Grade 6

My Summer Learning Packet

6th Grade Summer Learning Packet

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COMPTON UNIFIED SCHOOL DISTRICT

MESSAGE FOR PARENTS

Dear Parents and Guardians,

As summer break approaches, we would like to share with you some learning resources that we have available for our Compton USD students. From our Summer Learning Packets to our online programs, CUSD students have multiple opportunities to reinforce learning. We want our scholars to continue learning during vacation time!

Educational research consistently shows that summer learning programs help students better retain the information learned during the previous year and better prepares students for the upcoming grade level. We also know that when kids read over the summer, they are more likely to leap ahead when they return to school. This is often called the "summer leap."

Please visit our Distance Learning Platform (Parent Resources) in the Compton Unified School District website to access some of the resources that we have available for our students!

We hope that you have a restful and healthy summer break and we look forward to seeing everyone in August.

EDUCATIONAL SERVICES

PHONE:
(310) 639-3165

WEBSITE:
www.compton.k12.ca.us

SUMMER LEARNING PACKETS

Our Common-Core aligned ***Summer Learning Packets*** offer our students the opportunity to review some of the most important concepts learned throughout this academic year. These activities mainly cover the areas of literacy and mathematics. Each packet contains student work that students can complete during the summer break.

In addition, we recommend that students engage in leisure reading for a minimum of 30 minutes daily! Encourage them to take home reading books from their classroom/school library!

Please know that these instructional activities and ideas are suggested and not required. Some children may need a combination of reading independently and having someone read to them. Some children prefer reading on the iPad or computer. If your child is struggling with a math page, please let your child's next year teacher know what concepts were difficult. If your child needs to skip problems, that is fine!

Our intention is to provide academic activities for children who would like to complete them, as well as for parents that find the review beneficial for their child. We hope each child finds the activities engaging.

Other academic summer activities could include journal writing, composing emails to family and friends, writing post cards while on a trip, sending thank-you notes, card games, Sudoku, word searches, crossword puzzles, arts and crafts, gardening, putting on plays/musicals, organizing a child-friendly garage sale, cooking, having a family game/puzzle night, etc.

HAVE A WONDERFUL SUMMER!!!

SUMMER ENRICHMENT

DISTRITO ESCOLAR UNIFICADO DE COMPTON

MENSAJE PARA LOS PADRES

Queridos padres y tutores,

A medida que se acerca el descanso de verano, nos gustaría compartir con ustedes algunos recursos de aprendizaje que tenemos disponibles para nuestros estudiantes. De nuestros *Paquetes de Aprendizaje de Verano* a algunos de nuestros programas en línea, los estudiantes de CUSD tienen múltiples oportunidades para reforzar el aprendizaje. Queremos que nuestros estudiantes continúen aprendiendo durante las vacaciones

La investigación educativa muestra consistentemente que los programas de aprendizaje de verano ayudan a los estudiantes a conservar mejor la información aprendida durante el año escolar anterior y prepara mejor a los estudiantes para el próximo nivel de grado. También sabemos que cuando los niños leen mucho durante el verano, con mayor probabilidad irán por delante cuando vuelvan a la escuela. Esto a menudo se llama el "salto de verano".
Visite nuestra Plataforma de Aprendizaje a distancia (Recursos para padres) en el sitio web del Distrito Escolar Unificado de Compton para tener acceso a algunos de los recursos que tenemos disponibles para nuestros estudiantes

Esperamos que tenga un descanso de verano relajante y saludable y esperamos verlo a todos en agosto.

SERVICIOS EDUCATIVOS

TELEFONO:
(310) 639-3165

SITIO WEB:
www.compton.k12.ca.us

PAQUETES DE APRENDIZAJE DE VERANO

Nuestros paquetes de aprendizaje de verano ofrecen a nuestros estudiantes la oportunidad de revisar algunos de los conceptos más importantes aprendidos a lo largo de este año académico. Estas actividades abarcan principalmente las áreas de alfabetización y matemáticas. Cada paquete contiene el trabajo que los estudiantes pueden completar durante las vacaciones de verano.

Además, recomendamos que los estudiantes participen en lectura libre por un mínimo de 30 minutos diarios ¡Anímeles a llevar libros de lectura a casa de la biblioteca de su salón de clases/ biblioteca de la escuela!

Por favor, sepa que estas actividades e ideas son sugeridas y no requeridas. Algunos niños pueden necesitar una combinación de lectura independiente y también que alguien les lea. Algunos niños prefieren leer en el iPad o en la computadora. Si su hijo/a tiene problemas con una página de matemáticas, por favor informe a la maestra del próximo año escolar sobre qué conceptos eran difíciles para su hijo/a. Si su hijo/a necesita saltarse los problemas, no pasa nada.

Nuestra intención es proporcionar actividades académicas para los estudiantes que deseen completarlas, así como para los padres que encuentren este repaso beneficioso para su hijo/a. Esperamos que cada niño/a encuentre actividades que en las que se puedan involucrar.

Otras actividades académicas de verano podrían incluir la redacción o escritura libre, escribir correos electrónicos a familiares y amigos, la redacción de tarjetas postales durante un viaje, enviar notas de agradecimiento, juegos de cartas, Sudoku, búsquedas de palabras, crucigramas, artes y artesanías, jardinería, poner juegos/música, organizar una venta de garaje para niños, cocinar, tener una noche de juegos/rompecabezas familiar, etc. ¡Disfrute con sus hijos/as las muchas oportunidades que ofrece el verano!

¡TENGAN UN AGRADABLE VERANO!

SUMMER ENRICHMENT

Summer Reading Log

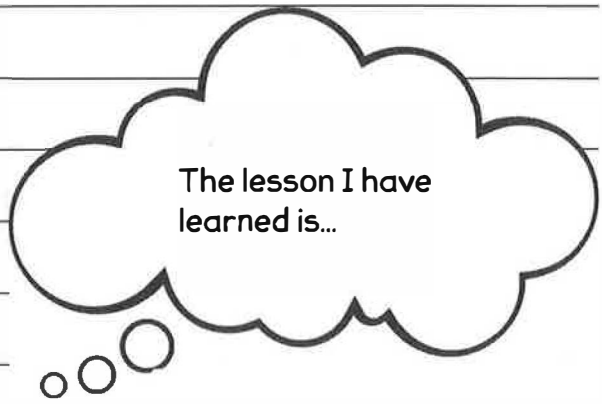
NUMBER	TITLE	RATING

Grade 6

ELA

Journal Entry 1

During recent events, we have been asked to think of the needs of others. Think about a lesson you have learned by putting yourself in someone else's shoes. Write to explain the lesson you've learned.



Reflexive and Intensive Pronouns

Introduction **Reflexive** and **intensive pronouns** are pronouns that end in *-self* or *-selves*. They refer back to a noun or another pronoun in the same sentence.

- Reflexive and intensive pronouns can be singular or plural.

Singular	Plural
myself	ourselves
yourself	yourselves
himself, herself, itself	themselves

- A **reflexive pronoun** is an object pronoun that refers back to the subject and is important to the meaning of the sentence. If you leave out the reflexive pronoun, the sentence will not be clear.

Jake was mad at himself for dropping the ball during the game.

- An **intensive pronoun** can be used to emphasize, or *intensify,* a noun or pronoun. If you leave out the intensive pronoun, the sentence will still make sense.

I myself thought it wasn't his fault. His **teammates** themselves agreed.

Guided Practice **Cross out the incorrect pronoun or pronouns in each sentence. Then write the correct form above the incorrect one.**

Hint

A reflexive pronoun should not be used as the subject of a sentence. Use the correct subject pronoun instead.

Example:
Ben and **I** played.
NOT
Ben and **myself** played.

1. My family and myself were excited to see my brother's first ball game.
2. He itself was nervous about how he would play.
3. Dad drove us to the field at 1:00, although the game themselves did not start until 2:00.
4. Himself and I found themselves good seats in the bleachers.
5. My two sisters went to buy popcorn for herself.
6. Myself asked them to bring some for Dad and me.
7. When they returned, Dad told them, "You'll fill yourself with popcorn and miss dinner."

For numbers 1–3, which pronoun should replace the underlined pronoun to make the sentence correct?

1 When the team lost the game, the players blamed ourselves.

A itself

B themselves

C himself

D yourselves

2 The pitcher itself said that he had not pitched his best game.

A myself

B himself

C yourself

D themselves

3 Alonzo and myself agreed that the other team had simply played better.

A I

B me

C himself

D ourselves

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓐ Ⓑ Ⓒ Ⓓ

3 Ⓐ Ⓑ Ⓒ Ⓓ

4 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ⁄4

For number 4, which revision uses a reflexive or intensive pronoun correctly?

4 Mayor Ramirez is a great fan and attends every single game.

A Herself Mayor Ramirez is a great fan and attends every single game.

B Mayor Ramirez themselves is a great fan and attends every single game.

C Mayor Ramirez is a great fan itself and attends every single game.

D Mayor Ramirez herself is a great fan and attends every single game.

▶ **Try It** Reread what you wrote in Part 1. Check that you have used reflexive pronouns correctly. Then try to add one intensive pronoun in your response.

Using Context Clues

Introduction When you come across a word you do not know in your reading, look for clues. **Context clues** are words and phrases in the text that give hints to a word's meaning.

Context Clue	Signal Words	Example
Definition	*are, is, means, or*	Larger animals often treat smaller animals as prey, or something to be killed and eaten.
Example	*like, such as, for example*	Predators, such as hawks, wolves, and coyotes, hunt rabbits.
Cause and Effect	*as a result of, because, and thanks to*	Because many animals eat rabbits, the number of wild rabbits has decreased.
Comparison and Contrast	*like, too, similarly, but, unlike, although*	Although wolves eat both plants and animals, hawks are completely carnivorous.

A word's position and function in the sentence can also be a clue to its meaning. For example, read the sentence below:

Brown bears are solitary animals and are often found alone.

You can tell that *solitary* is an adjective in this sentence. The adjective describes the bears. Then the word *solitary* is defined in the sentence. Since the bears *are often found alone,* this gives a good clue to what the word *solitary* means.

Guided Practice **Read the paragraph below. Circle context clues to help you figure out the meaning of the underlined words. Then tell a partner the meaning of the underlined words.**

Hint

Think about the different types of context clues. Look for words that signal examples, cause and effect, and contrasts. Then use the clues to help you figure out the meanings of the underlined words.

Marsupials are mammals that carry their young in pouches. The American opossum is a marsupial. Thanks to its defense mechanisms, the opossum keeps itself safe from predators. When threatened, it hisses, growls, and bites. If this doesn't work, the opossum reacts in an unusual way. Although many animals move quickly to escape danger, the opossum collapses and pretends to be dead. This is an unconscious response to stress that is similar to jerking your hand away from a hot object before thinking.

Read the paragraph. Then answer the questions that follow for numbers 1–4.

Answer Form

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

Number Correct ___/4

Pangolins have a physical resemblance, or likeness, to an armadillo, with claws and armored bodies. When attacked, pangolins thwart combat by rolling into a hard ball and hiding. Like bats and other animals that sleep all day, pangolins are nocturnal. Because they lack teeth, eating tiny stones with their food is critical for digestion.

1 Which phrase from the paragraph best helps you understand the meaning of the word resemblance?

A have a physical
B or likeness
C with claws
D armored bodies

2 What does the phrase thwart combat mean in the paragraph?

A get attacked
B attack others
C avoid a fight
D start a fight

3 What does the word nocturnal suggest about the pangolins?

A They roll into hard balls.
B They are awake at night.
C They are like all other animals.
D They lack teeth.

4 What does the word critical mean in the paragraph?

A safe
B possible
C necessary
D imaginable

Reading

Read the passage. Then answer the questions that follow.

Worth More Than Gold

by Amy Charles

1 Every summer, millions of acres of America are green with growing crops. American farmers grow wheat, soybeans, corn, and other foodstuffs, and it's an impressive sight. There's also something eerie about it, though. Each field grows an army of identical plants. Every cornstalk in the cornfield is exactly like its neighbors, with the same DNA. That means it has the same instructions for building itself. This kind of field is called a monoculture, *mono* meaning "one."

2 This is of some benefit to the farmer because each plant grows about as well as the next. The farmer is in trouble, however, if a pest or disease strikes. If one cornstalk in the field can be killed easily by an attacker, so can all the rest. This was a serious problem in Ireland long ago. The Irish potato famine in 1845 was caused by a fungus that is extremely harmful to potatoes. Because all the potatoes in Ireland at the time were so similar, most of the potato crop died. And because potatoes were the main food in Ireland at the time, people began to starve. The situation became even worse because the fungus stayed in the ground. When new potatoes were planted, the fungus killed them, too. Within 25 years, nearly half of Ireland's people had starved or moved away.

3 Why was the famine so destructive in Ireland? One problem was that we didn't have the science to know what had gone wrong; people didn't know about DNA. DNA tells the cell how to take atoms, the smallest pieces of matter, and make from them the smallest pieces of the body. These pieces, called molecules, are too small for us to see, but once they're made, the molecules work together to grow the body and keep it alive.

4 Some molecules are great at fighting disease. Unfortunately for those desperate farmers in Ireland, none of the potatoes they planted, year after year, could make the right molecules. Because of this, the potatoes weren't protected from the fungus.

5 Scientists now know how to solve that problem, and the answer lies in how DNA works. DNA is a molecule, too—a long molecule at the center of the cell. The cell can read DNA like a cookbook, finding recipes that tell how to make other molecules that it needs. We call the recipe for each molecule a gene. If you want molecules that will fight potato fungus, you need the genes for making those molecules. If a potato doesn't have those genes, that potato can't fight the fungus. One way to solve the problem is to give the potato the right genes. To find those genes, we look in other strains, or kinds, of potatoes. We look for a potato that can fight off the fungus. That potato has the genes for making the right molecules. Then all we have to do is put that plant's genes into the unprotected potato plants. And, roughly speaking, we know how to do that.

6 Here's the big question, though: Where do you find that super-strong potato when a fungus is attacking? The answer comes from scientists and farmers around the world who have built gene banks to keep our food supply safe. All over the world, scientists and farmers collect seeds from different crop plants—corn, potatoes, alfalfa, wheat, oats, rice, and every other grain, fruit, and vegetable; they collect them all. They record what diseases and pests each plant can fight off, and they record which plants can live well in certain conditions, such as limited water, high heat, floods, or poor soil. Then they store seeds from each plant in a safe place, a gene bank.

7 Now, when a pest attacks a wheat crop in Oklahoma, scientists don't wait. They look in gene banks for a strain of wheat that fights that pest well. They can use that wheat's genes to create a new wheat plant that will grow well in Oklahoma and will also fight off the pest.

8 There are more than 1,600 plant gene banks around the world, and one of the most famous gene banks is in Norway. It's an abandoned coal mine north of the Arctic Circle, in a group of islands called Svalbard. This bank stores backup copies of seeds that are in other banks around the world. The Svalbard bank now has copies of over half a million seeds. If crops are in trouble, what's in those vaults is worth more than gold.

9 That's the extent to which scientists and farmers around the world go to protect those crops growing all across the Midwest—and Brazil, and Russia, and China. Thanks to their work, the food supply for seven billion people is safer than it ever was before.

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1 Which sentence from the passage **best** supports the idea that growing monocultures can be risky?

A "American farmers grow wheat, soybeans, corn, and other foodstuffs, and it's an impressive sight."

B "Every cornstalk in the cornfield is exactly like its neighbors, with the same DNA."

C "If one cornstalk in the field can be killed easily by an attacker, so can all the rest."

D "One problem was that we didn't have the science to know what had gone wrong; people didn't know about DNA."

E "The cell can read DNA like a cookbook, finding recipes that tell how to make other molecules that it needs."

F "They look in gene banks for a strain of wheat that fights that pest well."

2 The following question has two parts. First, answer part A. Then, answer part B.

Part A

What is one main idea of "Worth More Than Gold"?

A Gene banks protect the world's food supply.

B People have studied DNA for hundreds of years.

C Monocultures are often destroyed by pests.

D The Irish potato famine began in 1845.

Part B

Which sentence from the article **best** supports the answer to part A?

A "That means it has the same instructions for building itself."

B "Because all the potatoes in Ireland at the time were so similar, most of the potato crop died."

C "If you want molecules that will fight potato fungus, you need the genes for making those molecules."

D "If crops are in trouble, what's in those vaults is worth more than gold."

3 Which of the following would **not** belong in a summary of the passage?

A The Irish potato famine in the 1800s was made worse because people at the time did not know about DNA.

B To get molecules that will fight a potato fungus, you need to have the right materials.

C One solution to possible problems caused by monocultures lies in the field of genetics, in plant DNA.

D To protect the world's crops, a gene bank in Svalbard, Norway, has backup copies of more than half a million seeds.

4 What is the **main** purpose of paragraph 5?

A It introduces the topic of worldwide famine.

B It provides a definition of the key term "fungus."

C It shows how genes can solve the problem of crop disease.

D It poses and answers logical questions about DNA and genes.

5 Read the statement below.

> The author of this passage has great respect for the scientists and farmers who have made gene banks possible.

How can you tell this statement is true? Use **two** details from the text to support your answer.

Journal Entry 2

Different animals are known for different personality types. For example, a mule is known for being stubborn. What animal best represents your personality? Write to explain which animal and why.

Correcting Vague Pronouns

Introduction Pronouns help writers to avoid repetition, but when a pronoun is **vague**, or unclear, readers can't tell what or whom it refers to.

- A pronoun may be unclear if there is more than one noun to which the pronoun could be referring. For example:

Clear: The cliff dwellings at Mesa Verde were built by the Ancestral Pueblo people.
Unclear: They show us what life was like there thousands of years ago.

The pronoun *they* could refer to *cliff dwellings* or to *Ancestral Pueblo people*. You can fix the problem by changing the pronoun to the correct noun.

Clear: These dwellings show us what life was like there thousands of years ago.

- A pronoun may also be unclear if there is no noun to which the pronoun refers.

Unclear: Our days at Mesa Verde were long and full, and it taught us a lot.

Unclear: At home, people sometimes asked questions, and it was hard.

You can fix the first sentence by replacing the pronoun with a noun phrase, such as *the trip*. However, the second sentence might need a bit more work.

Clear: Our days at Mesa Verde were long and full, and the trip taught us a lot.

Clear: At home, people asked questions that were hard to answer.

Guided Practice **Read the paragraph. Cross out each vague (unclear) pronoun, and write your correction above it. You may want to revise more than the pronoun to make the sentence's meaning clear.**

Hint

Changing a vague pronoun to a noun is not always enough. You may need to revise the sentence to give a bit more information.

In 1888, during a heavy snowfall near what is now Mesa Verde National Park, two cowboys saw walls and towers off in the distance. They were unusual, and they decided to go and explore them. They found homes built right into the walls of the tall cliffs. They had ancient tools and pottery, and it was exciting.

