Grade 8

My Summer Learning Packet

8th 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

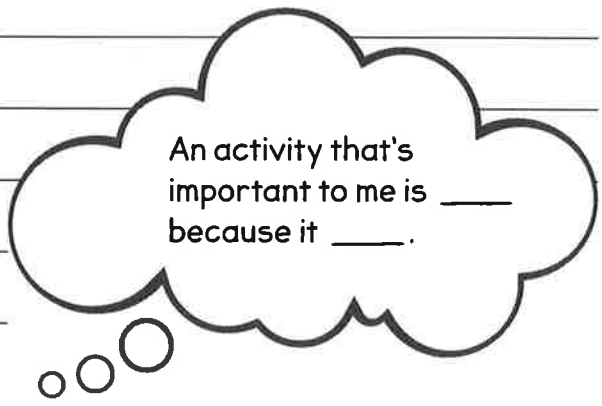
NUMBER	TITLE	RATING

Grade 8

ELA

Journal Entry 1

Describe an activity or a hobby that is important to you. How did you begin doing this activity? What do you enjoy about it, and why is it important to you?



Gerunds

Introduction A **verbal** is a word that is formed from a verb but is used in a sentence as a noun, an adjective, or an adverb.

- A **gerund** is one kind of verbal. It is a verbal that functions as a noun. Like a noun, a gerund can be a subject, a predicate nominative, a direct object, or the object of a preposition. To form a gerund, add *-ing* to a verb.

Subject	Singing is very important to Roberto.
Predicate Nominative	His main interest is singing.
Direct Object	Roberto loves singing.
Object of Preposition	Without singing, Roberto's life would be a lot duller.

- Not all verbs with the *-ing* ending are gerunds. Most often, a verb that ends in *-ing* is just that—a verb. It is part of a verb phrase that includes words such as *is* and *are*. Don't confuse gerunds with verbs. A gerund looks like a verb but functions as a noun.

Gerund	Roberto is excited about performing.
Verb Phrase	He is performing next week.

object of the preposition *about*

verb phrase that tells what the subject, *He*, is doing

Guided Practice **Find and underline each gerund. Write *S* for *subject*, *PN* for *predicate nominative*, *DO* for *direct object*, or *OP* for *object of a preposition* to tell how the gerund is used. Write *none* if a sentence has no gerund.**

Hint

Sometimes a gerund is a predicate nominative. Remember, a predicate nominative comes after a linking verb.

1. Roberto's chorus finds pleasure in performing. _____
2. Planning began months ago for their concert. _____
3. Now the chorus is practicing daily. _____
4. They practice harmonizing over and over. _____
5. Their other important job is advertising. _____
6. Singing is something the whole community can enjoy! _____

Independent Practice

For numbers 1–3, which word in each sentence is a gerund?

1 Ms. Santos is directing the chorus, and she loves teaching.

A directing
B chorus
C loves
D teaching

2 Conducting is something she really enjoys, even when she is working long hours.

A Conducting
B something
C enjoys
D working

3 We are learning about composing, and Ms. Santos's favorite composer of choral music is Wolfgang Amadeus Mozart.

A learning
B about
C composing
D music

Answer Form

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

Number Correct ___/5

For numbers 4 and 5, read each sentence. What is the function of the underlined gerund?

4 During practice, Ms. Santos teaches us about breathing.

A subject
B predicate nominative
C direct object
D object of a preposition

5 The most rewarding part of her job is mentoring because Ms. Santos loves to help young singers progress.

A subject
B predicate nominative
C direct object
D object of a preposition

▶ **Try It** Read what you wrote in Part 1 and look for gerunds in your writing. Underline each gerund. Remember that a gerund is formed by adding *-ing* to a verb. Above each underlined gerund, identify how the gerund is being used.

Active and Passive Voice

Introduction Sentences can be stated in the active voice or the passive voice.

- In the **active voice**, the subject of the sentence clearly *performs* the action.

subject **action**
[Maddy] won the All-Around Student Achievement Contest.

- In the **passive voice**, the subject *receives* the action expressed by the verb. The verb consists of a form of the helping verb *be* plus the past participle of the main verb.

subject **helping verb** **past participle**
The [All-Around Student Achievement Contest] was won by Maddy.

- In the passive-voice sentence example, the subject of the sentence changed, but the overall meaning did not. Maddy performed the action of winning, but she was not the subject. The contest, which was the direct object of the action in the first sentence, is the subject of the second sentence.

Guided Practice **Underline the simple subject in each sentence. Then write *A* for *active* or *P* for *passive* to identify the voice of each sentence.**

Hint

In the passive voice, the person who performs the action isn't always identified.

Example:
The award will be presented on Friday.

The sentence doesn't tell *who* will present the award. *Award* is the simple subject, but it doesn't perform the action.

1. Maddy is considered one of the best writers in school. _____
2. She writes amazing articles for the school newspaper. _____
3. Her report on ways to reduce waste in the cafeteria was chosen as Article of the Year. _____
4. This year's spring play was also written by Maddy. _____
5. The eighth grader even excels in math and science. _____
6. Last year, she received a chance to go to Science Camp in Washington, DC. _____
7. Camp applications were distributed to all students. _____
8. Many students took advantage of the opportunity and applied. _____

Independent Practice

For numbers 1 and 2, which is the best way to change the voice in each sentence from active to passive without changing the meaning?

1 The committee chose three students to attend Science Camp.

A Science Camp was chosen for three students to attend.

B Three students were chosen by the committee to attend Science Camp.

C Science Camp was chosen for three students by the committee.

D Three students who attended Science Camp were chosen by the committee.

2 The Science Camp sent the students a letter of acceptance.

A The Science Camp was sent a letter of acceptance for the students.

B A letter of acceptance to the students was received from the Science Camp.

C A letter of acceptance was received by the Science Camp for the students.

D The students were sent a letter of acceptance by the Science Camp.

Answer Form

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

Number Correct ___/4

For numbers 3 and 4, which is the best way to change the voice in each sentence from passive to active without changing the meaning?

3 Music Camp was applied to by more students than to Drama Camp this year.

A More students applied to Music Camp than to Drama Camp this year.

B More students will apply to Music Camp than to Drama Camp this year.

C More students applied to Drama Camp than to Music Camp this year.

D Music Camp had more students apply to it than to Drama Camp this year.

4 Maddy, a smart and friendly girl, is liked by everyone.

A Maddy, a smart and friendly girl, will be liked by everyone.

B Maddy, who is a smart and friendly girl, likes everyone.

C Everyone likes Maddy, a smart and friendly girl.

D Everyone is liked by Maddy, a smart and friendly girl.

Read the story. Then answer the questions that follow.

from "The Canoe Breaker"

by Margaret Bemister

1 Once in a certain tribe there was a young man who had no name. For it was the law in that tribe that every youth had to do some deed that would give to him his name. This young man had tried in many ways to do something that would make the chief tell him that he was a great warrior. Several times he had tried to kill a bear, but had failed. He had gone forth in battle, hoping to kill some powerful enemy, but no one had fallen under his tomahawk. He had gone on long hunting trips, hoping to bring home the skin of some wild animal, but had always returned empty-handed. So his brave, young heart felt very sad, for the young men of the tribe laughed at him for not having won a name for himself.

2 One summer day, the tribe left their camp on the lake shore and went back among the hills on a hunting trip. After they had gone some distance, the young man left the others and wandered off by himself, hoping that this time he would kill some animal, and so be no longer scorned by his companions. He tramped for many hours through the forest and over the hills, without catching sight of anything. At length, he climbed one hill which was higher than the others, and from here he could see the small creek which flowed through the hills down to the lake. As he was looking at it, he thought he saw some dark objects along the shore of the creek. They seemed about the size of canoes. He scanned the hills anxiously, and at length could see a band of Indians making their way along the trail made by the hunters in the morning.

