometric figure one property at a time without using its name. For example, instead of naming a square, describe it as a figure with four vertices (corners), four right angles, and four equal sides. Students should begin drawing the figure on a sheet of paper as they try to guess the figure based on the description and their knowledge of geometric properties. For round two or a follow-up game, draw various figures on small pieces of paper and fold them in half. A student will pick one from a container. That student will then describe the figure using its properties so the other students can guess its name. If students get stuck, they may make comparisons and contrasts with other figures. For example, if no one is able to guess *cone* but someone has already guessed *cylinder*, the student can say, *This figure is like a cylinder but comes to a point.*

- To reinforce the properties of new figures, students will work together to develop verbal and visual memory cues. For instance, to differentiate between acute and obtuse angles, review the meaning of *acute* and ask students if anything about the word *acute* reminds them of something that helps them remember the meaning. Elicit student input to model a memory aid for the term, emphasizing the importance of connecting the word to its meaning. For instance, ask students what letter *acute* begins with and help them to visualize how the lines that meet to form the top of a capital letter *A* form an acute angle (measuring less than 90 degrees). Or, draw a solid figure (e.g., rectangular prism) on the board and ask a student to draw a smiley face on the figure; this can help them to connect the term *faces* to the flat surfaces of a three-dimensional figure. Students should create memory aids using drawings, word roots, and other personal associations.

– To reinforce names and properties of figures, give students practice identifying them as components of solid figures. Using the Internet or other resources, find examples of basic, age-appropriate paper origami for children. Give students all the necessary materials and instructions. While students are creating their origami figure, have them focus on identifying the basic two-dimensional shapes that make up the origami figure. At the end of the activity, the students will have new paper pets or plants to take home.

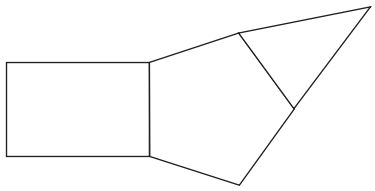
– Students will further develop an understanding of basic geometric figures by observing and describing the attributes of a variety of two-dimensional shapes and prisms made from cubes.

  Use sturdy paper to cut out a variety of shapes, such as hexagons, triangles, squares, rectangles, and diamonds. Make sure at least one side of every shape is four inches long (this regular length will make it possible for students to align the sides of each shape without one side being longer than the other).

  Discuss the attributes of each shape with students.

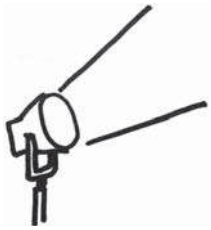
  For example, you may:
  – count the number of sides
  – note that the square's sides are all the same length
  – note that the opposite sides of the rectangle are the same length

  Then have students put shapes together to make new shapes. For example, two squares placed side by side can make a rectangle; a triangle placed on top of a square can be made to look like a house, etc. Encourage students to come up with different shapes, even irregular shapes (this is when it will come in handy to have sides of equal length). Discuss the attributes of the new shapes. How many sides does the new shape have? Are all the sides the same length?



- Use small cubes to study three-dimensional prisms. Be sure to collect enough cubes so that each student or group of students can have several cubes. Have students study one single cube first: note that all edges are the same length; count the number of faces. Then have students create a new figure using three or four cubes. Ask them to study their new figure: how many faces does it have? Are all of the edges the same length? Students can then switch places with a partner and study their classmate's figure. To conclude the lesson, choose several of the figures the students have built, and discuss the attributes of each figure as a class.

Activities



❹ Data Analysis and Probability

Georgia Performance Standard M2D1

Within the Data Analysis and Probability domain, students will pose questions and collect, organize, and interpret data about themselves and their surroundings. They will create simple charts and tables to record results. Students will organize and display data using picture graphs, Venn diagrams, and bar graphs, and they will understand how to interpret them.

The following activities develop skills in this domain:

– To engage students in data collection and data displays as part of a fun outdoor activity, they will build two paper airplanes of different types. Students will create a chart (see example below) to gather data about the distance each plane travels. Students should throw each plane five times and measure and record how far each plane flew on each attempt. Students will use the results to figure out which plane would be the best to enter into a flying contest.