Independent Practice

Read the paragraph. For numbers 1–3, choose the revision that corrects the vague pronoun in each numbered sentence in the paragraph.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/3

The Ancestral Pueblo people moved to Mesa Verde around 550 C.E., but the cliff dwellings weren't built until around 1200 C.E. **(1)** They showed a high degree of skill in stone masonry. **(2)** They do not know why the Ancestral Pueblo people moved into the cliffs. **(3)** They might have been safer in harsh weather. Whatever the reason these people moved to the cliffs, it is amazing.

1

A They showed skill in stone masonry to a high degree.

B All showed a high degree of skill in stone masonry.

C A high degree of skill in stone masonry was shown by them.

D The Pueblo people showed a high degree of skill in stone masonry.

2

A Archeologists are not sure why the Ancestral Pueblo people moved into the cliffs.

B The Ancestral Pueblo people do not know why they moved into the cliffs.

C It is unknown to them why the Ancestral Pueblo moved into the cliffs.

D Why the Ancestral Puebloans moved into the cliffs, they do not know.

3

A In harsh weather, they might have been safer.

B Their safety might have been greater in harsh weather.

C Cliff dwellings might have been safer in harsh weather.

D It might be because of their safety in harsh weather.

▶ **Try It** Reread what you wrote in Part 1. Circle any pronouns you used. Then reread to make sure someone reading your paper for the first time would understand who the pronoun is referring to. Fix any errors.

Greek and Latin Word Parts

Introduction Many English words have Greek and Latin roots and affixes. By becoming familiar with them, you will be able to unlock the meaning of many words.

- **Roots** are word parts that have meanings but usually cannot stand alone. Sometimes roots combine with other roots to form words, such as *audiovisual.*

Root	Meaning	Root	Meaning
aud	"hear"	*mot, mov*	"move"
cycle	"circle, wheel"	*vis, vid*	"see"
therm	"heat"	*meter*	"measure"

- **Affixes**, such as prefixes and suffixes, can also be added to roots to form words, such as *interject.*

Prefix	Meaning	Suffix	Meaning
uni-	"one"	*-ance, -ence*	"state of"
bi-	"two"	*-ion, -al*	"action, process"
tri-	"three"	*-or*	"state" or "quality of"

Guided Practice **Circle the roots in the underlined words. Write the meaning of each root. Then tell a partner the meaning of the underlined words.**

Hint

A suffix adds meaning to a root or word. Suffixes often give clues that indicate part of speech (noun, adjective, etc.). The suffix *-ence* usually signals a noun; the suffix *-al* usually signals an adjective.

1. Inez sat in the audience at a cooking show.

_____

2. The motor of the cake mixer broke. The chef needed help.

_____

3. He made a hand motion for Inez to come up on stage.

_____

4. As he worked, she kept an eye on the oven thermometer.

_____

5. Because she had great vision, this was an easy task.

_____

Independent Practice

For items 1–4, read each sentence. Then answer the question.

Answer Form

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

Number Correct ___/4

1 "Watch how I extend the dough with my hands," said the chef.

The prefix *ex-* means "out," and the root *tend* means "stretch." What does the word extend mean in the sentence?

A pull it in different directions

B form it into small balls

C loosen it with water

D cut it into small pieces

2 "Next, I add the equivalent of a teaspoon of spice," explained the chef.

The prefix *equi-* means "equal," and the root *vale* means "worth." What does the word equivalent mean in the sentence?

A half portion

B cost

C same measure

D double the amount

3 "Are my directions audible?" asked the chef.

The root *aud* means "hear," and the suffix *-ible* means "able." What does the word audible mean in the sentence?

A necessary

B too complicated

C realistic

D loud enough

4 Inez told the chef she was grateful for the cooking lesson.

The root *grat* means "pleasing," and the suffix *-ful* means "having or giving." What does the word grateful mean in the sentence?

A eager

B thankful

C greatly impatient

D responsible

Read the passage. Then answer the questions that follow.

The Scent of Memory

by Christopher Ford

1 Scientists say that, more than sight, sound, touch, or taste, the sense of smell can trigger memory. For me, the smell of wood smoke always makes me think of autumn. One whiff, and I am twelve, at home on my family's farm, snuggled in bed as the smell of wood smoke snakes through my slightly-open bedroom window.

2 It is early autumn, and all around us, our neighbors are harvesting apples. We have been eating apple pie, applesauce, apple cakes, even apple stew. My family does not own an orchard, but we rejoice in the benefits of the harvest and our special neighbors.

3 It's Saturday morning. My father wakes me gently, saying, "Let's go, Chris, it's time." I stand up stiffly, shivering, the chill draft hurrying me over to pull on jeans and a shirt, my favorite old sweatshirt, and my warmest socks.

4 My mom is already up and at the stove, coffee cup in one hand, stirring a huge pot of oatmeal with the other. It's not my favorite breakfast in the world, but on a morning like this, with hard work ahead of me, I know I'll appreciate it later.

5 "Good stuff, Lynn," my dad says as he gives my mom a kiss on one cheek. He spoons out a huge bowl for himself and then one for me. Even with raisins and brown sugar, it's hard to swallow.

6 "Eat up, Chris," my dad teases. "It'll stick to your ribs!"

7 He and my mom talk as they drink their coffee and eat their breakfast. It's all bills and money talk, so I tune out, watching the leaves swirl outside. My little sister pads in after a while, all pink fluff and fuzzy curls. Even I have to admit she's kind of adorable. She crawls silently into my dad's lap and he nestles her right into the crook of his arm, as if the shape of his arm was made to fit the curve of her back. He manages this maneuver while continuing to sip his coffee and talk to my mom. After we finish breakfast, we say goodbye to the two of them and head out.

8 It is just past dawn, and in the east, a smattering of lacy clouds drifts slowly across the streaks of pink, orange, and red that forecast a cold day. The air smells lightly of wood smoke from the farmers who are burning brush in the nearby orchards. Crunch, crunch, crunch, my feet push easily through the carpet of fallen leaves on the way to the barn. The colors are outrageous: orange, red, yellow, and even greens that are bright and playful. I can't resist kicking a few piles into the air to watch them swirl.

9 In the barn, it's warmer, with animal breath and body heat creating a hazy fog. I scratch our old goat, Ginger, behind her ears, pat the orange tabby, Huck, and say good morning to Jessie and her three pups. They are still squirmy and warm, snuggling in for breakfast.

10 We feed the animals and then load up the truck with everything we need: axes, clippers, small saw, twine, gloves. Our neighbor has trees down and has offered the wood to anyone who wants to come and chop it up. With the winter weather we're expecting, we can use all the firewood he can spare. The more we can get by on fireplace heat this winter, the better.

11 "Woo-hoo, you feel that, Chris? Fall is here for sure!" my dad rubs his hands together and starts the truck.

12 I nod in agreement and reach up to tuck my nose into my sweatshirt collar, then my hands go into my sweatshirt pocket.

13 Dad laughs. "Don't worry. In no time at all, you'll be sweating."

14 At Mr. Arnold's place, there are three trees down: two apple trees and one huge old oak that got dragged down when the apples blew down in our first storm of the season. The holes their roots left behind are enormous, and I want to crawl into them and explore, but Dad has other plans for me.

15 "Okay, Chris, we're going to start with the lower branches, here. We'll strip the branches and work our way up the tree, then we can chop up the trunk." We dig in, Dad correcting my axe strokes from time to time, interrupting my swing to show me where to hit the branch just right so that I'll get a cleaner cut. He was right: in no time I'm sweating enough to take my sweatshirt off, but my breath comes out of my mouth steaming in the frosty air.

16 By noon we've stripped off the lower branches and have the truck full of wood, about a cord's worth. We'll need about four more to get through the winter, but we thank Mr. Arnold and promise to be back tomorrow.

17 On the ride home, I nearly fall asleep, so my dad reaches over and gives me a playful punch in the arm. "That went twice as fast today with your help, son. You're getting pretty strong," he says and I feel positively mighty.

18 I watch the orchards as we pass. There are so many shades of orange and red that I can't possibly record them all, so I breathe deep and flood my nose to best recall the memories of this day.

1 The following question has two parts. First, answer part A. Then, answer part B.

Part A

What is one theme of "The Scent of Memory"?

A Scientists have proven that smell is an important scent.

B The harvest is an unpleasant time with big rewards.

C Life on a farm is better than life elsewhere.

D Thinking about the past is a powerful source of emotion.

Part B

Which sentence from the "The Scent of Memory" **best** supports the answer to part A?

A "Scientists say that, more than sight, sound, touch, or taste, the sense of smell can trigger memory."

B "For me, the smell of wood smoke always makes me think of autumn."

C "On the ride home, I nearly fall asleep, so my dad reaches over and gives me a playful punch in the arm."

D "There are so many shades of orange and red that I can't possibly record them all, so I breathe deep and flood my nose to best recall the memories of this day."

2 Select **three** sentences that should be included in a summary of "The Scent of Memory."

A A boy describes the many pleasures in his life on a farm.

B Thinking about the smell of wood smoke, a man recalls an autumn day in his youth.

C His best memories are of the barn, the goat, the cat, the dog, and chopping wood.

D His mother and sister stay at home, while he and his father share a harvest with neighbors.

E He wakes up early and has breakfast with his family before heading out with his father.

F He and his father feed the animals in the barn and then chop wood on a neighbor's farm.

G He sweats from working so hard, but his breath still looks like steam in the cold air.

3 Read this sentence from paragraph 5 of "The Scent of Memory."

Even with raisins and brown sugar, it's hard to swallow.

What does the phrase "hard to swallow" suggest about the narrator?

A He has a sore throat.

B He does not like oatmeal.

C He prefers plain oatmeal.

D He is not hungry.

4 In paragraph 17 of "The Scent of Memory," why does the narrator **most likely** say that he feels "positively mighty"?

A He recognizes that he has grown taller in the past year.

B He believes that his father would not have been able to do the work himself.

C He is pleased that his father recognizes his helpfulness and ability.

D He has accomplished something he thought was impossible.

5 How does the author develop the narrator's point of view in "The Scent of Memory"?

A by having the narrator recall a specific day from his childhood

B by having the narrator use only the sense of smell to describe a memory

C by having the narrator alternate between past and present to show the past's influence

D by having the narrator reflect on how his life has changed a great deal since his youth

6 Read the following poem about October:

> October is the lovely girl who draws her sisters' envy:
> Mild in temper, fair of heart, and much admired by many.
> Her sisters dress more modestly, but she is always bold,
> clothed in red and violet, crowned with green and gold.

One theme of "The Scent of Memory" is that autumn is a special time of year with plentiful harvests and beautiful colors. The poem also shares this theme. Compare and contrast how "The Scent of Memory" and the poem present the theme stated above. Use details from the texts to support your answer.

Journal Entry 3

We all have talents. Think about what your talents are. What is your greatest talent? How did you discover it? Write to share your talent with everyone!

Denotation and Connotation

Introduction A word can have two kinds of meanings. A word's **denotation** is its dictionary definition. A word's **connotation** is the feeling that people associate with the word.

Compare these examples:

Positive Connotation	Negative Connotation
My older cousin Cal is clever.	My older cousin Cal is sly.
He asks questions because he is curious.	He asks questions because he is nosy.

The dictionary definition of the word *clever* means almost the same as the dictionary definition of *sly*. The words have similar denotations. The words *curious* and *nosy* also have similar denotations. However, they have very different connotations. The words we use carry feelings. The reader uses these feelings to form opinions.

When you write, think about the connotations of the words you choose. Ask yourself: "What effect will my words have on my readers?"

Guided Practice **Read the sentences. Write *P* if the underlined word has a positive connotation. Write *N* if the underlined word has a negative connotation.**

Hint

Read each underlined word. Ask yourself: What feelings do I connect to the word? If the feelings are good, the word has a positive connotation. If the feelings are bad, the word has a negative connotation.

1. Cal is a very thrifty person. _____
   Cal is a very stingy person. _____
2. He wears classic styles. _____
   He wears old-fashioned styles. _____
3. Every morning he trudges to work. _____
   Every morning he sprints to work. _____
4. Cal drives an antique car. _____
   Cal drives an ancient car. _____
5. His wife insists that he fix the car himself. _____
   His wife encourages him to fix the car himself. _____
6. One day, Cal's son requested a room of his own. _____
   One day, Cal's son demanded a room of his own. _____

Independent Practice

For numbers 1–3, read the sentence. The answer choices have similar denotations. Which answer choice has the most positive connotation?

1 Cal and his wife had a debate about moving to a new home.

A quarrel

B dispute

C discussion

D disagreement

2 Cal said, "We can turn the office into an acceptable bedroom."

A pleasing

B usable

C functional

D workable

3 Cal's wife wanted to move, and she was stubborn about it.

A pushy

B defiant

C obstinate

D determined

Answer Form

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

Number Correct ___/4

For number 4, read the sentence. The answer choices have similar denotations. Which answer choice has the most negative connotation?

4 On moving day they transported all their belongings to their new home.

A sent

B lugged

C moved

D carried

▶ **Try It** Reread what you wrote in Part 1. Do the words give a positive or a negative connotation to your writing? Change any words with a negative connotation to a positive connotation and reread it. Be proud of your talents!

Using a Dictionary or Glossary

Introduction Many words have more than one definition and can serve as more than one part of speech. When you are reading or writing, use a dictionary to check the precise meaning of a word or phrase.

- Words in a **dictionary** appear in alphabetical order. Each entry provides the pronunciation, the part of speech, and the meanings of the word. Sample sentences are often included to clarify meaning.

account (ə kount') *n.* 1. a record of events or time period 2. money in a bank 3. worth, importance
account for *v.* 1. to be the main reason for: *Heavy rain accounted for the flooding.* 2. to explain: *I can't account for the dog's barking.*

When there is more than one meaning, each definition is numbered.

The abbreviations show the part of speech: *n.* stands for *noun* and *v.* stands for *verb.*

extract (ĭk străkt') *v.* 1. to pull out 2. to obtain or get meaning, pleasure, or information from something **extract** (ĕk' străkt) *n.* 3. an excerpt or part of a text 4. a flavoring

The pronunciation of the word is in parentheses. For some words, the pronunciation depends on the part of speech.

- A **glossary** is similar to a dictionary. It is an alphabetical list of special words that are used in a book. Each entry defines the word as it is used in that book.

Guided Practice **Read the paragraph. Use the entries above to find the meanings of the underlined words and phrases. Write the number of the correct meaning above each word or phrase.**

Hint

Identify how a word is used in a sentence before you use the dictionary. If the word is used as a noun, then you should read the definitions given for a noun.

Our museum has an exhibit on Chinese art. The catalog includes extracts from books about the landscape paintings. Many people extract pleasure from viewing these paintings. However, various accounts suggest that these paintings were also used to teach life lessons. If the paintings were used to teach morals, then scholars could account for the wide use of symbols that stand for character traits.

Independent Practice

For numbers 1–4, use the dictionary entries to answer the questions.

Answer Form

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

Number Correct ___/4

express (ĭk sprĕs') *v.* **1.** to say or state **2.** to communicate ideas or feelings **3.** to squeeze or press something out *n.* **4.** type of transportation that moves with few or no stops *adj.* **5.** specific: *I bought these apples for the express purpose of baking a pie.* **6.** stated **7.** moving with few or no stops

1 What part of speech is express as used in this sentence?

My mother and I took the express train to the museum.

A noun
B adjective
C verb
D adverb

2 Which definition of express best fits this sentence?

One artist painted a gloomy landscape to express the theme of grief and loss.

A Definition 2
B Definition 3
C Definition 5
D Definition 6

reflect (rĭ flĕkt') *v.* **1.** to bend back light **2.** to show an image, to mirror **3.** to show clearly or reveal: *The novel reflects the writer's unhappiness.* **4.** to consider seriously: *You need to reflect on your actions.* **5.** to bring negative attention to: *The team's rowdiness reflected on the school.*

3 Which definition best fits reflect as used in this sentence?

Many landscape paintings reflected the artist's mood.

A Definition 1
B Definition 3
C Definition 4
D Definition 5

4 Which definition best fits the way reflect is used in this sentence?

When you view a Chinese landscape painting, reflect on the artist's message.

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

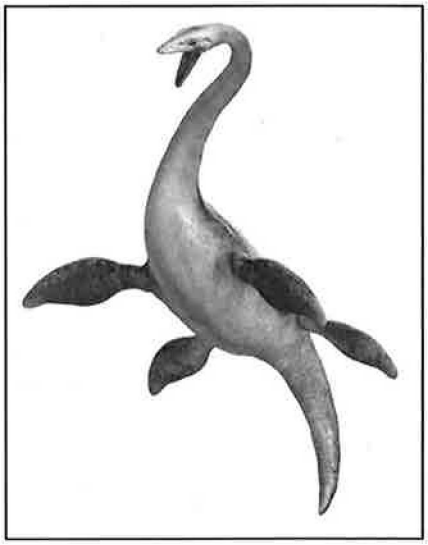
Read the scientific account. Then answer the questions that follow.

Looking for the Loch Ness Monster

by Stuart Clyburn

1 The word *loch* is a Scottish Gaelic word for *lake*. And there are a whole lot of lochs in Scotland—more than 500 of them! But one loch, Loch Ness in the Scottish Highlands, is known around the world. The reason for its fame is not its great size or beauty. People know the name *Loch Ness* because it is said to be the home of a mysterious, giant creature known as "the Loch Ness monster." Whether the creature really exists or not has been a matter of great debate for decades.

2 What does "Nessie," the popular nickname for the monster, supposedly look like? By most accounts, she has a small head on a very long neck. Her body is broad and rounded, with four flippers and a long tail. If you know your prehistoric creatures, you might be thinking: Nessie sounds like a *plesiosaur*, a giant sea reptile that lived hundreds of millions of years ago. One common theory about Nessie is that she actually *is* a plesiosaur. Other explanations for Nessie are far less dramatic. Some people think that the "mysterious" creature people have mistaken for a monster may have been nothing more than a walrus, seal, or eel.



an artist's depiction of a plesiosaur

3 How could a creature as big as a plesiosaur hide in a lake? Well, Loch Ness is a huge body of water. It's the second largest loch in Scotland, based on the surface area of its water. Loch Ness covers more than 21 square miles, and only Loch Lomond is bigger. But if you look at the volume of water, Loch Ness is the biggest. And that's because it's deep—about 755 feet at its deepest point. This single loch contains more water than all the freshwater lakes in England. In other words, it's one big place to hide.