3 At once the young man knew there was great danger ahead, for these Indians, the Shuswaps, were the enemies of his tribe and now were following their trail, and when they found them, they would kill them. Quickly the young man made his way down the hill, and through the forest to the spot where the hunters had camped for their evening meal. Running up to them, he cried, "Return at once to your lodges. Our enemies are now on our trail. They are in the forest on the other side of this hill. I shall return and delay them while you reach your lodges in safety."

4 Then, without waiting for a reply, he turned and ran back in the direction from which he had come. By short cuts through the hills, he made his way to the creek and found, as he expected, that the Indians had left their canoes tied at its mouth. Seizing his tomahawk, he began to break the canoes, and soon had a hole made in all of them except one. Leaving the creek, he mounted the hill and from there could see the Shuswaps. He began to wave his arms and call wildly to attract their chief. At last they noticed him and began to make their way towards him. The young man was delighted, for now he knew that his tribe could escape in safety, while their enemies were returning towards the creek. Soon the Shuswaps neared the top of the hill, and he knew he must think of some plan to delay them here. Suddenly he dropped to the ground and lay there as though insensible. With a run the Shuswaps gained the summit and surrounded him. He lay face downwards with his arms stretched out. They turned him over on his back and peered into his face. Not a muscle moved; not even his eyelids quivered. Then the chief bent over him and felt his heart. "He [is not dead], he said, "but the Great Spirit has called his spirit to go on a long journey. . . . Let us place his body under the pine-trees, there to await the return of the spirit."

5 The Indians lifted the body of the young man, carried it to a clump of pine-trees and laid it down. Then they walked some yards away and held a council.

6 As soon as they were a safe distance away, the young man jumped up. He ran down the hill, and reaching the canoes, jumped into the unbroken one and began to paddle down the creek.

7 The Shuswaps turned and saw him. With fierce cries, they began to race down the hillside, and when they arrived at the spot where they had left their canoes, and saw what had happened, they filled the air with their angry yells. The young man was now out on the lake in the canoe, and they were unable to follow him, as all the other canoes were wrecked. They ran angrily along the lake shore, thinking he would land on their side, but instead, he made his way across the lake to the other side.

8 When the young man reached the shore, he again seized his tomahawk, and this time broke the canoe with which he had saved his life. The defeated Shuswaps, standing on the shore, saw him do this, and again they filled the air with their angry yells. There was nothing for them to do but to return to their camp, while the young man made his way along the lake shore to the village of his tribe. When he reached there, he found that he was no longer a man without a name. His brave deed had won for him the name of Kasamoldin—the canoe breaker—and ever afterwards in his tribe, and to others, he was known by this name.

Answer the questions. Mark your answers to questions 1–3 on the Answer Form to the right.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/3

1 A central theme of this story is that great deeds arise from seeing how to best use our unique strengths and abilities. Which sentence from the story **best** illustrates this theme?

A "He had gone forth in battle, hoping to kill some powerful enemy, but no one had fallen under his tomahawk."

B "Seizing his tomahawk, he began to break the canoes, and soon had a hole made in all of them except one."

C "The Indians lifted the body of the young man, carried it to a clump of pine-trees and laid it down."

D "There was nothing for them to do but to return to their camp, while the young man made his way along the lake shore to the village of his tribe."

2 In what way does the plot contribute to the theme?

A The young man must decide on a name that reveals his special skills.

B The chief of the Shuswaps appreciates the young man for what he is.

C The young man doesn't give up until he proves he is a great warrior.

D The young man finally achieves success in a nontraditional way.

3 Which of the young man's character traits **best** helps to convey the theme?

A the courage he shows in a dangerous situation

B his physical strength in breaking the canoes

C his determination to earn a name for himself

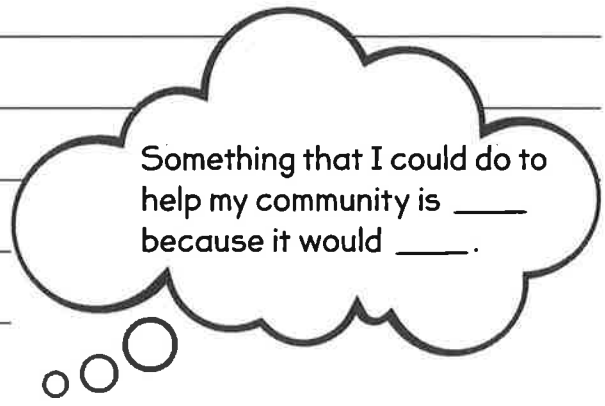
D his fear when confronted by the Shuswaps

4 Explain how the author develops the theme over the course of "The Canoe Breaker." In your answer, include at least **two** details from different parts of the story.

Self Check

Journal Entry 2

What are two things that you could do to help your community? Explain how your community would benefit.



Gerund Phrases

Introduction A **gerund phrase** is made up of a gerund and other words that complete its meaning. Gerund phrases may include nouns, pronouns, adjectives, adverbs, and prepositional phrases.

- Like a gerund, a gerund phrase functions as a noun. It can be a subject, a direct object, a predicate nominative, or the object of a preposition.

Subject	Conserving energy can protect Earth's resources.
Direct Object	Many people have started making an effort.
Predicate Nominative	A key to success is reducing our trash.
Object of Preposition	We can put effort into recycling certain materials.

- To distinguish between a gerund phrase and a verb phrase, look at how the phrase is used in the sentence. If the phrase functions as a noun, it is a gerund phrase. If it functions as a verb, it is a verb phrase.

Gerund phrase	Working together can make a big difference.
Verb phrase	Many communities are working together.

Guided Practice **Underline the gerund phrase in each sentence. Write *S* for *subject*, *PN* for *predicate nominative*, *DO* for *direct object*, or *OP* for *object of a preposition* to tell how the gerund phrase is being used.**

Hint

A gerund phrase can be the subject of a sentence or of a dependent clause. A dependent clause usually begins with a subordinating conjunction, such as *because*, *when*, or *if*, followed by the subject of the clause.

1. Involving your family in conservation can be fun. _____
2. Even the youngest family member can help by turning off extra lights. _____
3. Another thing that makes a difference is shutting down your computer at night. _____
4. Many people are using less water because conserving it can also save money. _____
5. Some communities target reducing electronic waste. _____

Independent Practice

For numbers 1–3, which group of words from each sentence is a gerund phrase?

1 Using energy-efficient light bulbs has been helping people to cut down on waste.

A Using energy-efficient light bulbs

B has been helping people to cut down on waste

C helping people

D to cut down on waste

2 It is important to seal windows and doors properly to prevent heat or cold from escaping through gaps.

A It is important

B windows and doors

C to prevent heat or cold

D escaping through gaps

3 Everyone in my family is participating because reducing our environmental impact is important.

A Everyone in my family

B is participating

C reducing our environmental impact

D our environmental impact is important

Answer Form

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

Number Correct ___/5

For numbers 4 and 5, what is the function of the underlined gerund phrase in each sentence?

4 In hot weather, <u>using a fan instead of an air conditioner</u> requires less energy.

A It is the subject of the sentence.

B It is the direct object of the verb *requires*.

C It is a predicate nominative.

D It is the object of the preposition *In*.

5 I like <u>taking a short shower instead of a bath</u> because a bath wastes more water.

A It is the direct object of the verb *like*.

B It is the direct object of the verb *wastes*.

C It is the subject of the sentence.

D It is a predicate nominative.

▶ **Try It** Read what you wrote in Part 1 and look for gerund phrases in your writing. Underline any gerund phrases you find. If you didn't use any gerund phrases, see if you can revise one of your sentences to use a gerund phrase.

Using Context Clues

Introduction Sometimes as you read, you may come to a word or a phrase that you don't understand. Often, you can determine the meaning of an unfamiliar word from its context, the words and sentences around it.

- Different kinds of context clues help readers figure out the meanings of words.

Context Clue	Signal Words	Example
Definition	*is, or, which is, means*	The land pulls in opposite directions along a fault, which is a crack in the earth's crust.
Example	*for example, for instance, such as*	Geoscientists, such as geologists and seismologists, study earthquakes.
Comparison	*like, similar, also, as well*	Like a large earthquake, smaller seismic events may also be destructive.
Contrast	*but, or, yet, in spite of, however, whereas, although*	In spite of the chaos caused by an earthquake, order is eventually restored.