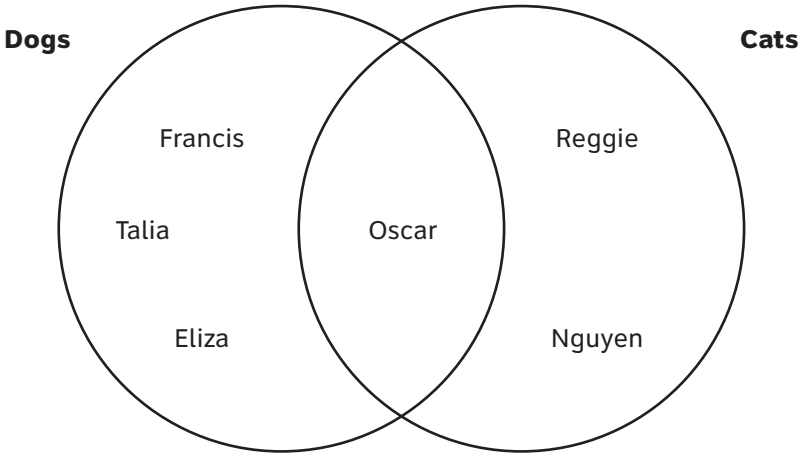
Plane Distance (in feet and inches)

	Plane 1	Plane 2
Flight 1		
Flight 2		
Flight 3		
Flight 4		
Flight 5		

– Take advantage of students' curiosity about their surroundings and ask students to suggest ideas for categories of information to gather from friends or neighbors, such as information about recycling, afterschool activities, and favorite TV shows. After choosing a category, students should plan how they will gather the data. Then, they will display the data using a picture graph (cut out or draw pictures to represent each piece of data) or bar graph (students color in sections of a bar to represent each piece of data).

– To enhance students' understanding of Venn diagrams for data display, ask students to gather data that will have overlapping categories. For example, students could survey and gather data about the number of dogs or cats each friend has. Students will record each friend's name in the appropriate category or categories. Students should then create a Venn diagram like the sample below. Place each friend's name in the appropriate area within the diagram. If someone has both a dog and a cat, his or her name should be placed in the overlapping area in the middle. On the sample diagram, Talia has one dog but no cats, and Reggie has one cat but no dogs. Oscar has both a dog and a cat, so his name is written in the overlapping area between *Dogs* and *Cats*.

Friends with Pets



– Students will develop data-gathering skills and prepare visualizations of statistics using picture graphs. Group students in pairs. Each pair will take two handfuls of a type of cereal: fruit rings, marshmallow shapes, fruit puffs, and alphabet cereal. (Any cereal with a variety of colored or shaped pieces will work.) Each pair will separate their cereal into categories. The fruit rings and fruit puffs can be separated by color, the marshmallow shapes by shape, and the alphabet cereal by letter type—with or without holes in the center (the letters with holes in the center will be A, B, D, O, P, Q, and R). Next, pairs will create a picture graph by gluing the various cereal pieces to poster board or chart paper. Conclude the activity by allowing each pair to ask the class to interpret the information in their graph. Possible questions could include

  – Which color, shape, or letter type appeared the most?
  – Which color, shape, or letter type appeared the least?
  – Did any colors, shapes, or letter types appear in equal amounts?
  – How many times did your favorite color, shape, or letter type appear?

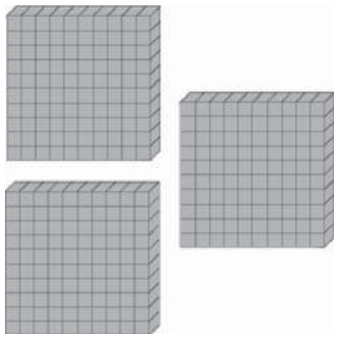
Compare two or more picture graphs by asking:

- Did any picture graphs have the same or similar information (some colors, shapes, and/or letter types may have appeared in equal numbers on more than one picture graph)?