4 Some people who believe in Nessie say that she's made her home in the region for more than a thousand years. A book written in the seventh century tells about an Irish monk who saw a giant "water beast" in the River Ness in 565 C.E. No one thought much about that story until 1933. A couple was driving home along the loch late one night. They said they were forced to stop when a giant, dragon-like creature crossed the road and slid into the water. Their story appeared in newspapers. Soon, many more people claimed to have seen the monster. The following year, in 1934, a doctor from England took a photo that became famous worldwide. The poorly lit, grainy photo shows what looks like the head and long neck of a plesiosaur-like creature rising from the water. The photo served as "proof" of the monster until 60 years later—when it was revealed to be a fake.

5 Since the 1930s, dozens of serious, scientific searches have been undertaken to find the Loch Ness monster. One early effort involved placing scouts with cameras and binoculars around the loch for five weeks. Later searches relied on the use of sonar. This method involves bouncing sound waves through the deep

waters of the loch to detect moving objects. In 2003, the famous British Broadcasting Corporation (BBC) sponsored one of the most thorough searches ever. Scientists used 600 sonar beams and satellite tracking. What did they find? Nothing of note, really. They concluded that Nessie was a myth.

6 After so many attempts, you have to wonder why people keep looking for the Loch Ness monster. It may just be that there's something exciting about the idea of mysterious creatures living so close to us, always just out of view. There's a word for such creatures: *cryptids.* It comes from a Greek word meaning "to hide." The Loch Ness monster is one of many cryptids that have captured the public imagination. Others include Bigfoot in North America, the Yeti in the Himalaya Mountains, and the chupacabra in the southwestern United States and Mexico.

7 Many animals whose existence we take for granted today might once have been considered cryptids. Komodo dragons and giant squids were once thought to be tall tales. Until 1902, people regarded stories of "giant ape-men" living in Africa as just a myth. Today, we know them as mountain gorillas. The odds of "Nessie" turning out to be real may not be quite as good. But if it were true, we'd all love it, wouldn't we? It's exciting to think that a real live monster lives deep in a loch in Scotland.

Answer Form

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

Number Correct ___/4

1 According to the account, what is one reason many people believe the Loch Ness monster does not exist?

A The earliest sighting of the Loch Ness monster occurred in 565 C.E.

B The photo taken in 1934 has been proven to be a fake.

C Plesiosaurs, like the dinosaurs, lived hundreds of millions of years ago.

D Sonar beams and satellite tracking found no evidence in the loch.

2 Which detail provides evidence that a creature as huge as a plesiosaur could really hide in Loch Ness?

A Loch Ness has a surface area of 21 square miles and is 755 feet deep.

B The Loch Ness monster might actually be an ordinary walrus, seal, or eel.

C Dozens of scientific searches of Loch Ness have been conducted.

D The Loch Ness monster is known as a cryptid, a word whose root word means "to hide."

3 Which statement is **best** supported by the account?

A It is illogical to think that a plesiosaur could still be living in Loch Ness today.

B Someday, scientists will prove that no giant creatures live in Loch Ness.

C Some people want to believe in the Loch Ness monster and ignore scientific evidence showing it does not exist.

D People have always been fascinated by the idea of strange creatures such as Bigfoot and the Loch Ness monster.

4 Despite the great interest in the Loch Ness monster, it is highly unlikely that such an animal actually exists. Which sentence from the passage **best** supports this conclusion?

A "Whether the creature really exists or not has been a matter of great debate for decades."

B "Some people who believe in Nessie say that she's made her home in the region for more than a thousand years."

C "Since the 1930s, dozens of serious, scientific searches have been undertaken to find the Loch Ness monster."

D "Many animals whose existence we take for granted today might once have been considered cryptids."

5 Some people firmly believe that the Loch Ness monster is actually a plesiosaur. Use at least **three** details from the account to explain why some people believe this.

Self Check ***Go back and see what you can check off on the Self Check on page 1.***

Journal Entry 4

What superpower would you like to have? How would it be useful right now? Write a story about a teenager who has that superpower and uses it to save the world.

Figures of Speech

Introduction One way that writers make their writing lively and vivid is by using **figures of speech**. A figure of speech is an imaginative, or nonliteral, way of using language. It might describe something in an unexpected way, or it might even stretch the truth.

- **Personification** is a figure of speech that gives human-like qualities and actions to something that is not human. Writers use personification to create a picture in the mind of the reader or to convey a mood.

  The steep trail dared Mia to take another step.

  Sneaky tree roots were hiding under leaves and twigs, ready to trip her.

  Nonliving things, such as tree roots, can't dare someone, be sneaky, or hide with the intention of tripping someone. The figures of speech help the reader picture the trail and sense the lurking dangers.

- **Hyperbole** is a figure of speech that uses exaggeration for emphasis or effect.

  It took forever to reach the top of the mountain.

  It doesn't really take "forever" to climb a mountain. The figure of speech emphasizes the length and difficulty of the climb and conveys Mia's frustration.

Guided Practice **Read the passage. Underline each figure of speech, and identify it by writing *P* for personification or *H* for hyperbole. Then discuss the meaning of the figure of speech with a partner.**

Hint

As you read, ask yourself:

"Do any verbs show a nonliving thing doing something a person can do?"

"Do any adjectives give human-like qualities to nonliving things?"

"Do any sentences exaggerate the truth?"

By the time Mia's parents set up the tent, it was raining. Mia would never forgive them for this trip! Her legs were still complaining from the climb, and the mean rain was punishing her family for camping in October.

The next morning, though, Mia woke up refreshed. She thought, "I must have slept for days!" Outside the tent, the sun smiled through the leafy trees.

Independent Practice

For numbers 1–4, what does the underlined figure of speech mean in each sentence?

Answer Form

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

Number Correct ___/4

1 A bold wind grabbed Mia's cap as she and her parents hiked down the trail.

A The wind was bold and pushy.

B The wind blew Mia's cap off her head.

C Mia took her cap off her head because of the wind.

D Someone took Mia's cap.

2 When they reached the pond, Mia exclaimed, "There must be a million ducks here!"

A "There are one million ducks at the pond."

B "I've never seen ducks before."

C "There are a lot of ducks here."

D "I can guess the number of ducks."

3 Suddenly, clouds gathered and chased the sun out of the sky.

A The clouds were faster than the sun.

B The clouds pushed the sun out of the sky forever.

C The clouds had an important meeting.

D The sun disappeared quickly when clouds filled the sky.

4 The rain ignored Mia and her family's plans to go out on a rowboat.

A The rain did not affect the plans Mia and her family had.

B Mia and her family enjoyed their time out in the rowboat.

C Other people enjoyed rowboats, but not Mia's family.

D Mia's family had made plans, but now it was raining.

▶ **Try It** Reread your story. Find places where you could add emphasis by including figures of speech. Add one instance of hyperbole and one instance of personification.

Using a Thesaurus

Introduction You can use a thesaurus to make your writing more precise or interesting. A **thesaurus** provides synonyms and antonyms for particular words.

- A thesaurus lists words in alphabetical order. Each entry gives the part of speech, the definition, and a list of synonyms. Antonyms, if any, are also included.

bitter *adj.* 1. a strong, unpleasant taste: *The white part of a lemon rind is bitter.* **acrid, unpleasant** *Antonyms: sugary, sweet* 2. harsh and cold: *Winter has been bitter this year.* **rough, severe** *Antonyms: mild, pleasant* 3. having or showing resentment: *Al felt bitter when he lost his job.* **angry, resentful, sullen** *Antonym: friendly*

claim *v.* 1. to need: *This issue claims our attention.* **deserve, demand, require** 2. to say that something is true: *Nola claims that bees sleep at night.* **state, declare, insist** *Antonym: deny* *n.* 3. a statement that something is true: *The ad makes the claim that Brand X is the best flour.* **assertion, allegation, declaration** *Antonym: denial*

When there is more than one meaning, each definition is numbered.

Sometimes there is a sample sentence.

Some words can serve as more than one part of speech.

Guided Practice **Read the paragraph. Use the thesaurus entries above to answer the questions about the underlined words.**

Hint

Remember: A *synonym* is similar in meaning to another word. An *antonym* has the opposite meaning of the word.

Nearly 2,600 years ago, people in Mexico and Central America drank a bitter chocolate drink, which they made from cocoa beans. Some scholars claim that people drank chocolate even longer ago.

1 Which words are synonyms of *claim* as used in the paragraph?

_____

2 Which word is an antonym of *claim*? _____

3 Which words are synonyms of *bitter* as used in the paragraph?

_____

4 Which words are antonyms of *bitter*? _____

Independent Practice

For numbers 1–4, read the sentence. Then use the thesaurus entry to answer the question.

Answer Form

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

Number Correct ____/4

significant *adj.* **1.** expressing a meaning: *Dad gave Lee and Arlo a significant glance when they started to argue.* **meaningful, informative** *Antonym: meaningless* **2.** having influence: *Thu has a significant job with the Government.* **important** *Antonyms: insignificant, unimportant*

1 As the food of rulers, gods, and everyday people, chocolate was significant for the Maya.

Which is a synonym for significant as it is used above?

A meaningful
B unimportant
C insignificant
D meaningless

permit *v.* **1.** to allow to do something: *I'll permit you to pick plums.* **allow, authorize** *Antonyms: forbid, prohibit* **2.** to be favorable: *We'll have a picnic if the weather permits.* **accommodate, oblige** *n.* **3.** written permission: *The contractor got a permit to build a home.* **license, permission**

2 The Aztecs, however, would permit only certain people to drink it.

Which is an antonym for permit as it is used above?

A license
B allow
C forbid
D oblige

powerful *adj.* **1.** physically strong: *The oxen are powerful.* **strong, mighty** *Antonyms: weak, frail* **2.** able to influence: *Leaders are powerful people.* **high-ranking, influential** *Antonym: low-ranking*

3 Only the powerful members of Aztec society drank the sacred beverage.

Which is a synonym for powerful as it is used above?

A high-ranking
B powerless
C weak
D frail

valuable *adj.* **1.** having monetary worth: *Gold is valuable.* **precious** *Antonym: cheap* **2.** having use or importance: *A job teaches you valuable skills.* **useful, worthwhile** *Antonym: worthless*

4 Cocoa beans were so valuable that the Aztecs used the beans as money.

Which is an antonym for valuable as it is used above?

A useful
B worthwhile
C precious
D cheap

Read this account of important moments in the history of science. Then answer the questions that follow.

Luck Favors the Prepared

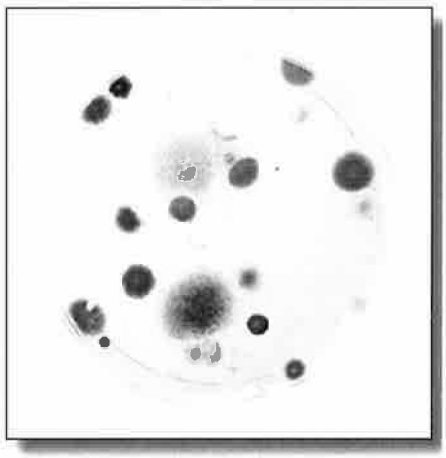
by Maria Malzone

1 Making a great discovery generally requires hard work, years of study, and experiment after experiment. However, people sometimes accidentally stumble upon amazing discoveries. Some of the things we use in everyday life—such as sticky notes, microwaves, and artificial sweeteners—were all chance discoveries that changed the way we live. The inventor of the sticky note just happened to stumble on a type of glue that could be reused. The scientist who discovered microwaves wasn't looking for them. He was doing experiments with a new type of vacuum tube. Then one day the chocolate bar in his pocket began to melt, and he realized the machine in front of him could change the way people cooked. A scientist who was trying to find new uses for coal tar happened by chance to notice that it tasted sweet, thus discovering the first artificial sweetener.

2 It is exciting to think that anyone could discover something important, such as sticky notes or microwave ovens. However, most of the accidental discoveries you hear about required more than just luck. While the discoverers may have been lucky, they were also prepared. Some of the most famous "accidental" discoveries were made by scientists who had been working to solve problems for a long time.

3 The discovery of penicillin, which is a medicine used to kill bacteria, is one of the most famous stories of accidental discovery. In the early 1900s, a scientist named Alexander Fleming was trying to find ways to cure diseases and infections. While doing his research, Fleming grew bacteria on special plates called petri dishes.

4 One day he noticed a type of mold, called penicillin, growing on the plate. To Fleming's amazement, the mold killed the bacteria. He discovered that the mold could be used as an antibiotic, which is a medicine that fights bacterial infections. The penicillin antibiotic was used to treat cuts, infections, and diseases that made many people seriously ill. Because of this, it was called a "miracle drug." It is still used today to help save lives.



Mold growing in a petri dish. Alexander Fleming's chance observation of how a type of mold killed bacteria led to the development of modern antibiotics.

5 X-rays were another accidental discovery. A scientist named Wilhelm Röntgen, who had studied physics and engineering, was working as a professor in the late 1800s. At that time, Röntgen was performing experiments by passing an electric current through gas. His experiments sometimes produced sparks in the gas. Röntgen noticed that every time the gas sparked, a plate treated with a special chemical lit up. Röntgen thought that perhaps the sparks were producing some sort of rays. These rays were not like anything known at the time, however. For this reason, Röntgen called them X-rays.

6 After making this discovery, Röntgen decided to investigate the rays further. For example, he placed different objects in front of the rays. He tested whether the X-rays would pass through the objects or be blocked by them. Röntgen's most famous image is the X-ray shadow of his wife Bertha's hand. This image shows that the rays do not pass through bone. Doctors quickly realized that they could use X-ray images to look at broken bones.

the first X-ray photograph, showing Bertha Röntgen's hand

7 Another scientist who made an accidental discovery was Charles Goodyear. Goodyear was experimenting with natural rubber because he hoped to find a way to make it more useful. Natural rubber, which comes from the sap of rubber trees, is too soft and sticky to be used in many products. Goodyear was determined to find a way to change the rubber so that it would be more durable but also remain elastic, or stretchy. He tried to change the rubber in countless ways, but each attempt disappointed him. Goodyear even patented one method of changing the rubber, but he was still unhappy with the results.

8 One day, Goodyear spilled a mixture containing natural rubber onto a hot stove. The result was the hard, strong rubber he had been seeking. The process resulted in what we now call vulcanized rubber. Goodyear patented a process for making vulcanized rubber in 1844 and then sold his product to manufacturers. Today vulcanized rubber is used in everything from bowling balls to car tires to shoe soles.

9 These scientists and inventors are all known for their accidental discoveries. Could these discoveries have been made by anyone else? Perhaps. But Fleming, Röntgen, and Goodyear all studied and worked hard for many years. When their lucky accidents happened, they had learned enough to understand what they saw. They then worked hard to make their observations useful. Lucky accidents can happen to anybody, but great discoveries are almost always the result of hard work.

Answer Form

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

Number Correct ___/6

1 Which sentence from the article **best** supports the idea that the discovery of X-rays helped to improve people's health?

A "After making this discovery, Röntgen decided to investigate the rays further."

B "He tested whether the X-rays would pass through the objects or would be blocked by them."

C "Röntgen's most famous image is the X-ray shadow of his wife Bertha's hand."

D "Doctors quickly realized that they could use X-ray images to look at broken bones."

2 Answer Parts A and B below.

Part A

Which statement is true about Alexander Fleming's initial understanding of penicillin?

A He hoped that penicillin would cure certain diseases.

B He was unaware that penicillin would have any effect.

C He was sure penicillin would be a helpful medicine.

D He knew penicillin was deadly to some bacteria.

Part B

Select **two** pieces of evidence from "Luck Favors the Prepared" that support the answer to Part A.

- ☐ "one of the most famous stories of accidental discovery"
- ☐ "a medicine used to kill bacteria"
- ☐ "trying to find ways to cure diseases and infections"
- ☐ "To Fleming's amazement"
- ☐ "the mold could be used as an antibiotic"
- ☐ "it was called a 'miracle drug'"

3 The author believes that Charles Goodyear was a dedicated scientist who kept improving on his work. Which sentence from the article **best** supports this statement?

A "Another scientist who made an accidental discovery was Charles Goodyear."

B "He tried to change the rubber in countless ways, but each attempt disappointed him."

C "One day, Goodyear spilled a mixture containing natural rubber onto a hot stove."

D "Goodyear patented a process for making vulcanized rubber in 1844 and then sold his product to manufacturers."

4 Which of the following **best** matches a central idea from the text with a detail that supports it?

A Central idea: Many important discoveries are made during experiments.
Supporting detail: Doctors began using X-rays to examine injured patients.

B Central idea: Some important discoveries are not well understood at first.
Supporting detail: Artificial sweetener was based on a kind of coal tar.

C Central idea: Some scientists make accidental discoveries that help people.
Supporting detail: Penicillin is still used in modern times to save lives.

D Central idea: Dedicated scientists may accidentally become great inventors.
Supporting detail: Fleming used plates called petri dishes to grow bacteria.

5 Vulcanized rubber continues to be an important part of modern products. How does the author illustrate this idea in the passage?

A She lists examples of different uses for vulcanized rubber.

B She tells the story of the invention of vulcanized rubber.

C She compares vulcanized rubber with natural rubber.

D She notes the year in which vulcanized rubber was patented.

6 Which of the following **best** summarizes the article?

A Sticky notes, microwaves, and artificial sweeteners all have something in common. Each of these useful things was discovered by accident. The same is true of a number of other discoveries, including penicillin, X-rays, and vulcanized rubber.

B Many important scientific discoveries have been made by accident. These include the discoveries of penicillin, X-rays, and vulcanized rubber. In each case, the scientist making the discovery had the experience to see the usefulness in what others might have considered a mere "accident."

C Alexander Fleming may be the person who made the most important accidental discovery of all time. He was working in his lab when he noticed a type of bread mold that killed bacteria. This led to the invention of penicillin, an antibiotic that has saved countless lives.

D When a good scientist discovers something by accident, the discovery involves more than just luck. Microwaves, penicillin, and X-rays are all examples of useful things discovered by scientists who knew how to turn a mistake into something good. Their "lucky accidents" had more to do with hard work than good luck.

7 Explain how the author uses anecdotes, or stories, to illustrate key ideas of the passage. Use details from the passage to support your answer.

8 Below is information from paragraphs 5 and 6 of the passage "Luck Favors the Prepared." Organize the information by writing each phrase from the passage into the proper section of the table: central idea, supporting detail, and example used to make a point.

Röntgen was performing experiments by passing an electric current through gas.

Röngten's image of his wife's hand showed that X-rays do not pass through bone.

X-rays were another accidental discovery.

Every time the gas sparked, a plate treated with a special chemical lit up.

Central idea	
Supporting detail	
Supporting detail	
Example used to make a point	

Journal Entry 5

Today you woke up and were told you are the president of a new country. You can name the country anything you'd like and make all the laws. What decisions would you make? Write an announcement to the people of your country explaining everything to them.

Subject and Object Pronouns

Introduction A pronoun takes the place of a noun. A **subject pronoun** is used as the subject of a sentence. An **object pronoun** is used as the direct object of a verb or as the object of a preposition. It is important to use them correctly when speaking and writing.