- A word's position and function in a sentence can also be a clue to its meaning. What is the meaning of *geometrogomy* in this sentence?

Scientists measure the geometrogomy of earthquakes.

Geometrogomy isn't a real word! But if it were, you could figure out something about its meaning from its use in the sentence. Since it comes after the word *the*, you know that *geometrogomy* is a noun. And because of its use in the sentence, you also know that it is probably an observable "thing"—something scientists can measure.

Guided Practice **Underline the context clue that can help you figure out the meaning of each underlined word or phrase. Write the meaning on a separate piece of paper.**

Hint

A context clue is often in the same sentence as an unfamiliar word. The clue may also be in a sentence that comes before or after the sentence that includes the difficult word.

Before they strike land, tornadoes can often be detected by Doppler radar, an electronic system that measures wind speeds. A tornado begins when a wind system forms a huge vortex. This formation is similar to water swirling toward a drain. This condition may trigger multiple tornadoes, which may occur simultaneously or one after the other. Whereas many regions are fairly safe from tornadoes, others are susceptible to them. Communities in tornado-prone areas try to mitigate their risk. For instance, they establish public warning systems.

Independent Practice

For numbers 1–4, use context clues to answer the questions about each paragraph.

Answer Form

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

Number Correct ___/4

The wind velocity, or speed of motion, in a violent tornado can reach 300 miles per hour. The effects of such a storm can be catastrophic, killing people and destroying wildlife. Within as little as a few seconds, a tornado can devastate a town in its path.

1 What does the word velocity mean in the paragraph?

A position
B change in direction
C swiftness
D size of something

2 What does the word catastrophic mean in the paragraph?

A dynamic
B productive
C tragic
D plentiful

When weather forecasters predict a tornado, it is advisable for people threatened by the storm to find safe shelter. If the storm destroys property, emergency workers will do their best to accommodate storm victims. For example, they will set up shelters for those who lost homes.

3 What does the word accommodate mean?

A to provide with something needed
B to soothe and comfort
C to give necessary information
D to investigate in order to report on

4 What words from the paragraph helped you figure out the meaning of accommodate?

A "When weather forecasters predict a tornado"
B "people threatened by the storm"
C "emergency workers will do their best"
D "set up shelters for those who lost homes"

Read the passage. Then answer the questions that follow.

The Battle Picnic

by Jonas Sellers

1 [Scene: a well-furnished drawing room in a fancy Washington D.C. home, July 16, 1861.]

2 MANFRED [Excitedly.] Well, the war with the Confederates has finally begun! We are determined to march to Richmond, and we will certainly overcome those rebels before the month has ended. Our victory will be swift, and the rebels will learn that they should not have unleashed Pandora's box with their traitorous ways.

3 JENNY [Distressed.] I believed that the war had already started in April, when the Confederate soldiers fired boldly on Fort Sumter. Surely that was an easy victory for them, and thankfully no one was killed on either side. But with all the volunteers President Lincoln gathered, why would the Confederate forces try to attack us now? I have heard officials say that our display of strength would frighten the Confederates into submission. [Pausing briefly in thought.] I am anxious about beginning a war; surely, many people will be harmed by such as serious act.

4 MANFRED [With a knowing smile.] I believe, sister, that you are less worried about war in general than about the safety of your own dear brother. Do not waste a moment worrying on my account; we will reward those Southern soldiers with a hearty beating, bring the black sheep back into the Union, and be at restful, even boring, peace again before you notice I am gone. By fighting, we will show our strength and our well-deserved confidence because we are battling on the proper side.

5 JENNY When must you leave?

6 MANFRED I came to say farewell, dear sister, as we march as soon as we are gathered. [Manfred walks over to the window and looks out.] Look at all the fine and fancy carriages filled with townspeople, determined to travel the road with our troops. What a stirring show of public support!

7 JENNY [Joining him at the window.] What can they be thinking of, to so merrily follow troops into battle?

8 MANFRED They are thinking that the battle will offer rewarding entertainment. They are thinking they will see our troops easily march to victory, just as I am thinking.

9 [Scene: July 21, 1861, along the Bull Run River, near Manassas Junction; there is a mass of confusion, with sightseers grabbing baskets and jumping into carriages; soldiers running toward the road heading back to Washington, and many soldiers dead and dying on the battlefield.]

10 JENNY [Totally distraught, staring toward the field.] Father, where is Manfred? Can you see Manfred anywhere on the battlefield?

11 MR. BENJAMIN [Demandingly.] Manfred will have to take care of himself. Sit down and get settled now, quickly as you can. The road is already filled to overflowing with panicky people.

12 JENNY Father, this is the most horrifying experience of my life. Why did we come? Why did so many people come, to picnic at a battle?

13 MR. BENJAMIN [Squarely facing Jenny.] Look at the growing hoards of Confederate soldiers, advancing so quickly. Our troops are fleeing off the field like bats from hell, hurrying back toward Washington, dropping their goods and guns so that they can run even faster.

14 JENNY I do not think they are cowards, Father. Who would stand at such as show of force?

15 MR. BENJAMIN We must go. We can talk later. Before long, the Confederates will be chasing us back to Washington, and who could imagine what might happen if they were to apprehend us?

16 JENNY I knew we should not have come!

17 MR. BENJAMIN Yes, I see that now.

18 JENNY [Solemnly.] I hope that Manfred makes it home safely. I hope . . . but I am not at all certain.

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

Part A

What is one central theme of "The Battle Picnic"?

A It is unrealistic to believe that wars are not deadly.

B Believing you can win is more important than actually winning.

C One's attitude toward an event will affect the outcome of that event.

D It is important to stay calm during times of crisis.

Part B

Select **three** pieces of evidence that support the answer to part A.

A "I believed that the war had already started in April, when the Confederate soldiers fired boldly on Fort Sumter."

B "I came to say farewell, dear sister, as we march as soon as we are gathered."

C "What can they be thinking of, to so merrily follow troops into battle?"

D "Manfred will have to take care of himself. Sit down and get settled now, quickly as you can. "

E " . . . there is a mass of confusion, with sightseers grabbing baskets and jumping into carriages; soldiers running toward the road heading back to Washington, . . . "

F "Father, this is the most horrifying experience of my life. Why did we come? Why did so many people come, to picnic at a battle?"

G "We must go. We can talk later."

2 Which details from "The Battle Picnic" **best** support the inference that the charcters do not fully understand their situation? Select all that apply.

A Almost everyone is excited about a picnic on the battlefield.

B The Union soldiers are preparing to march on the Confederate capital of Richmond.

C Manfred says he and the other Union soldiers will overcome the Confederates before the month has ended.

D People decide to leave the battle region as quickly as possible once the Confederates take control.

E The people fleeing the battle are afraid they will be attacked by the advancing Confederate soldiers.

3 Read these sentences from "The Battle Picnic."

> Do not waste a moment worrying on my account; we will reward those Southern soldiers with a hearty beating, bring the black sheep back into the Union, and be at restful, even boring, peace again before you notice I am gone. By fighting, we will show our strength and our well-deserved confidence because we are battling on the proper side.

What do you learn about Manfred's character by what he says?

A He believes battle is more exciting than daily life.

B He cares for his sister so much that he does not want to frighten her.

C He does not want to fight but he feels he must do so for his country.

D He does not care that his sister is concerned for his safety.

4 When Manfred states in "The Battle Picnic" that he is battling on the "proper side," what does the word "proper" suggest?

A Manfred is certain that his side will win.

B Manfred believes he is the only person able to behave in a correct manner.

C Manfred views the war as necessary.

D Manfred believes his side is supported by the forces of justice.

Go On

5 What is the effect of Manfred's comment in "The Battle Picnic" that he will be back before Jenny notices he is gone?

A It creates a break in the tension of the passage because the audience knows that Manfred is using humor in his response to Jenny.