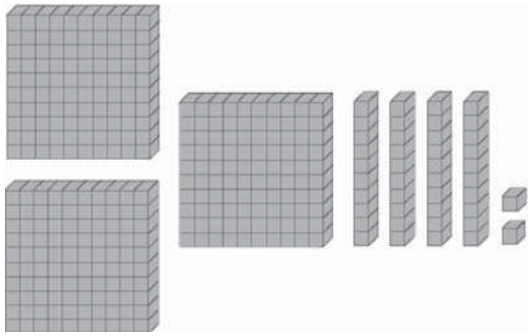
Practice Quiz

1 **Janice has 342 stamps. Which of these pictures shows the number 342?**

A



B



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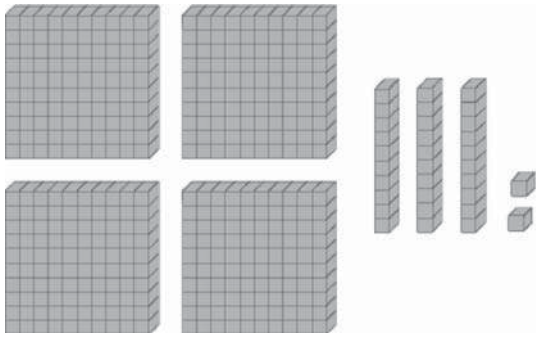


2 **Jean solved this problem.**

26 + 34 = 60

Which of these can she use to check her work?

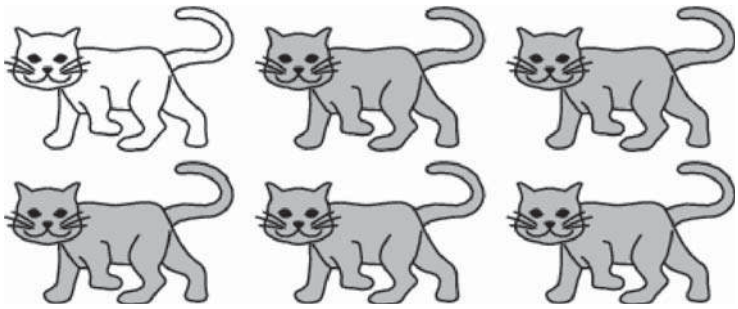
A 34 − 26
B 60 − 34
C 60 + 26

3 **A library can hold no more than 115 people at a time.**

If ✹ is the current number of people in the room, which of these is true?

A ✹ > 116
B ✹ < 116
C ✹ = 116

4 **Jake found 6 kittens. One kitten is white and five kittens are gray.**



What fraction of the kittens is gray?

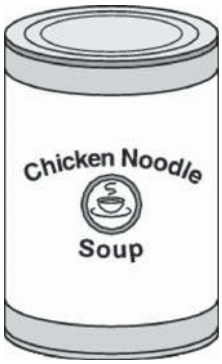
A $\frac{1}{6}$
B $\frac{5}{1}$
C $\frac{5}{6}$

5 **Paula kicked the ball 42 feet. John kicked the ball 29 feet.**

Which expression could be used to find how many MORE feet Paula kicked the ball than John?

A 29 − 42
B 42 + 29
C 42 − 29

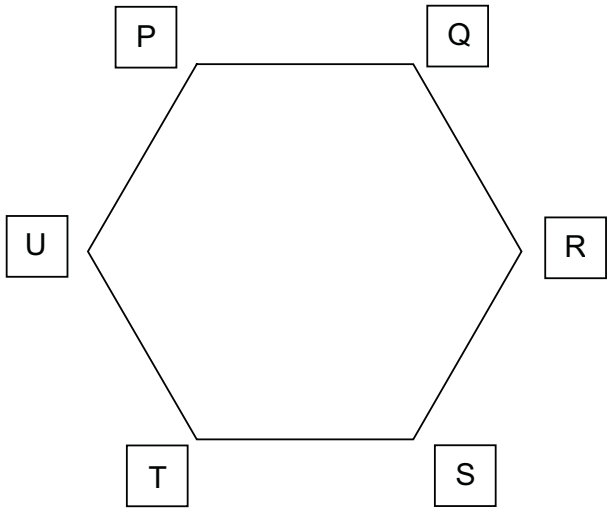
6 **Jerry has a soup can in the shape of a cylinder.**



How many faces of a cylinder are circles?