Subject	I am learning about the Mongolian ruler Genghis Khan.
Direct Object of Verb	The Mongol people admired him.
Object of Preposition	This fearsome warrior was a hero to them.

- Subject and object pronouns can be singular or plural.

Subject Pronouns	
Singular	**Plural**
I	we
you	you
he, she, it	they

Object Pronouns	
Singular	**Plural**
me	us
you	you
him, her, it	them

- A pronoun can be part of a **compound subject** or **compound object**. Compound subjects and objects are made up of two or more nouns, pronouns, or both. If the pronoun *I* or *me* is included, it usually comes last.

Compound Subject	**Tricia and** I are reading about ancient China.
Compound Object	The teacher assigned the topic to **Fred and** me.

Guided Practice **Cross out each underlined word or phrase. Above it, write the correct subject or object pronoun to replace it.**

Hint

The pronouns *it* and *you* can be used as either a subject or an object. But all other pronouns are used only as a subject or an object. Be careful to use them correctly!

Many historians have written about Genghis Khan. Often these historians describe Genghis Khan as a cruel warrior who captured land for the people of Mongolia. However, this fierce leader also united the people of Mongolia.

Tricia became interested in the Mongolian empire, and her and me wrote a report on the empire. Fred helped Tricia and I on the research. Fred, me, and Tricia learned a lot.

Independent Practice

For numbers 1–5, which word or words correctly complete each sentence?

Answer Form

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

Number Correct ___/5

1 When Genghis Khan was a child, his mother kept _____ and the rest of the family safe in the Mongolian Desert.

A we

B him

C they

D he

2 This brave woman and her children often had little to eat, but _____ survived.

A her and them

B she and them

C her and they

D she and they

3 Genghis Khan's mother was a strong, smart woman. Her son's ability to lead probably came from _____.

A her

B she

C he

D they

4 As a leader, Genghis Khan promoted religious freedom because other people's beliefs were interesting to _____.

A he

B him

C they

D we

5 _____ also learned that Genghis Khan created the first Mongol written language.

A Me and my friends

B They and me

C My friends and I

D My friends and me

▶ **Try It** Reread what you wrote in Part 1. Circle places where you used the words *I* or *me*. Did you use them properly? Then go through your announcement to make sure all other pronouns are used correctly.

Using a Thesaurus

Introduction You can use a thesaurus to make your writing more precise or interesting. A **thesaurus** provides synonyms and antonyms for particular words.

- A thesaurus lists words in alphabetical order. Each entry gives the part of speech, the definition, and a list of synonyms. Antonyms, if any, are also included.

bitter *adj.* **1.** a strong, unpleasant taste: *The white part of a lemon rind is bitter.* **acrid, unpleasant** *Antonyms: sugary, sweet* **2.** harsh and cold: *Winter has been bitter this year.* **rough, severe** *Antonyms: mild, pleasant* **3.** having or showing resentment: *Al felt bitter when he lost his job.* **angry, resentful, sullen** *Antonym: friendly*

claim *v.* **1.** to need: *This issue claims our attention.* **deserve, demand, require** **2.** to say that something is true: *Nola claims that bees sleep at night.* **state, declare, insist** *Antonym: deny* *n.* **3.** a statement that something is true: *The ad makes the claim that Brand X is the best flour.* **assertion, allegation, declaration** *Antonym: denial*

When there is more than one meaning, each definition is numbered.

Sometimes there is a sample sentence.

Some words can serve as more than one part of speech.

Guided Practice **Read the paragraph. Use the thesaurus entries above to answer the questions about the underlined words.**

Hint

Remember: A *synonym* is similar in meaning to another word. An *antonym* has the opposite meaning of the word.

Nearly 2,600 years ago, people in Mexico and Central America drank a bitter chocolate drink, which they made from cocoa beans. Some scholars claim that people drank chocolate even longer ago.

1 Which words are synonyms of *claim* as used in the paragraph?

_____

2 Which word is an antonym of *claim*? _____

3 Which words are synonyms of *bitter* as used in the paragraph?

_____

4 Which words are antonyms of *bitter*? _____

Independent Practice

For numbers 1–3, read the sentence. Then use the thesaurus entry to answer the question.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/3

significant *adj.* **1.** expressing a meaning: *Dad gave Lee and Arlo a significant glance when they started to argue.* **meaningful, informative** *Antonym: meaningless* **2.** having influence: *Thu has a significant job with the Government.* **important** *Antonyms: insignificant, unimportant*

1 As the food of rulers, gods, and everyday people, chocolate was significant for the Maya.

Which is a synonym for significant as it is used above?

A meaningful
B unimportant
C insignificant
D meaningless

permit *v.* **1.** to allow to do something: *I'll permit you to pick plums.* **allow, authorize** *Antonyms: forbid, prohibit* **2.** to be favorable: *We'll have a picnic if the weather permits.* **accommodate, oblige** *n.* **3.** written permission: *The contractor got a permit to build a home.* **license, permission**

2 The Aztecs, however, would permit only certain people to drink it.

Which is an antonym for permit as it is used above?

A license
B allow
C forbid
D oblige

powerful *adj.* **1.** physically strong: *The oxen are powerful.* **strong, mighty** *Antonyms: weak, frail* **2.** able to influence: *Leaders are powerful people.* **high-ranking, influential** *Antonym: low-ranking*

3 Only the powerful members of Aztec society drank the sacred beverage.

Which is a synonym for powerful as it is used above?

A high-ranking
B powerless
C weak
D frail

▶ **Try It** Look back at your poem. Are there any words that are used over and over? Are there words that could be replaced with more interesting words? Circle at least two words you can replace by using a thesaurus. Then, using a print or online thesaurus, find two new words.

Read the story. Then answer the questions that follow.

A Sewing Sensation

by William Rivera

1 Juan sat on the floor of Mom's sewing room with one eye on his soccer magazine and one eye on his mother. His mother was making a wedding dress for their neighbor's daughter, and Juan could see that the dress was going to be beautiful. Juan's mother had designed and sewn dresses for many of the girls in his town, and Juan felt proud that people wanted to wear his mother's creations on their special days.

2 Juan glanced up again from his magazine and asked, "Is your machine running okay, Mom? I think it's making a weird noise."

3 Mom hardly looked up and said, "I think it's working just fine. It's whirring and humming away, just as always."

4 Juan looked disappointed, but he went back to pretending to read his magazine. A few minutes later, he asked, "Do you want me to sew the hem of the dress so that you can rest your fingers? I've watched you do it millions of times, so I could do it if you are really tired." This time, Juan's mother studied Juan's face carefully.

5 "You know, I could use a break," she said, "and we need some new pillowcases. I've got the pattern cut out, and all you'd have to do is stitch up the sides." Juan dropped his magazine and was sitting in Mom's sewing chair in no time. Juan's mom carefully removed the dress she was working on, showed Juan how to thread the sewing machine, and brought him some pillowcases to sew.

6 In his enthusiasm, Juan stomped on the foot pedal and almost sewed over his finger. Then he remembered the patience that his mother always showed, and he slowed down. His seams were straight and even. Juan had a huge smile on his face when he looked over his shoulder at his mom.

7 "I can't believe you sewed that so perfectly on your first try," Mom said, patting Juan on the back. "It took me years of practice to perfect my technique, and you're already a sensation. Why don't you try making a pillow for your room? You can design it, and I'll show you how to make the pattern and cut it out."

8 Juan's face lit up, but then a dark shadow seemed to pass over it. "I think I should probably just go outside and kick the ball with my friends." To himself, he muttered, "What would Anthony think if he saw me at a sewing machine?" as he headed outdoors.

9 Mom didn't say anything as she watched Juan's reaction, but that night at dinner, she and Juan's dad began talking about a local fashion designer who had moved to Dallas and become a very successful clothing designer. Juan pretended he wasn't listening, but the scowl slowly vanished from his face. "Many of the best fashion designers are men," Juan's dad continued. "They can make a lot of money for their designs."

10 After dinner, Juan got out his notebook and began sketching. Then he showed his notebook to his mother, and she nodded approvingly. Together, they headed to the sewing room for pattern tracing paper and scissors.

11 Juan cut out two large round pieces of cloth and began stitching them together, leaving one section open. He turned the cloth inside out, stuffed the opening with cotton batting, and then sewed up the open section. Finally, he used fabric markers to add details. He placed his finished creation on his bed.

12 The next day, Anthony came over to kick the ball with Juan, but it started to rain. The two headed to Juan's room to watch soccer videos instead. When Anthony saw the new oversized soccer ball on Juan's bed, he asked Juan where he got it. Juan grinned at his friend and said, "Mine is one-of-a-kind, but I think I know how to get you one that's almost like it."

Answer the questions. Mark your answers to questions 1–4 on the Answer Form to the right.

Answer Form

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

Number Correct ___/4

1 Juan does not have a lot of experience with sewing. Which sentence from the passage is the **best** evidence of this claim?

A "Juan glanced up again from his magazine and asked, 'Is your machine running okay, Mom? I think it's making a weird noise.'"

B "'I can't believe you sewed that so perfectly on your first try,' Mom said, patting Juan on the back."

C "To himself, he muttered, 'What would Anthony think if he saw me at a sewing machine?' as he headed outdoors."

D "'Many of the best fashion designers are men,' Juan's dad continued."

2 Juan is very excited about learning to sew. Which of the following sentences from the passage **best** supports this statement?

A "Juan felt proud that people wanted to wear his mother's creations on their special days."

B "Juan sat on the floor of Mom's sewing room with one eye on his soccer magazine and one eye on his mother."

C "Juan had a huge smile on his face when he looked over his shoulder at his mom."

D "Then he remembered the patience that his mother always showed, and he slowed down."

3 Which detail **best** supports the idea that Juan's mother encourages her son's interests?

A She tells him that her sewing machine doesn't require fixing.

B She gives him some pillowcases to sew on his own.

C She sends him outside to play ball instead of sewing.

D She gives him a notebook for sketching and drawing.

4 What is one reason Juan chooses to play soccer with his friends instead of continuing to sew?

A He knew that he needed to practice if he wanted to improve his soccer skills.

B He did not want his friends to think he was rude for keeping them waiting.

C He thought that his father would not approve of his interest in sewing.

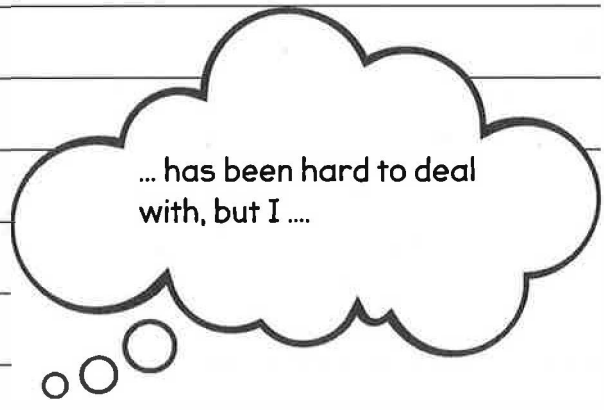
D He was concerned that his friends might make fun of his sewing talent.

5 Juan seems somewhat embarrassed about his strong interest in sewing. Write a paragraph in which you agree or disagree with that statement. Use at least **two** details from the story to support your answer.

✓ **Self Check** ***Go back and see what you can check off on the Self Check on page 43.***

Journal Entry 6

What has been the most challenging thing you've had to deal with while staying at home? How have you managed? Write advice to share with friends who are dealing with similar challenges.



More About Subject and Object Pronouns

Introduction **Subject pronouns** and **object pronouns** can be used to tell about or emphasize something mentioned in the sentence.

- Sometimes a **subject pronoun** follows a form of the linking verb *be (is, am, are, was, were)* to tell about the subject. The pronoun can be used alone or in a compound subject.

  It **was** I, not Zoey, who saw the boy fall off his bike.

  However, the first ones to reach the boy **were** she and Terrance.

- The plural pronouns ***we*** and ***us*** can also be used before a noun for emphasis. Use *we* if the noun is the subject of the sentence. Use *us* if the noun is the object of a verb or preposition.

  We **girls** kept the boy calm and called his mom.

  When the boy's mother arrived, she thanked us **girls** for our help.

Guided Practice **Circle the correct pronoun to complete each sentence.**

Hint

If the pronoun is followed by a noun, try reading the sentence without the noun. For example, "We [doctors] care about health." You can tell that *We* sounds right and that *Us* would sound wrong.

Look for forms of the linking verb *be (is, am, are, was, were)*. If a pronoun comes after one of these forms, remember to use a subject pronoun.

1. The people in our class who want to become doctors are Zoey and (me, I).
2. (Us, We) students enjoyed meeting Dr. Higgs on Career Day.
3. It was (him, he) who won the Doctor of the Year award in our state.
4. Dr. Higgs inspired (we, us) kids to learn more about careers in medicine.
5. Terrance's parents are both doctors, and it was (they, them) who invited Dr. Higgs to speak to us.

Independent Practice

For numbers 1–5, which pronoun correctly completes each sentence?

Answer Form

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

Number Correct ___/5

1 The Young Paramedic Program is perfect for _____ students.

A we
B them
C us
D they

2 The first people to sign up were Zoey, Paris, and _____.

A me
B I
C them
D him

3 It was _____ who noticed the sign-up sheet first.

A us
B I
C me
D them

4 The instructors are all paramedics, and it will be _____ who teach us basic first aid.

A they
B her
C them
D it

5 _____ young volunteers are eager to learn about saving lives.

A Us
B Them
C They
D We

▶ **Try It** Reread what you wrote in Part 1. Circle any pronouns you used. Make sure you used them all correctly. Fix any errors.

Punctuating Parenthetical Elements

Introduction When you want to include a **parenthetical element**, or a piece of extra information that is interesting but not absolutely necessary, you use punctuation marks to set it off from the rest of a sentence. You can use **commas, parentheses,** or **dashes.**

Type of Punctuation	When to Use	Example
Commas	to set off information that is not essential to understanding the rest of the sentence	Rachel Carson, **born on a small farm in Pennsylvania**, devoted her life to protecting the environment. She was always interested in nature, **even as a young girl.**
Parentheses	to set off nonessential information or to remind readers of something they may already know	Rachel Carson (**1907–1964**) did important research on the effects of chemicals on our water supply.
Dashes	to add emphasis, set off a new thought, or show a sudden change in thinking	Carson—**always passionate about nature**—was a powerful and persuasive writer. She began her writing by exploring life in the sea—**a world unknown to most readers**.

Guided Practice **Add the punctuation shown in *italics* to set off the parenthetical information in each sentence.**

Hint

When a parenthetical element is in the middle of a sentence, be sure to set it off with the same type of punctuation before *and* after.

Example:
Isabelle, also known as Izzie, is shy.
NOT
Isabelle—also known as Izzie, is shy.

1. Elizabeth Blackwell 1821–1910 grew up in a time when women were not welcome in many professions.
parentheses

2. She thought women would want to see a female doctor rather than a male about their health concerns.
commas

3. Blackwell was accepted into Geneva Medical School after being rejected by twenty other medical schools.
dash

4. Blackwell a determined person became the first woman to graduate from medical school in the United States.
commas

5. She later established a medical school just for women.
dash

For numbers 1–4, choose the answer that best punctuates the underlined part of each sentence.

Answer Form

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

Number Correct ___/4

1 Dr. Jonas Salk 1914–1995 discovered a cure for polio.

A Salk 1914–1995, discovered

B Salk, (1914–1995), discovered

C Salk (1914–1995) discovered

D Salk—1914–1995—discovered

2 Polio a disease that struck fear in parents was a terrible illness that could cripple children.

A Polio, a disease that struck fear in parents, was

B Polio, a disease that struck fear in parents—was

C Polio (a disease that struck fear in parents), was

D Polio—a disease that struck fear in parents, was

3 Jonas Salk's parents immigrants with little formal education themselves were determined that their children would succeed.

A parents—(immigrants with little formal education themselves) were

B parents immigrants with little formal education themselves, were

C parents immigrants with little formal education themselves— were

D parents (immigrants with little formal education themselves) were

4 At medical school, Salk began researching influenza the virus that causes the flu.

A influenza the virus, that causes the flu.

B influenza—the virus—that causes the flu.

C influenza (the virus) that causes the flu.

D influenza, the virus that causes the flu.

▶ **Try It** Reread what you wrote in Part 1. Are there places where you added information that should be set off from the rest of a sentence? If so, make sure you used the proper punctuation. If not, edit your writing to include at least one piece of extra information.

Read the story. Then answer the questions that follow.

Work Smarter, Not Harder

by Trevor Jackson

1 Kari wiped sweat from her forehead and stuck the shovel back into the haystack-sized pile of peppermint snow. It wasn't exactly snow. It was way too warm for it to be frozen water. The one time she licked off some that fell on her hand, she learned that it definitely didn't taste like peppermint. More like blended asparagus. But the mountain of powdery mush was definitely white with streaks of red swirling up through it. And Kari had to move it all off the wide green field and onto the dirt track around the field. All under the withering gaze of two suns.

2 It was her third day attempting to move the mush. Each day she worked as fast as she could, but she could never quite finish the job before falling down exhausted. She figured that was why each morning the pile was reset, waiting for her to get to work, as if she'd done nothing the day before.

3 Kari wasn't sure exactly how long she had been in Parival, if that's even where she really was. Two weeks? A month? Enough details shared by her uncle Otto matched what she had experienced since she fell down the well in the freezing, snow-filled woods behind her grandparents' house: the feeling of rising and falling at the same time when she first slipped on the well's rock wall, the way she cast two shadows because of the twin suns in the sky, the birdsongs that sounded more like a baby's midnight cries for food. Kari had thought these things were just stories, though, even if Otto always protested that they were true. Now she knew.

4 Kari hadn't been in Parival more than an hour before she'd spotted the big board. It was strung between two branches of an enormous tree, its limbs heavy with a scary-looking red fruit, like giant cherries. The board read, CHORES FOR KARI. She looked around as if there might be someone to explain. The suns beat down on her neck as she stepped closer to examine the chart. Each row gave a title and a brief description followed by a box for a check mark to show Kari had finished.

5 So far each task had proved to be more complicated than it seemed at first. She had to make choices about how she was going to complete each task. A job of collecting and sorting eggs as big as an ostrich's forced her to use some math skills she didn't know would ever come in handy. Another job involved her singing a row of musical notes, but she had to sing them from right to left instead of left to right.

6 Exhausted, Kari stopped shoveling the mush and dropped the shovel on the ground. She stamped her foot and gave a loud groan. She thought again about the tasks she had already completed. Each job was a combination of physical activity and some creative thinking. She had been shoveling for days, but had she applied any original thought to the task?