B It creates a sense of dread since the audience knows that Manfred's prediction of a quick and easy victory is incorrect.

C It causes the audience to share Jenny's sense of fear because the audience can tell Manfred is lying on purpose.

D It causes the audience to share Jenny's anger because the audience knows that Jenny has begged Manfred not to go to war.

6 At the beginning of the play, Manfred says, "Our victory will be swift, and the rebels will learn that they should not have unleashed Pandora's box with their traitorous ways." Read this telling of the Greek myth "Pandora's Box."

Pandora's Box

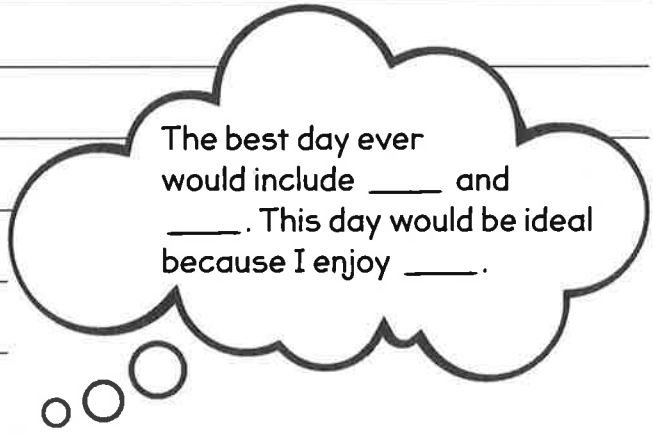
Long ago, the god Zeus was angry with two brothers named Epimetheus and Prometheus. Zeus, who was the most powerful of all the gods, had a plan to get even. He ordered another god, Hephaestos, to make a very beautiful woman out of clay. This woman, Pandora, was sent to Earth by Zeus to marry Epimetheus. As a wedding gift, Zeus gave Pandora a box but made her promise never to open it.

Pandora was very curious by nature, and after resisting for as long as she could, she finally opened the box. Out flew all the horrors and evils of the world—hate, disease, misery, poverty, envy, and more—which Zeus had hidden away in the box. Frightened by all the evil rushing out, Pandora quickly closed the lid, not realizing that there was one thing still trapped inside. That thing was hope.

What does Manfred suggest through his reference to Pandora's box? Use details from both "The Battle Picnic" and "Pandora's Box" in your answer.

Journal Entry 3

Imagine you could plan the best day ever. Describe the day. What would you do, who would be with you, and what would make it such an ideal day?



Participles

Introduction Remember that a **verbal** is a word that is formed from a verb but is used as a noun, an adjective, or an adverb. A **participle** is a type of verbal that functions as an adjective.

- A **present participle** is formed by adding *-ing* to a base verb.

  Someday Gianna would like to be a singing star. (*Singing* modifies *star.*)

  Humming, she daydreamed about her future. (*Humming* modifies *she.*)

- A **past participle** is similar to the past tense form of a verb. For a regular verb, the ending *-ed* is added. For an irregular verb, the ending *-en* may be added, or the spelling of the word may change in other ways.

  Max's mother is a trained musician. (*Trained* modifies *musician.*)

  Her chosen profession is teaching piano. (*Chosen* modifies *profession.*)

- Do not confuse a past participle with a past-tense verb. Remember that a participle functions as an adjective, while a verb tells the action of a subject.

  The tired singer rested her vocal cords. (*Tired* describes *singer,* while *rested* tells what the singer did.)

Guided Practice **Underline the present participle or past participle in each sentence. Then draw an arrow to the noun or pronoun it modifies.**

Hint

Do not confuse present participles, gerunds, and progressive verbs.

- The *waiting* audience was restless. (present participle)
- *Waiting* was hard. (gerund)
- Everyone was *waiting* for the show. (verb)

1. When I heard about the singing competition, I thought that participating would be fun.
2. Now I was shaking as I clenched a wrinkled sheet of music in my hand.
3. I peeked through the curtain and saw the five seated judges.
4. I realized that this was going to be a challenging experience.
5. I was trying to hold on to my shrinking confidence.
6. Frozen, I could not make my legs move onto the stage.

Independent Practice

For numbers 1–3, which word in each sentence is a participle?

1 The curtain opened, and I stepped into the brightly shining lights.

A opened
B stepped
C shining
D brightly

2 Temporarily blinded, I stumbled and bumped into the piano.

A Temporarily
B blinded
C stumbled
D bumped

3 Suddenly, flying sheets of music scattered everywhere!

A Suddenly
B flying
C scattered
D everywhere

Answer Form

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

Number Correct ___/5

For numbers 4 and 5, which word in each sentence does the underlined participle modify?

4 Panicking, I could not remember the words to my song.

A remember
B song
C words
D I

5 Finally, the forgotten words came rushing back to me.

A Finally
B words
C me
D rushing

▶ **Try It** Read what you wrote in Part 1 and look for a participle in your writing. Remember that a participle functions as an adjective. Underline each participle and then circle the noun that it modifies.

Punctuation to Indicate a Pause or Break

Introduction Sometimes in your writing, you will want to signal a pause. The pause may be in the middle of a sentence or at the end of it. You can use commas, dashes, or ellipses to cue different types of pauses.

Punctuation	When to Use	Examples
Commas	to set off nonessential information	Professional sports, **such as football and basketball,** can be more fun to watch live than on TV. Yesterday's game was thrilling, **especially at the end.**
Dashes	to indicate a change in thought or an abrupt break, or to emphasize set-off text	Some people think baseball is boring—**nine innings of players standing around**. The batter swung and—**with the crack of his bat**—knocked the ball out of the park.
Ellipses	to indicate an unfinished action or the process of thinking	With two seconds left on the clock, the player dribbled down the court . . . slam dunk!

Guided Practice **Add the type of punctuation shown in parentheses to correctly signal the pause in each sentence. Use a caret (^) to add dashes and ellipses.**

Hint

When you use commas or dashes to signal a pause in the middle of a sentence, be sure to use the same punctuation before and after the pause.

Example:
Camella—that girl over there—plays hockey.

NOT

Camella, that girl over there—plays hockey.

1. Did you see the game between the Hornets and the Grizzlies the one that went into overtime? (comma)
2. Suddenly the referee blew his whistle stopping the game for a penalty. (ellipsis)
3. A professional athlete runs the risk of serious injury a disaster that could even end a career. (dash)
4. Our softball team has a game next Thursday not Friday. (comma)
5. Curtis a newcomer to our team usually scores the most runs. (dashes)
6. At 6:00 A.M. a time when most people are asleep Curtis and his brother are out practicing. (commas)
7. My mom says I can go to the game if I accomplish one thing an A on my algebra test. (dash)
8. Stepping up to the plate he keenly focused his eyes on the pitcher. (ellipsis)

Independent Practice

For numbers 1–5, choose the best way to punctuate the pause in each sentence.

Answer Form

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

Number Correct ___/5

1

A The ball slowly rolled around the rim and finally, dropped through the hoop.

B The ball slowly rolled, around the rim, and finally dropped through the hoop.

C The ball slowly rolled . . . around the rim and finally dropped through the hoop.

D The ball slowly rolled around the rim . . . and finally dropped through the hoop.

2

A That tennis ball is flying toward you—watch out!

B That tennis ball is—flying toward you watch out!

C That tennis ball is flying toward you, watch out!

D That tennis ball is—flying toward you—watch out!

3

A The score after six innings—if she remembered correctly was 4 to 1.

B The score after six innings if she remembered correctly, was 4 to 1.

C The score after six innings . . . if she remembered correctly was 4 to 1.

D The score after six innings, if she remembered correctly, was 4 to 1.

4

A Let's get something to eat, maybe popcorn or nachos—at halftime.

B Let's get something to eat—maybe popcorn or nachos—at halftime.

C Let's get something to eat maybe popcorn or nachos, at halftime.

D Let's get something to eat—maybe popcorn or nachos, at halftime.

5

A Competing in the Olympics, what an amazing experience, that would be.

B Competing in the Olympics . . . what an amazing experience, that would be.