A 0
B 1
C 2

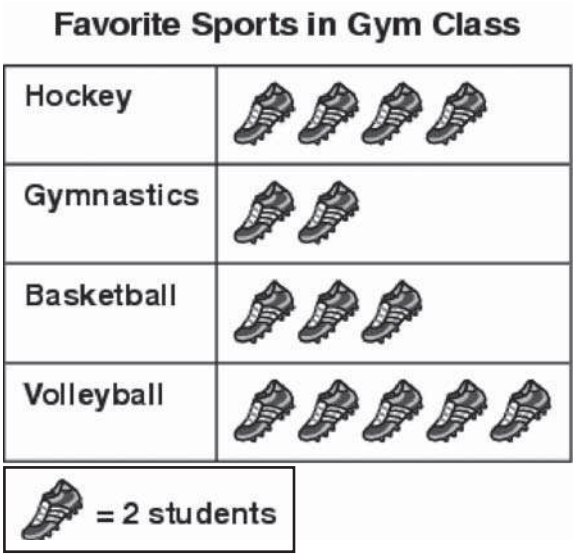
7 **Look at the hexagon PQRSTU.**



What two shapes are created by drawing a straight line from vertex T to vertex Q?

A Triangle QRT and Triangle RST
B Trapezoid QRST and Trapezoid PQTU
C Triangle PQT and Trapezoid PQST

8 **The pictograph shows the favorite sports of students in gym class.**



How many students chose basketball as their favorite sport?

A 3
B 6
C 9

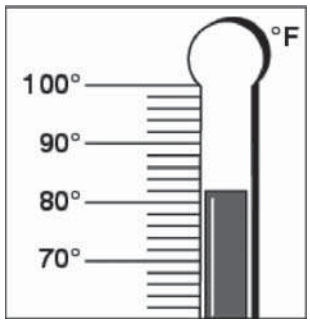
9 **Josie wants to measure this paper clip.**

Which unit is the BEST for her to use?

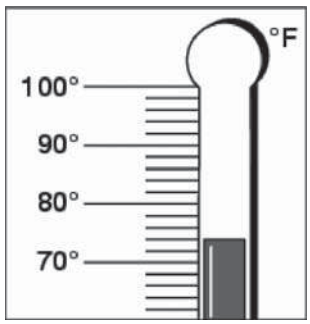
A feet
B yards
C inches

10 **Which thermometer shows a temperature closest to 80°F?**

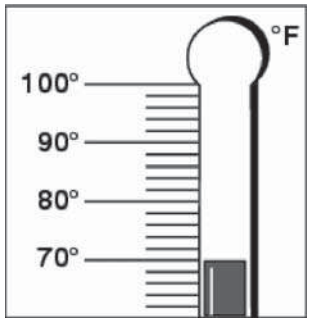
A



B



C



Solutions

Number	Correct Answer	Explanation
1	**B**	*Understand the relative magnitudes of numbers using 10 as a unit, 100 as a unit, or 1,000 as a unit. Represent 2-digit numbers with drawings of tens and ones, and represent 3-digit numbers with drawings of hundreds, tens, and ones. (M2N1b)* The correct answer is **Choice** (**B**)**.** This is an image of 3 flats (sets of 100), 4 rods (sets of 10), and 2 cubes (units of 1), which shows (3 x 100) + (4 x 10) + (2 x 1) = 300 + 40 + 2 = 342. Choice (A) is incorrect because 3 flats show (3 x 100) = 300. Choice (C) is incorrect because 4 flats, 3 rods, and 2 cubes show (4 x 100) + (3 x 10) + (2 x 1) = 400 + 30 + 2 = 432.
2	**B**	*Understand and use the inverse relation between addition and subtraction to solve problems and check solutions. (M2N2b)* The correct answer is **Choice** (**B**) **60 – 34.** The problem shows "26 + 34 = 60". Jean can check the results of this addition problem by subtracting either of the smaller amounts from the total; subtracting 26 from 60 equals 34, and subtracting 34 from 60 equals 26. Choice (A) is incorrect because subtracting one of the smaller amounts from the other would not help Jean check her result. It is a different operation with a different result (*34 – 26 = 8*). Choice (C) is incorrect because checking this problem requires subtraction from the total, not addition.
3	**B**	*Represent problem solving situations where addition, subtraction, or multiplication may be applied using mathematical expressions. (M2N5b)* The correct answer is **Choice** (**B**) ✹ **< 116.** The < symbol indicates that whatever is to its left must be less than what is to its right. Since ✹ is the number of people, ✹ *< 116* means the number of people is less than 116, which is the same as saying no more than 115 people. Choice (A) is incorrect because the > symbol means that ✹ must be greater than 116, the opposite of what the sign says. Choice (C) is incorrect because the = symbol means that ✹ must be exactly 116.