7 That was it! Kari suddenly remembered a magic trick she had performed at her little brother's birthday party. It had been a sunny day just like this one. Although of course there was only one sun in that sky. Kari's family and friends had all gathered in the backyard around the small patio table. Plates, cups, and plastic forks and spoons rested on top of a white tablecloth. Kari had grabbed the edges, counted to three, and yanked. Everything on top of the tablecloth stayed in one place, but the tablecloth was liberated. Kari's family applauded.

8 The grassy field had felt slippery under her feet while she had worked the last three days. Maybe it wasn't the peppermint snow that had to move, but the field underneath! Kari kicked the shovel aside and ran to the edge of the field. Sure enough, the edge of the field could be lifted. But the tablecloth had been much smaller and lighter than this grassy field. She would just have to try.

9 Kari gave the grass in her hands a shake and watched the pile of peppermint snow. The grass ripple she had shaken grew taller and taller as it moved toward the pile in the center. By the time the wave reached the center, it looked like a giant whale. The whale-shaped hump slid right underneath the pile, carrying it high up into the air. Kari saw her chance and pulled hard on the grass. The entire field came flying at her like it weighed no more than that tablecloth had last summer. She ducked as it flew over her head. Then she watched as the pile of snow came falling down to rest on the dirt that had been underneath the grass field. When it touched dirt, the pile vanished.

10 Kari dusted herself off and headed back to the big chores board; she would get home one way or another.

---

1 In the first paragraph of the story, what does it mean that Kari has to work "under the withering gaze of two suns"?

A The two suns disapprove of Kari's efforts.

B Kari feels judged by unseen persons in Parival.

C Kari is very angry at whoever brought her to Parival.

D The light from the suns is extremely hot and bright.

2 Which sentence signals a major shift in the action of the story?

A "The suns beat down on her neck as she stepped closer to examine the chart."

B "She stamped her foot and gave a loud groan."

C "Kari suddenly remembered a magic trick she had performed at her little brother's birthday party."

D "Then she watched as the pile of snow came falling down to rest on the dirt that had been underneath the grass field."

3 The following question has two parts. First, answer part A. Then, answer part B.

Part A

Why does Kari work to carry out the tasks written on the board?

A She likes the challenge of creative problem-solving.

B She thinks completing them is her only way out of Parival.

C She is bored and doesn't have anything else to do.

D She is frightened of the red fruit hanging by the board.

Part B

Which sentence from the passage **best** supports the answer to part A?

A "It was strung between two branches of an enormous tree, its limbs heavy with a scary-looking red fruit, like giant cherries."

B "A job of collecting and sorting eggs as big as an ostrich's forced her to use some math skills she didn't know would ever come in handy."

C "Each job was a combination of physical activity and some creative thinking."

D "Kari dusted herself off and headed back to the big chores board; she would get home one way or another."

4 Kari checks to see if the edge of the field can be lifted because she realizes that each previous task she completed required a creative solution. Which of the following sentences from the passage **best** supports this statement?

A "She had to make choices about how she was going to complete each task."

B "So far each task had proved to be more complicated than it seemed at first."

C "She had been shoveling for days, but had she applied any original thought to the task?"

D "Kari gave the grass in her hands a shake and watched the pile of peppermint snow."

5 Which sentence from the story helps to illustrate how little information the narrator shares with the reader?

A "The one time she licked off some that fell on her hand, she learned that it definitely didn't taste like peppermint."

B "Each day she worked as fast as she could, but she could never quite finish the job before falling down exhausted."

C "Kari wasn't sure exactly how long she had been in Parival, if that's even where she really was."

D "Kari had thought these things were just stories, though, even if Otto always protested that they were true."

E "She looked around as if there might be someone to explain."

F "Each row gave a title and a brief description followed by a box for a check mark to show Kari had finished."

G "Another job involved her singing a row of musical notes, but she had to sing them from right to left instead of left to right."

6 One of the themes of this story is that creative thinking can help you solve problems. The following folktale, "The Crow and the Pitcher," also shares this theme. Read the folktale.

The Crow and the Pitcher

A crow, weak from thirst, was delighted when he spotted a pitcher up ahead. He flew to it as fast as he could, hoping it would be filled with water. To his great disappointment, the pitcher was more than half empty, and through its narrow mouth, he couldn't reach a drop of the water it contained. He thought and thought about what to do and was about to give up. At last, he had an idea. He gathered a pile of stones and dropped them one at a time into the pitcher until the water rose within his reach.

Compare and contrast how "Work Smarter, Not Harder" and "The Crow and the Pitcher" present the theme stated above. Use details from the stories to support your answer.

Grade 6

MATH

Understanding Ratio Concepts

➤ **Complete each problem about ratio relationships.**

1. Ms. Omar runs the school tennis club. She has a bin of tennis balls and rackets. For every 5 tennis balls in the bin, there are 3 tennis rackets. Draw a model to show the ratio of tennis balls to tennis rackets.

   Write the following ratios.

   tennis balls to tennis rackets _____

   tennis balls to total pieces of tennis equipment _____

2. Christian has a collection of 18 shark teeth. He identified them as 6 tiger shark teeth, 8 sand shark teeth, and the rest as bull shark teeth.

   What does the ratio 6 : 8 represent in this situation?

   What does the ratio 4 : 18 represent in this situation? Explain your reasoning. Include a model in your explanation.

3. How are part-to-part ratios different from part-to-whole ratios?

Using Equivalent Ratios

➤ **Solve each problem.**

1. Josie is training for a race. The ratio of the number of minutes she runs to the number of miles she runs is 24 to 3. She plans to run 10 miles. How many minutes will it take her?

2. A chef planning for a large banquet thinks that 2 out of every 5 dinner guests will order his soup appetizer. He expects 800 guests at the banquet. Use equivalent ratios to estimate how many cups of soup he should prepare.

3. Fred is making a fruit salad. The ratio of cups of peaches to cups of cherries is 2 to 3. How many cups of peaches will Fred need to make 60 cups of fruit salad?

4. A community garden center hosts a plant giveaway every spring to help community members start their gardens. Last year, the giveaway supported 50 families by giving away 150 plants. Based on this ratio, how many plants will the center give away this year in order to support 65 families?

5. The first week of January, there are 49 dogs and 28 cats in an animal shelter. Throughout the month, the ratio of dogs to cats remains the same. The last week of January, there are 20 cats in the shelter. How many dogs are there?

6. A wedding planner uses 72 ivy stems for 18 centerpieces. When she arrives at the venue, she realizes she will only need 16 centerpieces. How many ivy stems should she use so that the ratio of ivy stems to centerpieces stays the same?

Understanding Rate Concepts

1. It takes Maya 30 minutes to solve 5 logic puzzles, and it takes Amy 28 minutes to solve 4 logic puzzles. Use models to show the rate at which each student solves the puzzles, in minutes per puzzle.

If Maya and Amy had the same number of puzzles to solve, who would finish first? Explain.

2. A garden hose supplies 36 gallons of water in 3 minutes. Use a table of equivalent ratios to show the garden hose's water flow in *gallons per minute* and *minutes per gallon*.

How many gallons of water does the hose supply in 10 minutes? Explain.

Understanding Rate Concepts *continued*

3 Max travels to see his brother's family by car. He drives 216 miles in 4 hours. What is his rate in miles per hour? Use a double number line to show your work.

Suppose he makes two stops of 10 minutes each during his journey. Will he be able to reach the town in 4 hours if he keeps the speed the same?

Using Unit Rates to Find Equivalent Ratios

➤ **Solve each problem. Show your work.**

1. Rachel mows 5 lawns in 8 hours. At this rate, how many lawns can she mow in 40 hours?

2. A contractor charges $1,200 for 100 square feet of roofing installed. At this rate, how much does it cost to have 1,100 square feet installed?

3. It takes Jill 2 hours to run 14.5 miles. At this rate, how far could she run in 3 hours?

4. Bobby catches 8 passes in 3 football games. At this rate, how many passes does he catch in 15 games?

5. Five boxes of crackers cost $9. At this rate, how much do 20 boxes cost?

6. It takes a jet 2 hours to fly 1,100 miles. At this rate, how far does it fly in 8 hours?

Using Unit Rates to Find Equivalent Ratios *continued*

7 It takes Dan 32 minutes to complete 2 pages of math homework. At this rate, how many pages does he complete in 200 minutes?

8 Kendra gets a paycheck of $300 after 5 days of work. At this rate, how much does she get paid for working 24 days?

9 Tim installs 45 square feet of his floor in 50 minutes. At this rate, how long does it take him to install 495 square feet?

10 Taylin buys 5 ounces of tea leaves for $2.35. At this rate, how much money does she need to buy 12 ounces of tea leaves?

11 In problem 10, how would your work be different if you were asked how many ounces of tea leaves Taylin could buy with $10?

Using Unit Rates to Compare Ratios

➤ **Solve each problem. Show your work.**

1. Shawn sells 36 vehicles in 4 weeks. Brett sells 56 vehicles in 7 weeks. Who sells more vehicles per week?

2. The table shows the gas mileage of two vehicles. Which vehicle travels more miles per gallon?

Car	Miles	Gallons
Pickup Truck	120	8
Minivan	180	10

3. Joe and Chris each have a lawn mowing business. Joe charges $40 to mow 2 acres. Chris charges $30 to mow 1.2 acres. Who charges more per acre?

4. The table shows the time it took two athletes to run different races. Who ran faster?

Athlete	Seconds	Meters
Ellen	28	200
Lindsay	60	400

Using Unit Rates to Compare Ratios *continued*

5 Branden and Pete each play running back. Branden carries the ball 75 times for 550 yards, and Pete has 42 carries for 380 yards. Who runs farther per carry?

6 The table shows the price of two cereal brands and the number of ounces per box. Which is the better price per ounce?

Cereal	Ounces	Price
Brand A	18	$2.50
Brand B	24	$3.50

7 Describe two different ways you could change the values in the table so that the answer to problem 6 is different.

Using Unit Rates to Convert Measurements

➤ **Solve each problem. Show your work.**

1. Susan has a 12-inch board for constructing a wooden chair. The directions say to use a board that is 29 centimeters long. Is her board long enough to cut? (1 inch = 2.54 centimeters)

2. Kevin uses 84 fluid ounces of water to make an all-purpose cleaner. The directions call for 4 fluid ounces of concentrated soap for every 3 cups of water. How many fluid ounces of soap should he use? (1 cup = 8 fl oz)

3. Shannon test-drives a car in Germany and drives 95 kilometers per hour. What is her speed in miles per hour? (1 kilometer ≈ 0.62 mile)

4. Keith works 8 hours per day for 5 days per week. Melba works 2,250 minutes each week. Who spends more time at work?

Using Unit Rates to Convert Measurements *continued*

5 Jason runs 440 yards in 75 seconds. At this rate, how many minutes does it take him to run a mile? (1 mile = 1,760 yards)

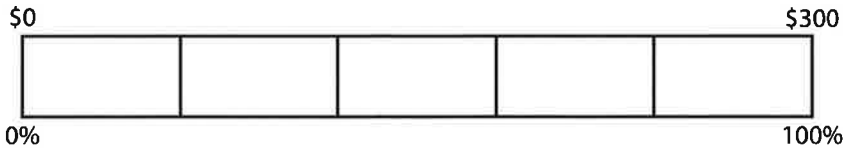
6 Boxes of granola are on sale at a price of 2 for $4.50. There are 12 ounces of granola in each box. What is the unit price in dollars per pound?

7 Sam is delivering two refrigerators that each weigh 105 kilograms. There is an elevator with a weight limit of 1,000 pounds. Can he take both refrigerators on the elevator in one trip? (1 kilogram ≈ 2.2 pounds)

8 For every 140 feet that Kelly rides on her bicycle, the wheels turn 20 times. About how many times do the wheels turn in 5 miles? (1 mile = 5,280 feet)

Understanding Percents

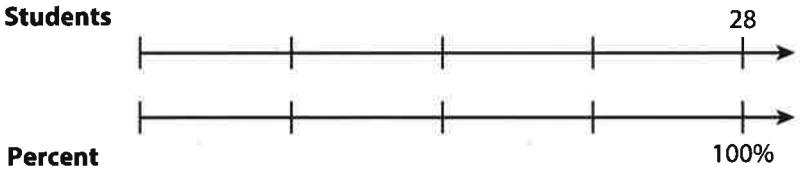
1. Emma is saving for a bicycle that costs $300. This month, she reaches 60% of her goal. Label and shade the bar model to show her progress. How much money has she saved? Explain.



2. Justin needs to make 80 illustrations for an art book. He has made 40% of the illustrations. Make a bar model to show his progress. How many illustrations does he still need to make? Explain.

3. In a classroom of 28 students, 75% of the students have met their reading goal.

   Label the double number line. How many students met their reading goal? What fraction of 28 students met their reading goal? Explain.



Finding a Percent of a Quantity

➤ **Find the percent of the number. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. 40% of 80 _____
2. 25% of 60 _____
3. 10% of 90 _____
4. 50% of 70 _____
5. 80% of 500 _____
6. 75% of 80 _____
7. 90% of 250 _____
8. 65% of 400 _____
9. 85% of 800 _____
10. 55% of 140 _____
11. 45% of 160 _____
12. 95% of 180 _____
13. 70% of 720 _____
14. 15% of 220 _____
15. 65% of 200 _____

Answers

9	77	504	72	225
260	171	33	60	35
400	32	130	680	15

Finding the Whole

➤ **Solve each problem.**

1. 25% of what number is 13?

_____

2. 50% of what number is 140?

_____

3. 10% of what number is 60?

_____

4. 5% of what number is 12?

_____

5. 30% of what number is 72?

_____

6. 70% of what number is 56?

_____

7. 95% of what number is 57?

_____

8. 75% of what number is 66?

_____

9. 85% of what number is 102?

_____

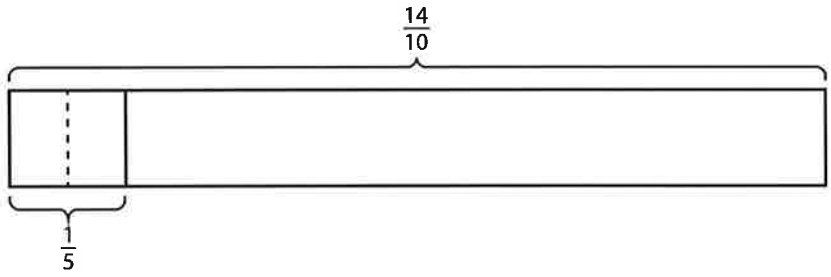
10. 45% of what number is 63?

_____

11. Explain how you could use 25% of a number to find the number.

Understanding Division with Fractions

1. Complete the bar model to show how many $\frac{1}{5}$s make $\frac{14}{10}$.



How many $\frac{1}{5}$s make $\frac{14}{10}$? _____

Complete the equations.

$\frac{14}{10} \div$ _____ $= 7$ _____ $\cdot \frac{1}{5} = \frac{14}{10}$

2. Use the number line to show $\frac{2}{3} \div \frac{1}{12}$.

What is the quotient? _____

3. Which type of model do you like better, the bar model or the number line? Explain.

Using Multiplication to Divide by a Fraction

➤ **Write the missing digits in the boxes to make each equation true.**

1. $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{\square}{2} = \frac{3}{\square}$

2. $\frac{4}{5} \div \frac{1}{4} = \frac{4}{5} \times \frac{4}{\square} = \frac{\square}{\square}$

3. $\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{\square}{\square} = \frac{\square}{15}$

4. $\frac{5}{6} \div \frac{5}{12} = \frac{5}{6} \times \frac{\square}{\square} = \frac{\square}{30} = 2$

5. $\frac{3}{4} \div \frac{5}{7} = \frac{3}{4} \times \frac{\square}{\square} = \frac{\square}{\square}$

6. $1\frac{1}{3} \div \frac{3}{7} = \frac{\square}{3} \times \frac{7}{\square} = \frac{\square}{\square}$

7. $4\frac{\square}{2} \div \frac{2}{5} = \frac{9}{2} \times \frac{\square}{\square} = \frac{\square}{\square}$

8. $3\frac{1}{2} \div \frac{\square}{8} = \frac{7}{\square} \times \frac{8}{7} = \frac{\square}{\square} = \square$

9. $1\frac{2}{3} \div 2\frac{1}{4} = \frac{\square}{3} \times \frac{\square}{9} = \frac{\square}{\square}$

10. $3\frac{3}{5} \div 1\frac{3}{\square} = \frac{18}{\square} \times \frac{4}{7} = \frac{\square}{\square}$

11. Write a word problem that could be solved by the equation in problem 8.

Understanding Positive and Negative Numbers

1. The points on the number line are opposite numbers. The tick marks represent intervals of 1 unit.

Label 0 at the correct spot on the number line.

Label the point plotted to the right of 0.

Label the point plotted to the left of 0.

2. Use this list of numbers to answer the following questions:

$0, 4, -2, \frac{2}{3}, -1.8, 16, 3.2, -\frac{5}{4}$

Which numbers are rational numbers that are not integers?

Of the remaining numbers, which are integers but not whole numbers?

Of the remaining numbers, which are whole numbers?

3. Use the following terms to complete the following statements: *integers*, *rational numbers*, and *whole numbers*. Use each term only once.

The counting numbers and zero are _____.

The counting numbers and their opposites, along with zero, are _____.

Integers and the decimal equivalents of fractions are _____.

Understanding Positive and Negative Numbers *continued*

4 Plot and label 4, −3, 1, and their opposites on the number line.

5 If several points are graphed on a number line, is the point that is the farthest from 0 always the greatest? Explain.

Comparing Positive and Negative Numbers

➤ **Write < or > to make each comparison true.**

1. $7 \bigcirc 10$
2. $7 \bigcirc -10$
3. $-7 \bigcirc -10$
4. $\frac{2}{3} \bigcirc -1\frac{2}{3}$
5. $-50 \bigcirc 0.3$
6. $-12 \bigcirc -35$
7. $-5 \bigcirc 4.5$
8. $\frac{1}{2} \bigcirc -80$
9. $-\frac{1}{4} \bigcirc -1.4$

➤ **Write each set of numbers in order from least to greatest.**

10. $5, -2, -1, 4$ _____
11. $3.4, 7, -3.5, -3$ _____
12. $-2.1, -2, -3, 0$ _____
13. $-\frac{3}{4}, -2, -\frac{1}{4}, 2$ _____
14. $5, 0, -6, -0.1$ _____
15. $7.5, -200, -1.5, -8$ _____
16. $\frac{1}{2}, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}$ _____
17. $1.2, -2.1, -21, 0.12$ _____
18. $0.1, -0.2, 0.55, -0.31$ _____
19. Describe how to determine which of two negative numbers is greater. Give an example.

Understanding Absolute Value

1. Answer the questions about this number line.

Which is greater, -9 or -4? Explain.

Which is greater, $|-9|$ or $|-4|$? Explain.