C Competing in the Olympics . . . what an amazing experience that would be.

D Competing in the Olympics—what an amazing experience—that would be.

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

Animal Regeneration

by Aleya Brown

1 Regeneration is the ability of an organism to regrow a lost body part. All creatures have the power to regenerate lost body parts to some degree. If a human scrapes a knee or breaks a bone, for example, tissue is regenerated to heal the wound. Even a lost fingernail will regenerate over time. If the finger is severed, however, the limits of regeneration have been reached; humans cannot regrow limbs or organs. In contrast, if an earthworm is cut in half, the end of the worm with a head can grow a new tail. If the end of the worm with the tail survives, it too may grow a new tail. Unfortunately, it starves to death eventually because it cannot feed itself without a head or mouth.

2 Which creatures have strong regenerative powers? Lower animals, such as worms, lizards, spiders, and starfish, have some of the greatest regenerative powers. Crayfish, for example, have a remarkable safety device at the base of each claw and leg called a "breaking joint." When a predator grabs a limb or claw, the appendage breaks away so the crayfish can escape. Over time, as the crayfish molts, or sheds its soft shell, the broken limb or pincer grows larger and larger until it has been completely regenerated.

3 Some animals are able to survive in large part because of their regenerative powers. A type of flatworm called planaria lives under rocks in clear creeks and streams. The flatworm has no real defense mechanisms to protect it from predators, but it can be cut into as many as 32 pieces, and each piece may form a new worm, complete with a head, eyes, and internal organs. In the case of the planaria, an event that could be fatal is turned into an awesome act of procreation.

4 Many more animals display noteworthy regenerative powers. Sharks replace lost teeth throughout their lifetimes. A single shark may grow as many as 24,000 teeth in its lifetime, ensuring a long career at the top of the food chain. Much like planaria, sea cucumbers, which have bodies that grow up to three feet long, can be cut into pieces and survive. Each piece may grow into a new sea cucumber. Spiders, like crayfish, can regrow legs. Many lizards also have "breakaway" tails that snap off when caught by predators. They then grow new ones, which lack the original spine. Starfish can lose arms and grow new ones. Sometimes an entirely new starfish can grow from a single lost arm.

5 Interestingly enough, the scales of a fish tell stories about regeneration. Much like the rings inside a tree trunk, fish scales reveal details about an organism's past. Each scale lies in a pocket of skin and grows along with the fish. Scientists read the markings on a scale to determine the age of the fish, seasons of famine or drought, and other important information. It is often necessary to look at many scales to get a complete story, however, because scales are often lost and regenerated. These new scales lack the markings that happen over time. They are like a blank page in the history of the fish.

6 Scientists are extremely interested in regeneration because of the possible implications for healing humans. Some scientists think it is possible that higher animals retain the ability to regenerate body parts, but that the reaction triggering the body to regenerate has been lost. By studying lower animals, such as worms, spiders, and sponges, scientists hope to discover what triggers regeneration. The dream is that this knowledge could one day be used to help humans regrow internal organs and limbs. Currently, human regeneration may sound like something out of a science-fiction movie. The implications of such a discovery, however, would be so far-reaching that they are hard to fathom. For now, the miracle of regeneration is intriguing enough to keep scientists working for years to come.

Answer the questions. Mark your answers to questions 1–5 on the Answer Form to the right.

Answer Form

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

Number Correct ___/5

1 What is the meaning of "procreation" as it is used in paragraph 3 of the passage?

A survival

B repetition

C cooperation

D reproduction

2 Read this sentence from the passage.

> Crayfish, for example, have a remarkable safety device at the base of each claw and leg called a "breaking joint."

Which of the following best matches the author's connotative meaning of the word "remarkable" as it is used in the sentence?

A unusual

B significant

C extraordinary

D noticeable

3 As used in paragraphs 2, 3, and 4 of the passage, the word *powers* is **closest** in meaning to

A influence

B authority

C forcefulness

D abilities

4 Which of the phrases from the passage **best** helps the reader understand the meaning of the word "appendage"?

A "have a remarkable safety device"

B "grabs a limb or claw"

C "sheds its soft shell"

D "grows larger and larger"

5 Read this sentence from the passage.

> The dream is that this knowledge could one day be used to help humans regrow internal organs and limbs.

Which word **best** matches the meaning of "dream" as it is used in this sentence?

A hope

B fantasy

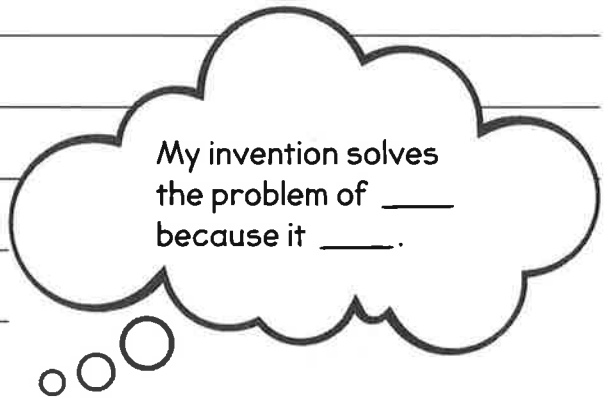
C plan

D illusion

Self Check

Journal Entry 4

What would you invent to make everyday life better? Describe the problem that needs to be solved and how your invention would solve it.



Participial Phrases

Introduction A **participial phrase** is made up of a participle and other words that complete its meaning. Like a participle, a participial phrase functions as an adjective.

- A participial phrase can contain a present or a past participle.

Present	In the deep sea, you can see fish **glowing** in the dark.
Past	**Equipped** with cameras, divers look for these fish.

In the first sentence above, the participial phrase *glowing in the dark* modifies *fish*. In the second sentence, the participial phrase *Equipped with cameras* modifies *divers*.

- To distinguish a participial phrase from a verb phrase or a gerund phrase, look at how it is used in the sentence. If the phrase modifies a noun or a pronoun, it is a participial phrase. If it functions as a verb, it is a verb phrase. If it functions as a noun, it is a gerund phrase.

Participial phrase (modifies a noun or pronoun)	Scientists studying deep-sea creatures have discovered something called "bioluminescence."
Verb phrase (functions as a verb)	Scientists have been studying this chemical phenomenon in animals for years.
Gerund phrase (functions as a noun)	Studying bioluminescence has turned up some surprising facts.

Guided Practice **Underline the participial phrase in each sentence. Then draw an arrow to the noun it modifies.**

Hint

A participial phrase can appear before or after the word it modifies. It can contain nouns, pronouns, adjectives, adverbs, and other words and phrases.

1. "Bioluminescence" is a scientific term that describes light coming from an organism.
2. Caused by a chemical reaction, bioluminescence can produce different colors, from violet to red.
3. Animals producing their own light are called "bioluminescent."
4. Flickering on a summer's night, a firefly is an example of a bioluminescent insect.
5. Photographs taken in the deepest, darkest parts of the ocean show creatures that seem to light up.

Independent Practice

For numbers 1–3, which group of words from each sentence is a participial phrase?

1 Considered unusual on land, bioluminescent animals are more common in the deepest parts of the ocean.

A Considered unusual on land

B bioluminescent animals

C are more common

D in the deepest parts of the ocean

2 Light produced by a chemical reaction is used in different ways by bioluminescent animals.

A Light produced

B produced by a chemical reaction

C is used in different ways

D by bioluminescent animals

3 Some creatures, camouflaging themselves, produce lights that confuse their predators.

A Some creatures

B camouflaging themselves

C produce lights

D that confuse their predators

Answer Form

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

Number Correct ___/5

For numbers 4 and 5, which word from the sentence does the underlined participial phrase modify?

4 Glowing in the dark sea, these creatures can also attract prey with light.

A creatures

B attract

C prey

D light

5 Fireflies communicating with each other use flashes to attract each other's attention.

A Fireflies

B use

C flashes

D attention

▶ **Try It** Read what you wrote in Part 1. Find a sentence that you can revise to use a participial phrase. Remember, there are three types to choose from!