Number	Correct Answer	Explanation
4	**C**	*Model, identify, label, and compare fractions (thirds, sixths, eighths, tenths) as a representation of equal parts of a whole or of a set. (M2N4a)* The correct answer is **Choice** (**C**) $\frac{\mathbf{5}}{\mathbf{6}}$. The whole—6 kittens total—makes the denominator of the fraction 6. The part that is gray—5 of the 6 kittens—makes the numerator 5. Choice (A) is incorrect because $\frac{1}{6}$ is the fraction of the kittens that are not gray. Choice (B) is incorrect because $\frac{5}{1}$ is another way to represent 5, the number of kittens that are gray rather than the fraction of kittens that are gray.
5	**C**	*Represent problem solving situations where addition, subtraction, or multiplication may be applied using mathematical expressions. (M2N5b)* The correct answer is **Choice** (**C**) **42 – 29.** To determine how many more feet Paula kicked the ball than John, John's distance (29 feet) must be subtracted from Paula's distance (42 feet), so *42 – 29* is correct. Choice (A) is incorrect because *29 – 42* represents the subtraction of Paula's distance from John's distance and results in a negative number. Choice (B) is incorrect because adding the two distances will not show the total distance the ball was kicked.
6	**C**	*Recognize the (plane) shapes of the faces of a geometric solid and count the number of faces of each type. (M2G2a)* The correct answer is **Choice** (**C**) **2.** A cylinder is made up of 1 rectangular face and 2 circular faces (top and bottom). Choice (A) is the number of circular faces a rectangular prism has. Choice (B) is the number of circular faces a cone has.

Number	Correct Answer	Explanation
7	**B**	*Describe the change in attributes as two- and three-dimensional shapes are cut and rearranged. (M2G3)* The correct answer is **Choice** (**B**) **Trapezoid QRST and Trapezoid PQTU.** If a line connecting T and Q is drawn, each figure will have the shape of a trapezoid, rotated from its standard orientation. Note also that both figures are four sided, and the only answer choice that suggests two four-sided figures is (B). Choices (A) and (C) are incorrect. Each suggests that at least one of the resulting figures is a triangle (has three sides). However, both resulting figures have four sides and therefore cannot be triangles.
8	**B**	*Know how to interpret picture graphs, Venn diagrams, and bar graphs. (M2D1b)* The correct answer is **Choice** (**B**) **6.** The key below the picture graph shows that 1 shoe in the picture graph represents 2 students. Next to the word Basketball in the graph, there are 3 shoes. To find the number of students represented by 3 shoes, add (2 + 2 + 2 = 6). Choice (A) is incorrect because, although there are 3 shoes shown, each shoe represents 2 students for a total of 6. Choice (C) is incorrect because it is the result of adding 3 three times, not 2.
9	**C**	*Determine an appropriate tool and unit for measuring. (M2M1c)* The correct answer is **Choice** (**C**) **inches.** To best measure the paper clip, choose a small unit such as inches or centimeters. One unit (1 in or 1 cm) should be smaller than the object being measured. Choices (A) and (B) are incorrect because both *feet* and *yards* are too large to accurately measure the image shown.
10	**A**	*Read a thermometer. (M2M3b)* The correct answer is **Choice** (**A**)**.** The thermometers show Choice (A) *82°*, Choice (B) *74°*, and Choice (C) *70°*. The temperature closest to 80° is Choice (A) *82°*. Choices (B) and (C) are incorrect because they are both closer to 70° than to 80°.