2. A football team tries to move the ball forward as many yards as possible on each play, but sometimes they end up behind where they started. The distances, in yards, that a team moves on its first five plays are 2, -1, 4, 3, and -5. A positive number indicates moving the ball forward, and a negative number indicates moving the ball backward.

Which number in the list is the greatest?

What is a better question to ask to find out which play went the farthest from where the team started?

The coach considers any play that moves the team more than 4 yards from where they started a "big play." Which play(s) are big plays?

3. When does it make sense to compare the absolute values of numbers rather than the numbers themselves?

Understanding the Four-Quadrant Coordinate Plane

➤ **For problems 1–6, plot and label each point in the coordinate plane. Name the quadrant or axis where the point is located.**

1. $A(-3, -2)$

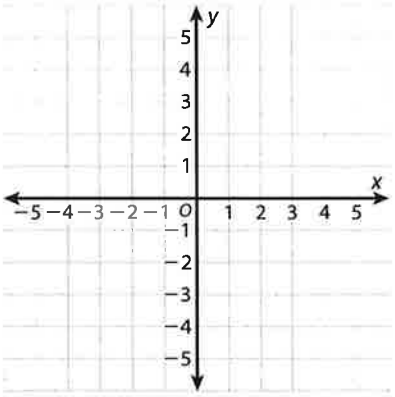
2. $B(4, -4)$

3. $C(2, 3)$

4. $D(-2, 4)$

5. $E(3, -3)$

6. $F(4, 0)$



7. If point E above is reflected across the x-axis, what would be the coordinates of the reflection? Explain.

8. Imagine that one of the points given in problems 1–6 has been reflected. The reflection is in Quadrant II. What are the possible coordinates of the reflected point? Explain.

9. Bradley says that if point B is reflected across the y-axis and its reflection is then reflected across the x-axis, the result is point D. Is Bradley correct? Explain.

Writing and Interpreting Algebraic Expressions

➤ **Write an algebraic expression for each word phrase or situation.**

1. 12 more than 8.2 times a number n

2. 3 less than the quotient of 18 and a number m

3. 5.6 times the sum of 4 and a number p

4. the quotient of 2 and a number x, times 3

5. Five friends split the cost of parking at an amusement park. Each of them also buys a $30 ticket. Write an algebraic expression that represents the amount of money each friend spends. Identify any variables.

6. A movie theater is open x hours Monday through Thursday and y hours Friday through Sunday. Write an algebraic expression that represents the number of hours per week the theater is open.

➤ **Interpret the meaning of the algebraic expression in each problem.**

7. Andrew writes the algebraic expression $2s + 2.79$ to represent the cost of his lunch. He bought 2 sandwiches and a large drink. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

Writing and Interpreting Algebraic Expressions *continued*

8 A teacher writes the algebraic expression $24c + 5m + 19.99$ to represent the cost of supplies she purchased for her classroom. She bought 24 packages of colored pencils, 5 packages of markers, and a beanbag chair. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

9 Write a situation that could be represented by the algebraic expression $3s + 2.15$.

Evaluating Algebraic Expressions

➤ **Check each answer to see whether the student evaluated the expression correctly. If the answer is incorrect, cross out the answer and write the correct answer.**

Algebraic Expressions	Student Answers
1 $5m + 26$ when $m = 3$	$5(3) + 26 = 15 + 26$ $= 31$ Possible answer: $5(3) + 26 = 15 + 26$ $= 41$
2 $8(x + 2)$ when $x = 6$	$8(6 + 2) = 48 + 2$ $= 50$
3 $7p + 5$ when $p = 12$	$7(12) + 5 = 7(17)$ $= 119$
4 $q + 9p$ when $q = 18$ and $p = 4$	$18 + 9(4) = 18 + 36$ $= 54$
5 $6w - 19 + k$ when $w = 8$ and $k = 2$	$6(2) - 19 + 8 = 12 - 19 + 8$ $= 1$
6 $12x + y$ when $x = 3$ and $y = 52$	$12(3) + 52 = 36 + 52$ $= 88$

7 Check your answer to problem 2 by using a different strategy.

Using Order of Operations with Expressions with Exponents

➤ **Simplify or evaluate each exponential expression using the order of operations. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. $(6 + 3)^4$

2. $6 + 3^4$

3. $2(4^3) - 1$

4. $2(4^3 - 1)$

5. $5 + 9(1 + 2)^2$

6. $5 + 9(1) + 2^2$

7. $(18 - 4)^2$

8. $18 - 4^2$

9. $9 + 2(3^2)$

10. $(9 + 2)3^2$

11. $12 + x^4 - 6$ when $x = 8$

12. $m^3 + 9n$ when $m = 4$ and $n = 5$

Answers

27	196	2	18	126	99
127	86	109	4,102	87	6,561

Identifying Equivalent Expressions

➤ **Determine whether each pair of expressions is equivalent. Show your work.**

1. $2(x - y)$ and $2x - 2y$

2. $4(x + y)$ and $4y + 4x$

3. $4p + 3c$ and $(c + 2p)(2)$

4. $21q - 7p$ and $(3q - p)(7)$

5. $4(2a - 3v)$ and $8a + 6v$

6. $8(3x + c) - 1$ and $8c + 24x - 1$

Identifying Equivalent Expressions *continued*

7 $3(2x + 11)$ and $(3x + 15)(2)$

8 $2x + 2x + 2c + 6$ and $(2x + c + 3)(2)$

9 $3e + 7 - e$ and $2e + 10 + 2e - 3$

10 $5c + 4c + 2$ and $5c + 2(2c + 1)$

11 How can you check your answer to problem 8 by choosing values for the variables?

Writing and Solving One-Variable Equations

➤ **Solve each problem by writing and solving a one-variable equation.**

1. In the first three innings of a baseball game, the home team scored some runs. In the rest of the game, they scored 5 runs more than the number of runs scored in the first three innings. If the home team scored 9 runs in all, how many runs did they score during the first three innings? How many runs did they score in the remainder of the game? Let x = the runs scored in the first three innings.

2. The punch bowl at Felicia's party is getting low, so she adds 12 cups of punch to the bowl. Two guests serve themselves 1.25 cups and 2 cups of punch. The punch bowl now contains 11.5 cups of punch. How many cups were in the punch bowl before Felicia refilled it? Let n = number of cups in bowl before Felicia refilled it.

3. Vanessa is a caterer. She made several batches of appetizers last weekend for an event. This weekend, Vanessa made 4 times as many batches. She made a total of 25 batches of appetizers for the two weekends. Determine the number of batches Vanessa made last weekend and the number of batches she made this weekend. Let b = the number of batches of appetizers Vanessa made last weekend.

Writing and Solving One-Variable Equations *continued*

4 Wanda earned $350 babysitting over the months of July and August. She earned $90 more in August than in July. How much did she earn babysitting in July? In August?

5 Charlene is 8 years older than Aaron. The sum of their ages is 44. What are their ages?

6 On Saturday, 45% of the music Brianna listened to was country songs. She listened to 27 country songs on Saturday. How many songs did Brianna listen to on Saturday?

Writing and Graphing One-Variable Inequalities

➤ **Write an inequality to represent each situation.**

1. A farmer weighs a dozen chicken eggs. The heaviest egg is 56 g.

_____

2. A light bulb is programmed to turn on when the temperature in a terrarium is 72°F or cooler.

_____

3. Martin is building a sandcastle at the beach. He pours no less than 5 cups of wet sand into each plastic mold.

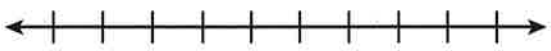
_____

4. The shortest tree in a park is at least 25.5 ft tall.

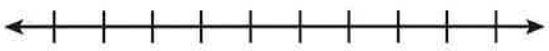
_____

➤ **Graph each inequality.**

5. $n \geq -2$



6. $h \leq 5$



7. $t \leq 7.1$

8. $r \geq -\frac{2}{3}$

9. What is the difference between the inequality $x \leq 5$ and the equation $x = 5$?

Certificate of Completion

This Award Is Presented to

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Grade 6

Learning Packet Answer Key

Grade 6 Writing and Language Activities

Entry	Writing Prompt	Resource	Answer Key	Page
1	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 4 Reflexive and Intensive Pronouns 	Guided Practice 1. ~~myself~~: I 2. ~~itself~~: himself 3. ~~themselves~~: itself 4. ~~Himself and I~~: He and I ~~themselves~~: ourselves 5. ~~herself~~: themselves 6. ~~Myself~~: I 7. ~~yourself~~: yourselves Independent Practice 1. B 2. B 3. A 4. D	2
2	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 6 Correcting Vague Pronouns 	Guided Practice 1. they: these structures 2. they: the men 3. They: The cowboys 4. They: The homes 5. it was exciting: the men were excited Independent Practice 1. D 2. A 3. C	11

Grade 6 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
3	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 17 Denotation and Connotation 	Guided Practice 1. thrifty: P stingy: N 2. classic: P old-fashioned: N 3. trudges: N sprints: P 4. antique: P ancient: N 5. insists: N encourages: P 6. requested: P demanded: N Independent Practice 1. C 2. A 3. D 4. B	21
4	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 15 Figures of Speech 	Guided Practice 1. Mia would never forgive them; H; Mia was very angry. 2. Her legs were still complaining; P; Her legs still hurt. 3. mean rain was punishing; P; The rain made camping so unpleasant it felt like a punishment by someone mean. 4. I must have slept for days; H; I slept for a very long time. 5. sun smiled; P; The sun shone and made Mia feel happy. Independent Practice 1. B 2. C 3. D 4. D	29

Grade 6 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
5	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 1 Subject and Object Pronouns 	Guided Practice 1. these historians: they 2. Genghis Khan: him 3. this fierce leader: he 4. the people of Mongolia: them 5. her and me: she and I (or we) 6. the empire: it 7. Tricia and I: us 8. Fred, me, and Tricia: We (or Fred, Tricia, and I) Independent Practice 1. B 2. D 3. A 4. B 5. C	40
6	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 8 Punctuating Parenthetical Elements 	Guided Practice 1. ( ) around 1821-1910 2. comma after *doctor* and *male* 3. dash after *School* 4. comma after *Blackwell* and *person* 5. dash after *school* Independent Practice 1. C 2. A 3. D 4. D	48

Grade 6 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
7	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 14 Using a Thesaurus 	Guided Practice 1. state, declare, insist 2. deny 3. acrid, unpleasant 4. sugary, sweet Independent Practice 1. A 2. C 3. A	40
8	Part 1 	Part 2 Grade 6 Ready Language Handbook Lesson 2 More About Subject and Object Pronouns 	Guided Practice 1. I 2. We 3. he 4. us 5. they Independent Practice 1. C 2. B 3. B 4. A 5. D	48

Grade 6 Reading Activities in Section 1

Lesson	Resource	Instructions	Answer Key	Page
1	Grade 6 Ready Language Handbook, Lesson 9 Varying Sentence Patterns 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	**Guided Practice**: Answers will vary. Sample answers: 1. Wouldn't it be fun to learn about insect colonies? 2. When I looked at the museum map, I noticed a new insect exhibit. 3. Near the entrance to the exhibit, the first thing I saw was a giant grasshopper. **Independent Practice**: 1. C, 2. C, 3. B, 4. C	N/A
2	Grade 6 Ready Language Handbook, Lesson 11 Using Context Clues 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	**Guided Practice**: Answers will vary. Sample answers: Marsupials: mammals that carry their young in pouches Defense mechanisms: keeps itself safe, hisses Collapses: pretends to be dead Unconscious: before thinking **Independent Practice**: 1. B, 2. C, 3. B, 4. C	N/A
3	Grade 6 Ready Language Handbook, Lesson 12 Greek and Latin Word Parts 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	**Guided Practice**: Answers will vary. Sample answers: 1. audience: circle "aud" – audience has something to do with hearing 2. motor: circle "mot" – motor has something to do with moving 3. motion: circle "mot" – motion has something to do with moving 4. thermometer: circle "therm" and "meter" – thermometer has something to do with measuring heat. 5. vision: circle "vis". – vision has something to do with seeing **Independent Practice**: 1. A, 2. C, 3. D, 4. B	11

Grade 6 Reading Activities in Section 1 (Cont.)

Lesson	Resource	Instructions	Answer Key	Page
6	Grade 6 Ready Reading Lesson 3 Part 5 	• Read Part 5, including "Looking for the Loch Ness Monster." • Answer questions 1–4. • Complete the short written response in question 5.	**Independent Practice**: Questions – 1. D, 2. A, 3. D, 4. C, 5. Answers will vary	**21–23**
7	Grade 6 Practice Assessment 1 	• Read "Worth More Than Gold." • Answer Questions 1–4. • Complete the written response in question 5.	Answers: 1. C, 2A. A, 2B. D, 3. B, 4. C, 5. Answers will vary	**24–27**
8	Grade 6 Practice Assessment 1 	• Read "The Scent of Memory." • Answer questions 6–10. • Complete the written response in question 11.	Answers: 6A. D, 6B, D. 7. B, E, F, 8. B, 9. C, 10. A, 11. Answers will vary	**28–32**
9	Grade 6 Unit 1 Interim Assessment 	• Read "Luck Favors the Prepared." • Answer questions 1–9.	Answers: 1. D, 2A. B, 2B. 1 and 4, 3. B, 4. C, 5. A, 6. B, 7. Answers will vary 8. Answers will vary. 9. Answers will vary	**33–40**

Grade 6 Reading Activities in Section 2

Lesson	Resource	Instructions	Answer Key	Page
1	Grade 6 Ready Language Handbook Lesson 9 Consistency in Style and Tone 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	**Guided Practice**: Answers will vary. Sample answers: 1. The thunder was so loud, we thought maybe the Fourth of July had come early. 2. It poured for an hour. When we finally got out of the car, each of our sleeping bags had soaked up a bathtub–full of water. **Independent Practice**: 1. A, 2. D, 3. B, 4. D	NA
2	Grade 6 Ready Language Handbook Lesson 13 Using a Dictionary or Glossary 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	**Guided Practice**: extracts: 3, extract: 2, accounts: 1, account for: 2 **Independent Practice**: 1. B, 2. A, 3. B, 4. C	**21**
3	Grade 6 Ready Language Handbook Lesson 14 Using a Thesaurus 	• Read the Introduction. • Complete the Guided Practice. • Complete the Independent Practice.	Guided Practice: 1. state, declare, insist, 2. deny, 3. acrid, unpleasant, 4. sugary, sweet Independent Practice: 1. A, 2. C, 3. A, 4. D	**2**9

Grade 6 Reading Activities in Section 2 (Cont.)

Lesson	Resource	Instructions	Answer Key	Page
5	Grade 6 Ready Reading Lesson 5 Citing Evidence to Make Inferences Part 4 	• Read Part 4, including "The Wisdom of the Willow Tree." • Underline sentences that show what Young Man learns on his journey. • Answer questions 1 and 2. • Complete the short written response in question 3.	**Guided Practice**: Underlining – Answers will vary **Guided Practice**: Questions – 1. B, 2. D **Guided Practice**: Question 3 – Answers will vary.	NA
6	Grade 6 Ready Reading Lesson 5 Citing Evidence to Make Inferences Part 5 	• Read Part 5, including "A Sewing Sensation." • Answer questions 1–4. • Complete the short written response in question 5.	**Independent Practice**: Questions – 1. B, 2. C, 3. B, 4. D, 5. Answers will vary	**40**
7	Grade 6 Practice Assessment 2 	• Read "Work Smarter, Not Harder." • Answer questions 6–10. • Complete the written response in question 11.	Answers: 6. D, 7. C, 8A. B, 8B. D, 9. C, 10. C, 11, Answers will vary	**4**8

Understanding Ratio Concepts

➤ **Complete each problem about ratio relationships.**

1. Ms. Omar runs the school tennis club. She has a bin of tennis balls and rackets. For every 5 tennis balls in the bin, there are 3 tennis rackets. Draw a model to show the ratio of tennis balls to tennis rackets.

Write the following ratios.

tennis balls to tennis rackets 5 : 3 or 5 to 3

tennis balls to total pieces of tennis equipment 5 : 8 or 5 to 8

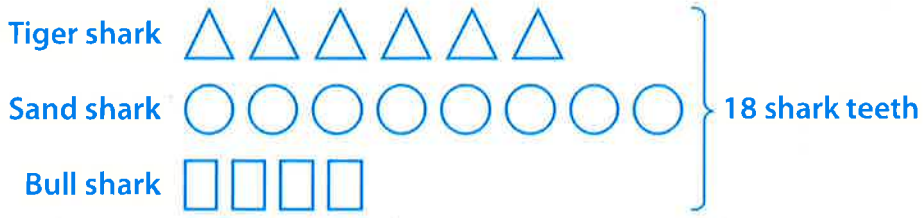
2. Christian has a collection of 18 shark teeth. He identified them as 6 tiger shark teeth, 8 sand shark teeth, and the rest as bull shark teeth.

What does the ratio 6 : 8 represent in this situation?

Possible answer: The ratio 6 : 8 is the ratio of the number of tiger shark teeth to the number of sand shark teeth.

What does the ratio 4 : 18 represent in this situation? Explain your reasoning. Include a model in your explanation.

Possible answer: $6 + 8 = 14$ and $18 - 14 = 4$, so there are 4 bull shark teeth and a total of 18 shark teeth. So, 4 : 18 is the ratio of bull shark teeth to the total number of shark teeth.



3. How are part-to-part ratios different from part-to-whole ratios?

Possible answer: Part-to-part ratios show the relationship between two separate groups that are part of a whole. Part-to-whole ratios show the relationship between one or more parts and the total number of items that make up the whole.

Using Equivalent Ratios

Solve each problem.

1. Josie is training for a race. The ratio of the number of minutes she runs to the number of miles she runs is 24 to 3. She plans to run 10 miles. How many minutes will it take her?

80 minutes

2. A chef planning for a large banquet thinks that 2 out of every 5 dinner guests will order his soup appetizer. He expects 800 guests at the banquet. Use equivalent ratios to estimate how many cups of soup he should prepare.

320 cups of soup

3. Fred is making a fruit salad. The ratio of cups of peaches to cups of cherries is 2 to 3. How many cups of peaches will Fred need to make 60 cups of fruit salad?

24 cups of peaches

4. A community garden center hosts a plant giveaway every spring to help community members start their gardens. Last year, the giveaway supported 50 families by giving away 150 plants. Based on this ratio, how many plants will the center give away this year in order to support 65 families?

195 plants

5. The first week of January, there are 49 dogs and 28 cats in an animal shelter. Throughout the month, the ratio of dogs to cats remains the same. The last week of January, there are 20 cats in the shelter. How many dogs are there?

6. A wedding planner uses 72 ivy stems for 18 centerpieces. When she arrives at the venue, she realizes she will only need 16 centerpieces. How many ivy stems should she use so that the ratio of ivy stems to centerpieces stays the same?