Greek and Latin Word Parts

Introduction Many words in English have Greek and Latin roots and affixes.

- A **root** is a word part that contains the main meaning of the word. In the word *secede*, the root *cede* means "move" or "go." *Secede* means "to move apart, or to separate."

Root	Meaning	Root	Meaning
cede, ceed	"go, move"	*pon, pos*	"put, place"
cur	"run"	*ven, vent*	"come"
mit, miss	"send"	*ject*	"throw"

- An **affix** is a word part added to a root. **Prefixes** are affixes that come before the root, and **suffixes** are affixes that come after it.

Prefix	Meaning	Suffix	Meaning
inter-	"between"	*-ion*	"act or process of"
pro-	"forward; in favor of"	*-or*	"state, quality, or action"
pre-	"before"	*-ent*	"someone who does an action; occurring in a certain way"

- You can use the meanings of roots and affixes to figure out the meaning of many English words.

Guided Practice **Read the passage. Circle the root in each underlined word. On a separate piece of paper, write the meanings of the word parts and define the word.**

Hint

The meaning of the root does not usually fit exactly with the definition of the word. Think of affixes and roots as clues that you can use along with the context to figure out the meaning of an unknown word.

Our car was proceeding along the highway when we heard the forecast. The weather had been mixed all day, and now we knew that the intermittent rains were the precursor to a big storm. The station resumed its programming, but soon the announcer interjected another warning. My brother, who was driving, was a proponent of going home, but my sister Lexy wanted to continue. We needed an intervention, so I used my cell phone to call my mom.

Independent Practice

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

Answer Form

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

Number Correct ___/4

1 My mom told us that the trajectory of the storm had changed and the river might overflow.

The prefix *tra-* means "across," the root *ject* means "throw," and the suffix *-ory* means "a place where." What is the meaning of trajectory as used in the sentence?

A the time when something important begins

B the type

C the path something takes as it moves over

D the size and shape

2 Lexy could be tenacious, but my mother's news put an end to all discussion.

The root *ten* means "hold," and the suffix *-ious* means "characterized by." What is the meaning of tenacious as used in the sentence?

A stubborn

B talkative

C cranky

D bossy

3 We subsequently turned the car around and returned home.

The prefix *sub-* means "under or after," and the root *sequ* means "follow." What is the meaning of subsequently as used in the sentence?

A slowly but surely

B immediately after

C completely

D eventually

4 After the huge storm, everyone wondered how long it would take the floodwaters to recede.

The prefix *re-* means "back," and the root *cede* means "go." What is the meaning of recede as used in the sentence?

A flow over

B rise higher

C remain stable

D withdraw from

Reading

Read the passage. Then answer the questions that follow.

The Glowing Beagle

by Karen Brinkmann

1 Dogs have provided many services for people over the years. Working and herding dogs pull sleds and shepherd animals. Service dogs guide and protect people with special needs. Police dogs assist in tracking down and apprehending criminals. Assistance dogs perform necessary tasks for people. And of course, dogs are probably best known for their faithful companionship to individuals and families.

2 But dogs may soon be able to add another talent to their long list of abilities: the potential to help researchers cure diseases because of the dogs' ability to glow. Yes, you read that correctly: scientists in Korea have designed and bred a dog that glows under ultraviolet light. Let's take a look at this unprecedented scientific creation in order to understand why it was accomplished as well as how it could help doctors study and eradicate diseases.

3 For many years, scientists have studied bioluminescent sea creatures such as jellyfish. *Bioluminescent* means a creature can produce and emit its own light. After years of observing and experimenting with these types of creatures, scientists discovered a protein called *green-fluorescent protein,* which is responsible for giving the jellyfish and other creatures the ability to glow. They determined a way to isolate the protein. Then, they transferred it into the cells of a puppy before the puppy was even born. The result was a delightful dog named Tegan who is like any other beagle except that she appears to glow when placed under an ultraviolet light.

4 You may be wondering how in the world a glowing beagle pup could possibly help researchers find a cure for diseases such as Alzheimer's and Parkinson's. The answer to that question lies not in the fact that the dog glows but that scientists have created a method to transfer genes. Because the gene transfer process has been successful, scientists are hopeful that other gene transfers will also be successful. And these gene transfers could lead to a better understanding, if not a cure, for many different kinds of diseases.

5 Human beings and dogs share the ability to contract 268 genetic diseases. If scientists can successfully conduct research on a dog that has a disease that a human can also develop, the scientists may find clues to curing that disease by observing the dog. Dogs share some of the same physiological and anatomical body parts that people do, so studies of dogs translate well to studies of humans. Plus, dogs are social creatures and respond well to commands. They are better subjects to study than laboratory rats or mice.

6 Though transferring fluorescent genes to a dog does not harm a dog in any way, there are some critics of the process. Some animal rights groups discourage any testing on animals. Many suggest alternatives to animal testing, including testing humans instead. However, though many studies have been conducted using human volunteers, the type of gene testing that scientists have done on dogs cannot be conducted on humans.

7 Another drawback of the program is the expense. Scientific research is typically costly, but genetic testing requires equipment and technology that come at a very high price. Additionally, testing on dogs would require that researchers find caregivers for the dogs. Small creatures such as mice and rats can live happily in small cages, but dogs of course cannot. Researchers who want to dedicate their lives to performing gene transfers on pups would need to find a way to house the dogs in a humane way.

8 Still, scientists are optimistic. They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs.

---

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

Part A

What is one central idea of the article?

A Dogs are known for their loyal and devoted companionship to humans.

B Bioluminescent sea creatures may help researchers cure diseases such as Parkinson's.

C It is safer and easier to conduct research on dogs than on humans.

D Glowing beagles could help doctors effectively treat human diseases.

Part B

Which sentence from "The Glowing Beagle" **best** supports the answer to part A?

A "For many years, scientists have studied bioluminescent sea creatures such as jellyfish."

B "If scientists can successfully conduct research on a dog that has a disease that a human can also develop, the scientists may find clues to curing that disease by observing the dog."

C "However, though many studies have been conducted using human volunteers, the type of gene testing that scientists have done on dogs cannot be conducted on humans."

D "They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs."

2 Look at the first sentence of the passage.

> Dogs have provided many services for people over the years.

What relationship does this sentence have with the rest of the first paragraph?

A It introduces a problem. The rest of the paragraph lists possible solutions.

B It states an observed effect. The rest of the paragraph examines causes.

C It provides an opinion. The rest of the paragraph provides reasons.

D It presents an idea. The rest of the paragraph gives examples.

3 Which of the following gives the **best** summary of the ideas in "The Glowing Beagle"?

A Some animals, such as jellyfish, can produce their own light. By transferring the light-producing gene to dogs, scientists have found a way to make dogs glow when placed under ultraviolet light. This could lead to important discoveries.

B The fascinating study of bioluminescent sea creatures has led to new research for curing diseases. However, scientists now cruelly perform tests, such as gene transfers, on live animals.

C By successfully transferring genes from light-producing sea creatures to dogs, scientists have found a way to study and possibly cure diseases in people. Though there are several drawbacks, scientists are hopeful that the challenges can be overcome.

D Scientists have discovered a cure for Alzheimer's disease. By transferring genes from bioluminescent sea creatures to dogs, researchers discovered where disease-producing genes can be found. They found ways to prevent these genes from becoming active.

4 The author believes the gene transfer process is a positive discovery, but she also wants to acknowledge that there are people who oppose it. Which sentence from the passage **best** supports this statement?

A "And of course, dogs are probably best known for their faithful companionship to individuals and families."

B "The result was a delightful dog named Tegan who is like any other beagle except that she appears to glow when placed under an ultraviolet light."

C "Though transferring fluorescent genes to a dog does not harm a dog in any way, there are some critics of the process."

D "Small creatures such as mice and rats can live happily in small cages, but dogs of course cannot."

E "They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs."

5 Below are three claims that one could make based on the article "The Glowing Beagle."

	Claims
	Gene transfers are an important breakthrough that could greatly benefit humans.
	Because of their similarity to humans, dogs are some of the best research subjects.
	Genetic testing is too costly and controversial to hold much promise.