Understanding Rate Concepts

1. It takes Maya 30 minutes to solve 5 logic puzzles, and it takes Amy 28 minutes to solve 4 logic puzzles. Use models to show the rate at which each student solves the puzzles, in minutes per puzzle.

Possible answer:

Maya

Minutes	Number of puzzles
30	5
6	1

Amy

Minutes	Number of puzzles
28	4
7	1

If Maya and Amy had the same number of puzzles to solve, who would finish first? Explain.

Maya will finish first. Possible explanation: Maya takes 6 minutes per puzzle. Amy takes 7 minutes per puzzle.

2. A garden hose supplies 36 gallons of water in 3 minutes. Use a table of equivalent ratios to show the garden hose's water flow in *gallons per minute* and *minutes per gallon*.

Possible work:

Gallons	36	12	1
Minutes	3	1	$\frac{1}{12}$

12 gallons per minute; $\frac{1}{12}$ minute per gallon

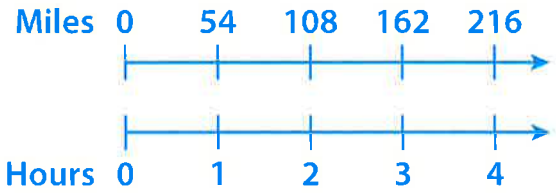
How many gallons of water does the hose supply in 10 minutes? Explain.

Possible answer: You multiply the rate in gallons per minute by 10 minutes. $10 \times 12 = 120$ gallons of water in 10 minutes.

Understanding Rate Concepts *continued*

3 Max travels to see his brother's family by car. He drives 216 miles in 4 hours. What is his rate in miles per hour? Use a double number line to show your work.

54 miles per hour; Possible work:



Suppose he makes two stops of 10 minutes each during his journey. Will he be able to reach the town in 4 hours if he keeps the speed the same?

No; Possible explanation: If he makes two 10-minute stops, he will have to travel the distance in 3 hours and 40 minutes, which means that he will not be able to reach the town in 4 hours without driving faster.

Using Unit Rates to Find Equivalent Ratios

➤ **Solve each problem. Show your work.**

1. Rachel mows 5 lawns in 8 hours. At this rate, how many lawns can she mow in 40 hours?

   25 lawns; Possible work: Since $5 \div 8 = \frac{5}{8}$, Rachel mows $\frac{5}{8}$ lawns per hour: $40 \times \frac{5}{8} = 25$. So, Rachel mows 25 lawns in 40 hours.

2. A contractor charges $1,200 for 100 square feet of roofing installed. At this rate, how much does it cost to have 1,100 square feet installed?

   $13,200; Possible work: Since $1,200 \div 100 = 12$, the roof installation costs $12 per square foot: $1,100 \times 12 = 13,200$. So, it costs $13,200 to install 1,100 square feet.

3. It takes Jill 2 hours to run 14.5 miles. At this rate, how far could she run in 3 hours?

   21.75 miles; Possible work: Since $14.5 \div 2 = 7.25$, Jill runs about 7.25 miles per hour: $3 \times 7.25 = 21.75$. So, Jill could run 21.75 miles in 3 hours.

4. Bobby catches 8 passes in 3 football games. At this rate, how many passes does he catch in 15 games?

   40 balls; Possible work: Since $8 \div 3 = \frac{8}{3}$, Bobby catches $\frac{8}{3}$ balls per game: $15 \times \frac{8}{3} = 40$. So, Bobby catches 40 balls in 15 games.

5. Five boxes of crackers cost $9. At this rate, how much do 20 boxes cost?

   $36; Possible work: Since $9 \div 5 = \frac{9}{5} = 1.80$, the crackers cost $1.80 per box: $20 \times 1.80 = 36$. So, 20 boxes cost $36.00.

6. It takes a jet 2 hours to fly 1,100 miles. At this rate, how far does it fly in 8 hours?

   4,400 miles; Possible work: Since $1,100 \div 2 = 550$, the jet flies 550 miles per hour: $550 \times 8 = 4,400$. So, it flies 4,400 miles in 8 hours.

Using Unit Rates to Find Equivalent Ratios *continued*

7 It takes Dan 32 minutes to complete 2 pages of math homework. At this rate, how many pages does he complete in 200 minutes?

12.5 pages; Possible work: Since $2 \div 32 = 0.0625$, Dan completes 0.0625 page per minute: $0.0625 \times 200 = 12.5$. So, he completes 12.5 pages in 200 minutes.

8 Kendra gets a paycheck of $300 after 5 days of work. At this rate, how much does she get paid for working 24 days?

$1,440; Possible work: Since $300 \div 5 = 60$, Kendra gets paid $60 per day: $60 \times 24 = 1,440$. So, she gets paid $1,440 for working 24 days.

9 Tim installs 45 square feet of his floor in 50 minutes. At this rate, how long does it take him to install 495 square feet?

550 minutes; Possible work: Since $50 \div 45 = \frac{10}{9}$, it takes Tim $\frac{10}{9}$ minutes per square foot: $495 \times \frac{10}{9} = 550$. So, it takes him 550 minutes to install 495 square feet.

10 Taylin buys 5 ounces of tea leaves for $2.35. At this rate, how much money does she need to buy 12 ounces of tea leaves?

$5.64; Possible work: Since $2.35 \div 5 = 0.47$, tea leaves cost $0.47 per ounce: $0.47 \times 12 = 5.64$. So, she needs $5.64 to buy 12 ounces.

11 In problem 10, how would your work be different if you were asked how many ounces of tea leaves Taylin could buy with $10?

I would find the unit rate in terms of ounces per dollar rather than dollars per ounce and then multiply by $10 to find the number of ounces Taylin could buy with that amount.

Using Unit Rates to Compare Ratios

Solve each problem. Show your work.

1. Shawn sells 36 vehicles in 4 weeks. Brett sells 56 vehicles in 7 weeks. Who sells more vehicles per week?

Shawn; Possible work: Shawn: $\frac{36}{4} = 9$ vehicles per week;
Brett: $\frac{56}{7} = 8$ vehicles per week; $9 > 8$

2. The table shows the gas mileage of two vehicles. Which vehicle travels more miles per gallon?

Car	Miles	Gallons
Pickup Truck	120	8
Minivan	180	10

Minivan; Possible work: Pickup Truck: $\frac{120}{8} = 15$; Minivan: $\frac{180}{10} = 18$;
18 mpg $>$ 15 mpg

3. Joe and Chris each have a lawn mowing business. Joe charges $40 to mow 2 acres. Chris charges $30 to mow 1.2 acres. Who charges more per acre?

Chris; Possible work: Joe: $\frac{40}{2} = 20$; Chris: $\frac{30}{1.2} = 25$; $25 > $20

4. The table shows the time it took two athletes to run different races. Who ran faster?

Athlete	Seconds	Meters
Ellen	28	200
Lindsay	60	400

Ellen; Possible work: Ellen: $\frac{200}{28} \approx 7.14$ meters per second;
Lindsay: $\frac{400}{60} \approx 6.67$ meters per second; $6.67 < 7.14$

Using Unit Rates to Compare Ratios *continued*

5 Branden and Pete each play running back. Branden carries the ball 75 times for 550 yards, and Pete has 42 carries for 380 yards. Who runs farther per carry?

Pete; Possible work: Branden: $\frac{550}{75} \approx 7.33$ yards per carry;
Pete: $\frac{380}{42} \approx 9.05$ yards per carry; $9.05 > 7.33$

6 The table shows the price of two cereal brands and the number of ounces per box. Which is the better price per ounce?

Cereal	Ounces	Price
Brand A	18	$2.50
Brand B	24	$3.50

Brand A; Possible work: Brand A: $\frac{2.50}{18} \approx 0.14$; Brand B: $\frac{3.50}{24} \approx 0.15$;
$\$0.14 < \$0.15$

7 Describe two different ways you could change the values in the table so that the answer to problem 6 is different.

Possible answer: I could change the price of Brand B to $3.35 or less or change the number of ounces for Brand B to 25 ounces or more.

Using Unit Rates to Convert Measurements

► **Solve each problem. Show your work.**

1. Susan has a 12-inch board for constructing a wooden chair. The directions say to use a board that is 29 centimeters long. Is her board long enough to cut? (1 inch = 2.54 centimeters)

   Yes; Possible work: 2.54 centimeters per inch: $12 \times 2.54 = 30.48$

   Her board is 30.48 centimeters long, so she has enough to cut 29 centimeters.

2. Kevin uses 84 fluid ounces of water to make an all-purpose cleaner. The directions call for 4 fluid ounces of concentrated soap for every 3 cups of water. How many fluid ounces of soap should he use? (1 cup = 8 fl oz)

   14 fluid ounces of soap; Possible work: 8 fl oz per cup: $8 \times 3 = 24$ fl oz of water

   4 fl oz of soap per 24 fl oz of water: $\frac{4}{24} = \frac{1}{6}$ fl oz of soap per fl oz of water

   $84 \times \frac{1}{6} = 14$

3. Shannon test-drives a car in Germany and drives 95 kilometers per hour. What is her speed in miles per hour? (1 kilometer $\approx$ 0.62 mile)

   58.9 miles per hour; Possible work: 0.62 mile per kilometer: $95 \times 0.62 = 58.9$

4. Keith works 8 hours per day for 5 days per week. Melba works 2,250 minutes each week. Who spends more time at work?

   Keith; Possible work: 60 minutes in 1 hour; $8 \times 5 = 40$ hours per week; $40 \times 60 = 2{,}400$ minutes, so Keith works 2,400 minutes each week. This is more than 2,250, so Keith spends more time at work.

Using Unit Rates to Convert Measurements *continued*

5 Jason runs 440 yards in 75 seconds. At this rate, how many minutes does it take him to run a mile? (1 mile = 1,760 yards)

5 minutes; Possible work: $\frac{1}{1{,}760}$ miles per yard, $440 \times \frac{1}{1{,}760} = \frac{1}{4}$ mile

He runs $\frac{1}{4}$ mile in 75 seconds, so it takes him $75 \times 4 = 300$ seconds to run a mile.

$\frac{1}{60}$ min per second, $300 \times \frac{1}{60} = 5$ minutes

6 Boxes of granola are on sale at a price of 2 for $4.50. There are 12 ounces of granola in each box. What is the unit price in dollars per pound?

$3.00 per pound; Possible work: $12 \times 2 = 24$ total ounces; 16 ounces in 1 pound; $\frac{24}{16} = 1.5$ pounds; $\frac{4.50}{1.5} = \$3.00$ per pound

7 Sam is delivering two refrigerators that each weigh 105 kilograms. There is an elevator with a weight limit of 1,000 pounds. Can he take both refrigerators on the elevator in one trip? (1 kilogram ≈ 2.2 pounds)

Yes; Possible work: 2.2 pounds per kilogram; $105 \times 2.2 = 231$; $231 \times 2 = 462$

Sam can take the refrigerators in the elevator in one trip because the combined weight of the refrigerators is only 462 pounds.

8 For every 140 feet that Kelly rides on her bicycle, the wheels turn 20 times. About how many times do the wheels turn in 5 miles? (1 mile = 5,280 feet)

about 3,771 times; Possible work: 5,280 feet per mile, $\frac{20}{140} = \frac{1}{7}$ turn per foot, $5 \times 5{,}280 = 26{,}400$ feet; $26{,}400 \times \frac{1}{7} = 3{,}771.43$ turns

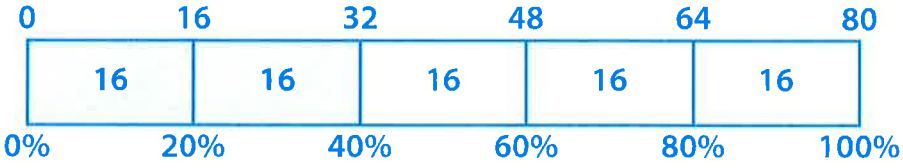
Understanding Percents

Teacher Packet

1. Emma is saving for a bicycle that costs $300. This month, she reaches 60% of her goal. Label and shade the bar model to show her progress. How much money has she saved? Explain.

$180; Possible explanation: The model is divided into 5 equal sections. Each section represents $\frac{1}{5}$ of $300, or $60. Each section also represents 20%. I shaded 3 sections to get to 60%. That is equal to $180.

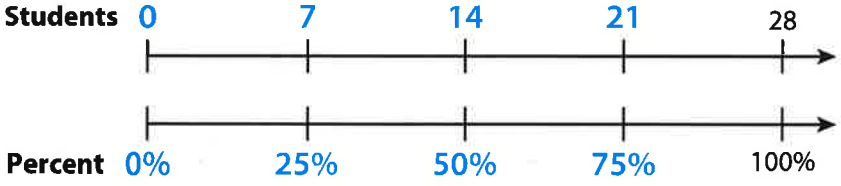
2. Justin needs to make 80 illustrations for an art book. He has made 40% of the illustrations. Make a bar model to show his progress. How many illustrations does he still need to make? Explain.



48; Possible explanation: 40% corresponds to 32 on the bar model. Therefore, he has made 32 illustrations so far and still needs to make 48 illustrations.

3. In a classroom of 28 students, 75% of the students have met their reading goal.

Label the double number line. How many students met their reading goal? What fraction of 28 students met their reading goal? Explain.



21 students; $\frac{3}{4}$; Possible explanation: 75% corresponds to 21 students. So, 21 students met their reading goal. The fraction $\frac{75}{100}$ represents 75%. Therefore, $\frac{75}{100}$, or $\frac{3}{4}$, of 28 students met their reading goal.

Finding a Percent of a Quantity

➤ **Find the percent of the number. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. 40% of 80 — 32
2. 25% of 60 — 15
3. 10% of 90 — 9
4. 50% of 70 — 35
5. 80% of 500 — 400
6. 75% of 80 — 60
7. 90% of 250 — 225
8. 65% of 400 — 260
9. 85% of 800 — 680
10. 55% of 140 — 77
11. 45% of 160 — 72
12. 95% of 180 — 171
13. 70% of 720 — 504
14. 15% of 220 — 33
15. 65% of 200 — 130

Answers

9	77	504	72	225
260	171	33	60	35
400	32	130	680	15

Finding the Whole

► **Solve each problem.**

1. 25% of what number is 13?

   52

2. 50% of what number is 140?

   280

3. 10% of what number is 60?

   600

4. 5% of what number is 12?

   240

5. 30% of what number is 72?

   240

6. 70% of what number is 56?

   80

7. 95% of what number is 57?

   60

8. 75% of what number is 66?

   88

9. 85% of what number is 102?

   120

10. 45% of what number is 63?

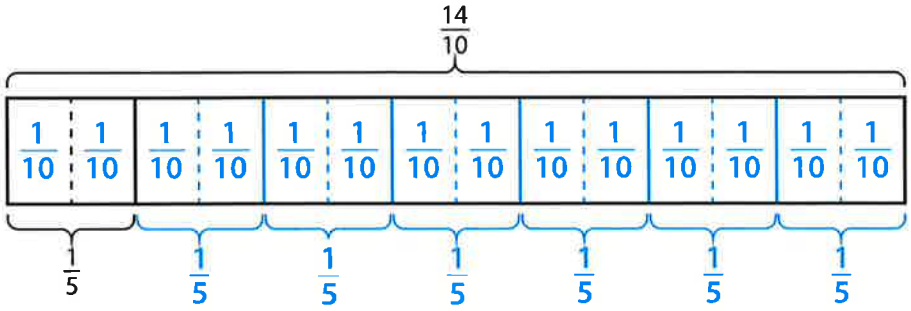
    140

11. Explain how you could use 25% of a number to find the number.

    Possible answer: 25% × 4 = 100%, so if I multiply 25% of a number by 4, I will get the number.

Understanding Division with Fractions

1 Complete the bar model to show how many $\frac{1}{5}$s make $\frac{14}{10}$.

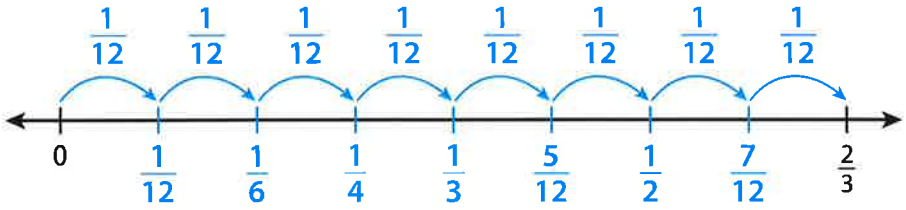


How many $\frac{1}{5}$s make $\frac{14}{10}$? 7

Complete the equations.

$\frac{14}{10} \div$ $\frac{1}{5}$ $= 7$ $\qquad$ 7 $\cdot \frac{1}{5} = \frac{14}{10}$

2 Use the number line to show $\frac{2}{3} \div \frac{1}{12}$.



What is the quotient? 8

3 Which type of model do you like better, the bar model or the number line? Explain.

Answers will vary. Possible answer: I like the bar model because it is more visual to me. The boxes seem to represent the fractions in space, whereas the number line is mostly numbers.

Using Multiplication to Divide by a Fraction

Write the missing digits in the boxes to make each equation true.

1. $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{\boxed{3}}{2} = \frac{3}{\boxed{4}}$

2. $\frac{4}{5} \div \frac{1}{4} = \frac{4}{5} \times \frac{4}{\boxed{1}} = \frac{\boxed{16}}{\boxed{5}}$

3. $\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{\boxed{4}}{\boxed{3}} = \frac{\boxed{8}}{15}$

4. $\frac{5}{6} \div \frac{5}{12} = \frac{5}{6} \times \frac{\boxed{12}}{\boxed{5}} = \frac{\boxed{60}}{30} = 2$

5. $\frac{3}{4} \div \frac{5}{7} = \frac{3}{4} \times \frac{\boxed{7}}{\boxed{5}} = \frac{\boxed{21}}{\boxed{20}}$

6. $1\frac{1}{3} \div \frac{3}{7} = \frac{\boxed{4}}{3} \times \frac{7}{\boxed{3}} = \frac{\boxed{28}}{\boxed{9}}$

7. $4\frac{\boxed{1}}{2} \div \frac{2}{5} = \frac{9}{2} \times \frac{\boxed{5}}{\boxed{2}} = \frac{\boxed{45}}{\boxed{4}}$

8. $3\frac{1}{2} \div \frac{\boxed{7}}{8} = \frac{7}{\boxed{2}} \times \frac{8}{7} = \frac{\boxed{56}}{\boxed{14}} = \boxed{4}$

9. $1\frac{2}{3} \div 2\frac{1}{4} = \frac{\boxed{5}}{3} \times \frac{\boxed{4}}{9} = \frac{\boxed{20}}{\boxed{27}}$

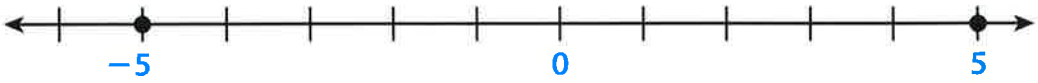
10. $3\frac{3}{5} \div 1\frac{\boxed{3}}{\boxed{4}} = \frac{\boxed{18}}{\boxed{5}} \times \frac{4}{7} = \frac{\boxed{72}}{\boxed{35}}$

11. Write a word problem that could be solved by the equation in problem 8.

Answers will vary.

Understanding Positive and Negative Numbers

1. The points on the number line are opposite numbers. The tick marks represent intervals of 1 unit.



Label 0 at the correct spot on the number line.

Label the point plotted to the right of 0.

Label the point plotted to the left of 0.

2. Use this list of numbers to answer the following questions:

$0, 4, -2, \frac{2}{3}, -1.8, 16, 3.2, -\frac{5}{4}$

Which numbers are rational numbers that are not integers?

$\frac{2}{3}, -1.8, 3.2, -\frac{5}{4}$

Of the remaining numbers, which are integers but not whole numbers?

-2

Of the remaining numbers, which are whole numbers?

$0, 4, 16$

3. Use the following terms to complete the following statements: *integers*, *rational numbers*, and *whole numbers*. Use each term only once.

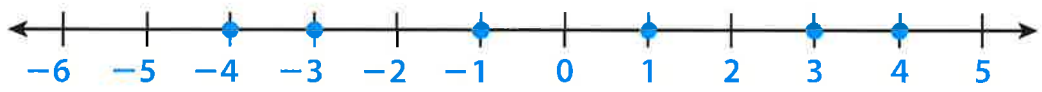
The counting numbers and zero are whole numbers.

The counting numbers and their opposites, along with zero, are integers.

Integers and the decimal equivalents of fractions are rational numbers.

Understanding Positive and Negative Numbers *continued*

4 Plot and label 4, −3, 1, and their opposites on the number line.



5 If several points are graphed on a number line, is the point that is the farthest from 0 always the greatest? Explain.

No; Possible explanation: It depends on whether the number is positive or negative. If it is positive, then it is the greatest number. If it is negative, it is the least number.

Comparing Positive and Negative Numbers

Write < or > to make each comparison true.

1. $7 < 10$
2. $7 > -10$
3. $-7 > -10$
4. $\frac{2}{3} > -1\frac{2}{3}$
5. $-50 < 0.3$
6. $-12 > -35$
7. $-5 < 4.5$
8. $\frac{1}{2} > -80$
9. $-\frac{1}{4} > -1.4$

Write each set of numbers in order from least to greatest.

10. $5, -2, -1, 4$ — $-2, -1, 4, 5$
11. $3.4, 7, -3.5, -3$ — $-3.5, -3, 3.4, 7$
12. $-2.1, -2, -3, 0$ — $-3, -2.1, -2, 0$
13. $-\frac{3}{4}, -2, -\frac{1}{4}, 2$ — $-2, -\frac{3}{4}, -\frac{1}{4}, 2$
14. $5, 0, -6, -0.1$ — $-6, -0.1, 0, 5$
15. $7.5, -200, -1.5, -8$ — $-200, -8, -1.5, 7.5$
16. $\frac{1}{2}, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}$ — $-\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}, \frac{1}{2}$
17. $1.2, -2.1, -21, 0.12$ — $-21, -2.1, 0.12, 1.2$
18. $0.1, -0.2, 0.55, -0.31$ — $-0.31, -0.2, 0.1, 0.55$

19. Describe how to determine which of two negative numbers is greater. Give an example.

Possible answer: On a horizontal number line, the number to the right is greater. For example, -10 is to the right of -30 on a number line, so -10 is greater than -30.

Understanding Absolute Value

1. Answer the questions about this number line.

Which is greater, −9 or −4? Explain.

−4; Possible explanation: −4 is to the right of −9 on the number line, so it is greater than −9.

Which is greater, |−9| or |−4|? Explain.

|−9|; Possible explanation: Absolute value is the distance from 0 on the number line. −9 is farther from 0 than −4, so |−9| is greater than |−4|.

2. A football team tries to move the ball forward as many yards as possible on each play, but sometimes they end up behind where they started. The distances, in yards, that a team moves on its first five plays are 2, −1, 4, 3, and −5. A positive number indicates moving the ball forward, and a negative number indicates moving the ball backward.

Which number in the list is the greatest?

4

What is a better question to ask to find out which play went the farthest from where the team started?

Possible answer: Which number has the greatest absolute value?

The coach considers any play that moves the team more than 4 yards from where they started a "big play." Which play(s) are big plays?

The play that moved the team −5 yards is a big play.

3. When does it make sense to compare the absolute values of numbers rather than the numbers themselves?

Possible answer: If a problem deals with distance, then it makes more sense to compare absolute values. If a problem deals with value, then it makes more sense to compare the numbers.

Understanding the Four-Quadrant Coordinate Plane

➤ **For problems 1–6, plot and label each point in the coordinate plane. Name the quadrant or axis where the point is located.**

1. $A(-3, -2)$
   Quadrant III

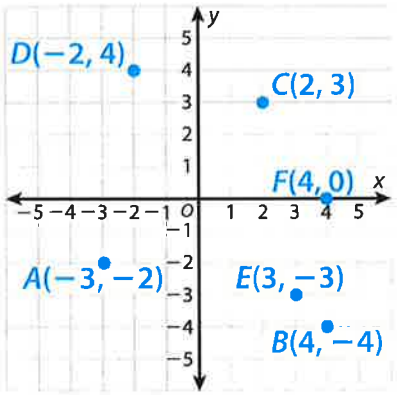
2. $B(4, -4)$
   Quadrant IV

3. $C(2, 3)$
   Quadrant I

4. $D(-2, 4)$
   Quadrant II

5. $E(3, -3)$
   Quadrant IV

6. $F(4, 0)$
   x-axis



7. If point *E* above is reflected across the *x*-axis, what would be the coordinates of the reflection? Explain.

   (3, 3); Possible explanation: Point *E* is 3 units to the right of the *y*-axis and 3 units below the *x*-axis. Its reflection is also 3 units to the right of the *y*-axis and is 3 units above the *x*-axis. That is the location of (3, 3).

8. Imagine that one of the points given in problems 1–6 has been reflected. The reflection is in Quadrant II. What are the possible coordinates of the reflected point? Explain.

   (−2, 3) or (−3, 2); Possible explanation: For the point to be in Quadrant II, it must either be a reflection of point *A* across the *x*-axis or a reflection of point *C* across the *y*-axis. If it is a reflection of point *A* across the *x*-axis, then the *x*-coordinate is the same as and the *y*-coordinate is the opposite of point *A*. If it is a reflection of point *C* across the *y*-axis, then the *x*-coordinate is the opposite of and the *y*-coordinate is the same as point *C*.

9. Bradley says that if point *B* is reflected across the *y*-axis and its reflection is then reflected across the *x*-axis, the result is point *D*. Is Bradley correct? Explain.

   Bradley is not correct. Possible explanation: When point *B* is reflected across the *y*-axis, the coordinates of the reflection are (−4, −4). When (−4, −4) is reflected across the *x*-axis, the coordinates of the reflection are (−4, 4). The coordinates of point *D* are (−2, 4).

Writing and Interpreting Algebraic Expressions

▸ **Write an algebraic expression for each word phrase or situation.**

1. 12 more than 8.2 times a number n

$8.2n + 12$

2. 3 less than the quotient of 18 and a number m

$\frac{18}{m} - 3$

3. 5.6 times the sum of 4 and a number p

$5.6(4 + p)$

4. the quotient of 2 and a number x, times 3

$\frac{2}{x} \times 3$

5. Five friends split the cost of parking at an amusement park. Each of them also buys a $30 ticket. Write an algebraic expression that represents the amount of money each friend spends. Identify any variables.

p = total cost of parking;

$\frac{1}{5}p + 30$ or $\frac{p}{5} + 30$

6. A movie theater is open x hours Monday through Thursday and y hours Friday through Sunday. Write an algebraic expression that represents the number of hours per week the theater is open.

$4x + 3y$

▸ **Interpret the meaning of the algebraic expression in each problem.**

7. Andrew writes the algebraic expression $2s + 2.79$ to represent the cost of his lunch. He bought 2 sandwiches and a large drink. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

Variable: s represents the price of each sandwich

Coefficient: 2 represents the number of sandwiches

Terms: $2s$ represents the total cost of sandwiches; 2.79 represents the cost of the large drink

Writing and Interpreting Algebraic Expressions *continued*

8 A teacher writes the algebraic expression $24c + 5m + 19.99$ to represent the cost of supplies she purchased for her classroom. She bought 24 packages of colored pencils, 5 packages of markers, and a beanbag chair. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

Variables: c represents the price of each package of colored pencils; m represents the price of each package of markers

Coefficients: 24 represents the number of packages of colored pencils; 5 represents the number of packages of markers

Terms: $24c$ represents the total cost of colored pencils; $5m$ represents the total cost of markers; 19.99 represents the cost of the beanbag chair

9 Write a situation that could be represented by the algebraic expression $3s + 2.15$.

Possible answer: Logan buys 3 sandwiches for s dollars each and a bottled water for $2.15.

Teacher Packet

Evaluating Algebraic Expressions

Check each answer to see whether the student evaluated the expression correctly. If the answer is incorrect, cross out the answer and write the correct answer.

Algebraic Expressions	Student Answers	
1 $5m + 26$ when $m = 3$	$5(3) + 26 = 15 + 26$ $= 31$	Possible answer: $5(3) + 26 = 15 + 26$ $= 41$
2 $8(x + 2)$ when $x = 6$	$8(6 + 2) = 48 + 2$ $= 50$	Possible answer: $8(6 + 2) = 8(8)$ $= 64$
3 $7p + 5$ when $p = 12$	$7(12) + 5 = 7(17)$ $= 119$	Possible answer: $7(12) + 5 = 84 + 5$ $= 89$
4 $q + 9p$ when $q = 18$ and $p = 4$	$18 + 9(4) = 18 + 36$ $= 54$	
5 $6w - 19 + k$ when $w = 8$ and $k = 2$	$6(2) - 19 + 8 = 12 - 19 + 8$ $= 1$	Possible answer: $6(8) - 19 + 2 = 48 - 19 + 2$ $= 31$
6 $12x + y$ when $x = 3$ and $y = 52$	$12(3) + 52 = 36 + 52$ $= 88$	

7 Check your answer to problem 2 by using a different strategy.

Possible work: $8(6 + 2) = 8(6) + 8(2) = 48 + 16 = 64$

Using Order of Operations with Expressions with Exponents

➤ **Simplify or evaluate each exponential expression using the order of operations. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. $(6 + 3)^4$

   6,561

2. $6 + 3^4$

   87

3. $2(4^3) - 1$

   127

4. $2(4^3 - 1)$

   126

5. $5 + 9(1 + 2)^2$

   86

6. $5 + 9(1) + 2^2$

   18

7. $(18 - 4)^2$

   196

8. $18 - 4^2$

   2

9. $9 + 2(3^2)$

   27

10. $(9 + 2)3^2$

    99

11. $12 + x^4 - 6$ when $x = 8$

    4,102

12. $m^3 + 9n$ when $m = 4$ and $n = 5$

    109

Answers

27	196	2	18	126	99
127	86	109	4,102	87	6,561

Identifying Equivalent Expressions

Determine whether each pair of expressions is equivalent. Show your work.

1. $2(x - y)$ and $2x - 2y$

Yes

Possible work:

$2(x - y)$

$2 \cdot x - 2 \cdot y$

$2x - 2y$

$2x - 2y = 2x - 2y$

2. $4(x + y)$ and $4y + 4x$

Yes

Possible work:

$4(x + y)$

$4 \cdot x + 4 \cdot y$

$4x + 4y$

$4x + 4y = 4y + 4x$

3. $4p + 3c$ and $(c + 2p)(2)$

No

Possible work:

$(c + 2p)(2)$

$2 \cdot c + 2 \cdot 2p$

$2c + 4p$

$4p + 3c \neq 2c + 4p$

4. $21q - 7p$ and $(3q - p)(7)$

Yes

Possible work:

$(3q - p)(7)$

$3q \cdot 7 - p \cdot 7$

$21q - 7p$

$21q - 7p = 21q - 7p$

5. $4(2a - 3v)$ and $8a + 6v$

No

Possible work:

$4(2a - 3v)$

$4 \cdot 2a - 4 \cdot 3v$

$8a - 12v$

$8a - 12v \neq 8a + 6v$

6. $8(3x + c) - 1$ and $8c + 24x - 1$

Yes

Possible work:

$8(3x + c) - 1$

$8 \cdot 3x + 8 \cdot c - 1$

$24x + 8c - 1$

$24x + 8c - 1 = 8c + 24x - 1$

Identifying Equivalent Expressions *continued*

7 $3(2x + 11)$ and $(3x + 15)(2)$

No

Possible work:

$3(2x + 11)$	$(3x + 15)(2)$
$3 \cdot 2x + 3 \cdot 11$	$2 \cdot 3x + 2 \cdot 15$
$6x + 33$	$6x + 30$

$6x + 33 \neq 6x + 30$

8 $2x + 2x + 2c + 6$ and $(2x + c + 3)(2)$

Yes

Possible work:

$2x + 2x + 2c + 6$	$(2x + c + 3)(2)$
$(2x + 2x) + 2c + 6$	$2x \cdot 2 + c \cdot 2 + 3 \cdot 2$
$4x + 2c + 6$	$4x + 2c + 6$

$4x + 2c + 6 = 4x + 2c + 6$

9 $3e + 7 - e$ and $2e + 10 + 2e - 3$

No

Possible work:

$3e + 7 - e$	$2e + 10 + 2e - 3$
$(3e - e) + 7$	$(2e + 2e) + (10 - 3)$
$2e + 7$	$4e + 7$

$2e + 7 \neq 4e + 7$

10 $5c + 4c + 2$ and $5c + 2(2c + 1)$

Yes

Possible work:

$5c + 4c + 2$	$5c + 2(2c + 1)$
$(5c + 4c) + 2$	$5c + 4c + 2$
$9c + 2$	$9c + 2$

$5c + 4c + 2 = 5c + 2(2c + 1)$

11 How can you check your answer to problem 8 by choosing values for the variables?

Possible answer: I can choose values for x and c, substitute them into each expression, and compare the results. If the values are equal, the expressions are equivalent.

Writing and Solving One-Variable Equations

Solve each problem by writing and solving a one-variable equation.

1. In the first three innings of a baseball game, the home team scored some runs. In the rest of the game, they scored 5 runs more than the number of runs scored in the first three innings. If the home team scored 9 runs in all, how many runs did they score during the first three innings? How many runs did they score in the remainder of the game? Let x = the runs scored in the first three innings.

   Possible work: $x + (x + 5) = 9$

   $2x + 5 = 9$

   $2x = 4$

   $x = 2$

   The team scored 2 runs in the first three innings, and 2 + 5, or 7, runs in the remainder of the game.

2. The punch bowl at Felicia's party is getting low, so she adds 12 cups of punch to the bowl. Two guests serve themselves 1.25 cups and 2 cups of punch. The punch bowl now contains 11.5 cups of punch. How many cups were in the punch bowl before Felicia refilled it? Let n = number of cups in bowl before Felicia refilled it.

   Possible work: $n + 12 - 1.25 - 2 = 11.5$

   $n + 8.75 = 11.5$

   $n = 2.75$

   There were 2.75 cups of punch in the bowl before Felicia refilled it.

3. Vanessa is a caterer. She made several batches of appetizers last weekend for an event. This weekend, Vanessa made 4 times as many batches. She made a total of 25 batches of appetizers for the two weekends. Determine the number of batches Vanessa made last weekend and the number of batches she made this weekend. Let b = the number of batches of appetizers Vanessa made last weekend.

   Possible work: $b + 4b = 25$

   $5b = 25$

   $b = 5$

   Vanessa made 5 batches of appetizers last weekend and 20 batches this weekend.

Writing and Solving One-Variable Equations *continued*

4 Wanda earned $350 babysitting over the months of July and August. She earned $90 more in August than in July. How much did she earn babysitting in July? In August?

Possible work: x = money earned in July

$$x + x + 90 = 350$$
$$2x + 90 = 350$$
$$2x = 260$$
$$x = 130$$

Wanda earned $130 in July and 130 + 90, or $220, in August.

5 Charlene is 8 years older than Aaron. The sum of their ages is 44. What are their ages?

Possible work: a = Aaron's age

$$a + (a + 8) = 44$$
$$2a + 8 = 44$$
$$2a = 36$$
$$a = 18$$

Aaron is 18 years old, and Charlene is 26 years old.

6 On Saturday, 45% of the music Brianna listened to was country songs. She listened to 27 country songs on Saturday. How many songs did Brianna listen to on Saturday?

Possible work: n = total number of songs

45% of the songs are country.

$$0.45 \cdot n = 27$$
$$n = 60$$

Brianna listened to 60 songs on Saturday.

Writing and Graphing One-Variable Inequalities

Write an inequality to represent each situation.

1. A farmer weighs a dozen chicken eggs. The heaviest egg is 56 g.

   $e \leq 56$

2. A light bulb is programmed to turn on when the temperature in a terrarium is 72°F or cooler.

   $t \leq 72$

3. Martin is building a sandcastle at the beach. He pours no less than 5 cups of wet sand into each plastic mold.

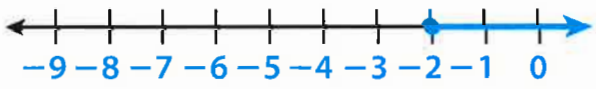
   $s \geq 5$

4. The shortest tree in a park is at least 25.5 ft tall.

   $h \geq 25.5$

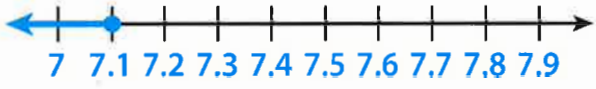
Graph each inequality. Possible answers given.

5. $n \geq -2$

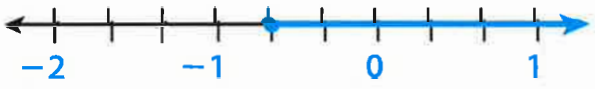


6. $h \leq 5$

7. $t \leq 7.1$



8. $r \geq -\frac{2}{3}$



9. What is the difference between the inequality $x \leq 5$ and the equation $x = 5$?

   Possible answer: The inequality $x \leq 5$ describes a range of numbers. The graph of the inequality includes a closed point at 5 and an arrow pointing left to show the range of numbers. The equation $x = 5$ describes only one number. The graph of the equation is a single closed point at 5.