Draw an X by the claim that is supported by the **most** relevant and sufficient evicence within "The Glowing Beagle." Then write down two sentences from the article that **best** provide evidence to support the claim selected in part A.

First sentence: _____

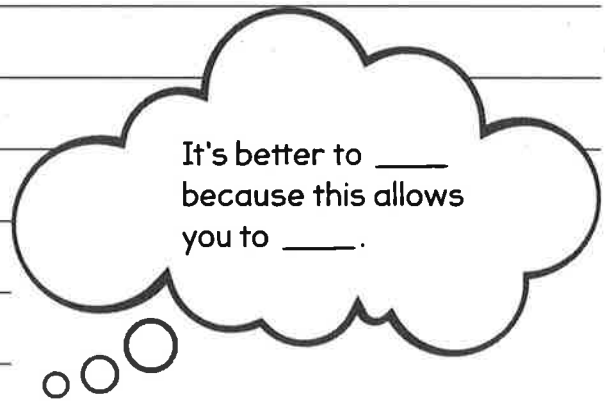
_____

Second sentence: _____

_____

Journal Entry 5

Is it more important to follow a schedule each day or to go along with whatever happens? Describe your approach to the day and what you like about that approach. Use reasons to support your position.



Infinitives

Introduction Remember, a **verbal** is a word that is formed from a verb but is used as a noun, an adjective, or an adverb. An **infinitive** is one type of verbal.

- An infinitive usually starts with the word *to,* followed by the base form of a verb.

  It is time **to leave**. Juanita hopes **to get** a job.

- Infinitives most often function as nouns, but they can also be adjectives or adverbs. For example:

Function	Example
Noun as direct object	At 7:00 P.M., the students started to gather.
Noun as predicate nominative	The goal of the Job Fair was to help them.
Noun as subject	To attend was a valuable experience.
Adjective modifying noun	Juanita was the first person to arrive.
Adverb modifying verb	She had studied the list to prepare.
Adverb modifying adjective	She was ready to participate.

Guided Practice **Underline the infinitive in each sentence. Then write whether the infinitive functions as a noun, an adjective, or an adverb.**

Hint

Do not confuse the preposition *to* with the word *to* in an infinitive. If the word is not followed by a verb, it is probably a preposition indicating direction, as in: *I went **to** school.*

1. Colinda wanted a job as a lifeguard, so she planned to apply. _____
2. She had studied first aid to qualify. _____
3. Steven talked to a person from the Tutoring Center because he wanted to volunteer. _____
4. To teach was Steven's ultimate goal. _____
5. The Job Fair offered to students interesting jobs to consider. _____
6. The employers were anxious to hire. _____

Independent Practice

For numbers 1–3, which group of words from each sentence is an infinitive?

1 The employers who came to the Job Fair brought information to distribute.

- **A** who came to
- **B** brought information
- **C** to the Job Fair
- **D** to distribute

2 Students and employers had an opportunity to meet.

- **A** Students and employers
- **B** had an opportunity
- **C** an opportunity to meet
- **D** to meet

3 To learn was Eric's main purpose for going to all the booths.

- **A** To learn
- **B** was Eric's main purpose
- **C** for going
- **D** to all the booths

Answer Form

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

Number Correct ___/4

For number 4, what is the function of the underlined infinitive in the sentence?

4 Zoe thought that the museum would be a great place <u>to work</u>.

- **A** It is a noun serving as a direct object.
- **B** It is an adjective modifying the noun *place*.
- **C** It is an adverb modifying the verb *thought*.
- **D** It is an adjective modifying the noun *museum*.

▶ **Try It** Read what you wrote in Part 1 and underline any infinitives in your writing. Then, above each underlined infinitive, write whether the infinitive functions as a noun, an adjective, or an adverb.

Denotation and Connotation

Introduction Words can have two kinds of meanings that convey very different ideas or images. A word's **denotation** is its basic meaning, or dictionary definition. A word's **connotation** is the feeling or impression that people associate with the word.

- A word can have a **positive**, **negative**, or **neutral** connotation. When you write, think about the connotations of the words you choose and the effect they will have on your readers.

Positive Connotation	Neutral Connotation	Negative Connotation
Several people lingered in the theater after auditions.	Several people stayed in the theater after auditions.	Several people loitered in the theater after auditions.
My aunt picked me up in her compact two-door car.	My aunt picked me up in her small two-door car.	My aunt picked me up in her cramped two-door car.

- To say that a car is ***small*** is a neutral statement about the car. A car that is ***compact***, however, can fit everything you need into just a small space. This word has a positive connotation. A ***cramped*** car, on the other hand, conjures images of tightly squeezed passengers and belongings. The connotation is negative.

Guided Practice **Read each sentence. Each underlined word has a neutral or a positive connotation. Write a word that has a negative connotation to replace each underlined word.**

Hint

Words that have the same, or a similar, denotation are synonyms. You can use a thesaurus to find the synonyms for each underlined word. Then choose and write the synonym that has a negative connotation.

1. It was adventurous of me to try out for the role of villain. _____
2. I'm quiet and shy, and the character is powerful. _____
3. My best friend was surprised that I was so firm in my decision. _____
4. I nervously held the script as I read my first lines. _____
5. My right leg shook as I faced the hero. _____
6. When offered the part, I deliberated for a while. _____
7. But then I decided that I had spent too much time being shy. _____
8. Sometimes, I wonder what kind of silliness I'll try next. _____

Independent Practice

For numbers 1–3, which word has the same denotation as the underlined word but has a more negative connotation?

1 The director was unpredictable in his reactions to the actors and scenes.

A changeable

B volatile

C whimsical

D variable

2 The actors felt that the director's comments were sometimes clever.

A perceptive

B insightful

C keen

D shrewd

3 The director's feedback excited the actors.

A agitated

B inspired

C invigorated

D energized

Answer Form

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

Number Correct ___/5

For numbers 4 and 5, which word has the same denotation as the underlined word but has a more positive connotation?

4 The director's great arrogance made it difficult for him to compromise in his way of doing things.

A conceit

B smugness

C confidence

D haughtiness

5 At the end of the rehearsals, the actors admitted that this director brought out the best in them.

A declared

B confessed

C gossiped

D vented

Journal Entry 6

What is one goal you have for the future, why is it important to you, and how do you plan to achieve it?

Journal Entry 6

PART 1

What is one goal you have for the future, why is it important to you, and how do you plan to achieve it?

Read the passage. Then answer the questions that follow.

The Gift of the Flute

a Brule Sioux legend
retold by Isabella Stroud

1 Long ago, in the land of the Sioux, there was a time before the People had flutes. They had drums made of wood and animal hide, and rattles made of gourd; but they had no flutes, for they had never seen or heard one.

2 One day, a young hunter left his village to follow the fresh tracks of an elk. He carried with him a new wooden bow and a deerskin quiver holding arrows carved of wood, with fine feathers and flint stone arrowheads as sharp as glass. Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him. The elk's tracks led deep into a forest—where, as night fell, both they and the elk disappeared.

3 As darkness filled the woods, the moon did not rise, and the hunter was forced to admit that until daybreak he was lost. He ate a little of the wasna—dried meat, mixed with berries and fat—that he carried in his deerskin pouch, and followed the sound of water to a cold stream, from which he drank. Then he wrapped himself in his fur robe and tried to sleep. But the night sounds of the forest were ones of animals calling, and owls hooting, and trees groaning, and instead of sleeping the hunter lay wakefully listening. The more he listened, the more he heard, until he realized that he was hearing a sound he had never heard before. It was a sound of wind—though not only of wind—and it was strangely lovely, yet dry and mournful, like the whistle of a ghost. And it was somewhat frightening. With a shiver, the hunter gathered his robe closer about him and took a long, long time to fall asleep.

4 When the hunter awoke with the sun, he looked up and saw wagnuka, the redheaded woodpecker, on a branch of the tree under which he had slept. The bird flitted to another tree, and to another, each time looking back as if to say, "Follow!" Again the hunter heard the lovely, strange sound of the night before, and he took up his bow and quiver and followed the woodpecker from tree to tree through the forest, until the bird came to a great cedar. There it paused on one hollow, slender branch, and began hammering with its beak at holes it had pecked in the wood. When the wind entered the holes the woodpecker had carved, the branch whistled with the lovely, strange sound. "Kola—friend," said the hunter to the woodpecker, "permit me to take this branch back to my people!"

5 So the hunter returned to his village with no elk meat, but instead with the first flute: a gift of the tree, of the wind, of the bird, and of one who had learned how to listen.

Go On

6 This question has two parts. First, answer part A. Then, answer part B.

Part A

Which of the following sentences **best** states a central theme of the story?

A Taking time to understand nature can lead to rewarding friendships with plants and animals.

B It is generally better to settle for something unimportant than to leave empty-handed.

C If people remain motivated and focused, they can accomplish any goal that they set out to.

D If people are not too focused on what they think they want, they can find unexpected surprises.

Part B

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

A "Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him."

B "The more he listened, the more he heard, until he realized that he was hearing a sound he had never heard before."

C "When the hunter awoke with the sun, he looked up and saw wagnuka, the redheaded woodpecker, on a branch of the tree under which he had slept."

D "Again the hunter heard the lovely, strange sound of the night before, and he took up his bow and quiver and followed the woodpecker from tree to tree through the forest, until the bird came to a great cedar."

E "So the hunter returned to his village with no elk meat, but instead with the first flute: a gift of the tree, of the wind, of the bird, and of one who had learned how to listen."

7 Which sentence from the story **best** explains why the hunter has to stay in the woods overnight?

A "One day, a young hunter left his village to follow the fresh tracks of an elk."

B "Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him."

C "As darkness filled the woods, the moon did not rise, and the hunter was forced to admit that until daybreak he was lost."

D "But the night sounds of the forest were ones of animals calling, and owls hooting, and trees groaning, and instead of sleeping the hunter lay wakefully listening."

8 Based on evidence from the text, which words below **best** describe the hunter? Select all that apply.

A curious

B cold-hearted

C respectful

D foolhardy

E careful

F cheerful

9 The author begins the fourth paragraph with the words "When the hunter awoke with the sun." How does this choice of words affect the tone of the story?

A The words further develop the frightening tone because the hunter is too scared to notice the sun.

B The words create a surprising tone because the reader expected the hunter to sleep into the afternoon.

C The words create a light tone to contrast with the mysterious tone of the previous paragraph.

D The words create a humorous tone because the hunter is now amused by his fear.

Go On

10 Which of these **best** summarizes the plot of this story?

A A Sioux hunter follows an elk into a forest. The elk stays too far ahead of him, so the hunter loses sight of the elk. The hunter decides to stay the night in the forest and look for the elk in the morning. When he wakes up, the hunter cannot find the elk. The hunter walks home and finds a flute on the way. He plays it for his people.

B A Sioux hunter follows an elk into a forest, and then night falls. Realizing it's too dark to get home, he lies down and listens to the sounds of the forest. He hears an unusual sound, and in the morning, he follows it to find a woodpecker who makes a flute. With permission from the woodpecker, the hunter takes the gift to his people.

C A Sioux hunter foolishly follows an elk into the forest. He lies down to fall asleep but is kept awake all night by the sounds of animals and trees. He also hears an unusual sound which frightens him because he is a coward. When he wakes up in the morning, he sees a woodpecker putting holes in some trees. This gives him an idea to make a flute.

D A Sioux hunter follows an elk into a forest until it gets dark. Then, he stays the night in the forest but is too worried about finding the elk to get any sleep. He hears the wind, the trees, and the animals of the forest. All the noises are very loud and frighten the hunter. He is given a flute on the way home.

11 Below are three inferences about the passage.

Inference	The people of the story placed a high value on music.
	The hunter is in tune with the nature surrounding him.
	For the hunter, the flute's sound carries deep emotion.

Circle one of the inferences. Then cite two lines from the passage that help support this inference.

Line 1: _____

_____

_____

Line 2: _____

_____

_____

Infinitive Phrases

Introduction An **infinitive phrase** is made up of an infinitive and the words that complete its meaning.

- An infinitive phrase may include nouns, pronouns, adjectives, adverbs, and other words and phrases. In the sentence below, the infinitive phrase is made up of the infinitive *to travel* and the prepositional phrase *to other planets*.

For years, people have wanted to travel to other planets.

- Like an infinitive, an infinitive phrase can function as a noun, an adjective, or an adverb.

Function	Example
Noun as subject	To reach even the nearest planet requires traveling for several years.
Noun as direct object	Still, many people would love to go there.
Noun as predicate nominative	One of the oldest dreams is to understand the universe.
Adjective modifying noun	Unmanned spacecraft have given us a tool to explore distant parts of our Solar System.
Adverb modifying an adjective	Someday it may be possible to go to Mars.

Guided Practice **Underline the infinitive phrase in each sentence. Write *subject*, *direct object*, *predicate nominative*, *adjective*, or *adverb* to tell how the infinitive phrase functions.**

Hint

Remember:

- An adjective tells "what kind."
- An adverb tells "how" or "why."
- A predicate nominative follows a linking verb.
- A direct object follows an action verb.

1. In 1865, Jules Verne wrote a novel to tell a funny story about space travel. _____
2. Verne liked to imagine what would happen in the future. _____
3. Verne predicted that the United States would be the first country to send people to the moon. _____
4. One effect of space travel would be to experience a type of weightlessness. _____
5. To splash down in the ocean was a way that astronauts might return from the moon. _____

Independent Practice

For numbers 1–3, which group of words from each sentence is an infinitive phrase?

1 In the 1960s, President Kennedy made a commitment to fund space exploration.

A In the 1960s

B made a commitment to fund

C to fund

D to fund space exploration

2 President Kennedy promised to send a person to the moon.

A President Kennedy promised

B to send a person to the moon

C a person to the moon

D to the moon

3 Russian cosmonaut Yuri Gagarin was the first person to travel into space.

A was the first person to

B the first person to travel

C was the first person to travel into space

D to travel into space

Answer Form

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

Number Correct ___/4

For number 4, what is the function of the underlined infinitive phrase in the sentence?

4 To be the first person on the moon was American astronaut Neil Armstrong's destiny.

A It is a noun functioning as a direct object.

B It is a noun functioning as the subject of the sentence.

C It is an adjective modifying the noun *astronaut*.

D It is an adverb modifying the verb *was*.

▶ **Try It** Read what you wrote in Part 1 and underline any infinitive phrases in your writing. Then, above each underlined phrase, write how the infinitive phrase functions.

Using Verbs for Effect

Introduction Writers think carefully about the verb mood and voice that they use. Each choice provides a different effect.

Effect	Example
• Use the **active voice** to emphasize the person doing the action. • Use the **passive voice** when the doer of the action is not important or known.	• Molly the Collie ran through the obstacle course with no problem. • She was defeated at the last minute.
• Use the **subjunctive mood** to express a wish, a suggestion, or something contrary to fact. • Use the **conditional mood** to express uncertainty or possibility.	• I wish Molly were a faster dog. That other dog ran as though he were a pup. I suggested that the owner keep him on a leash. • If Molly had been faster, she might have won. • Without more practice, Molly would probably lose again.

Guided Practice **Rewrite the sentences in the voice or mood shown in parentheses. Discuss with a partner the effect of changing the construction and mood of each sentence.**

Hint

When a sentence is in the passive voice, the doer of the action may be the object of a preposition.

A sentence in the conditional mood often includes verbs such as *were* and *would*, *could*, or *might*.

1 The dogs were lined up by the trainers. (active)

_____

2 My dog was afraid, and I wish he wasn't. (subjunctive)

_____

3 Another dog pushed him off the course. (passive)

_____

4 This competition was suggested by a friend. (active)

_____

5 She thought my dog had the ability to do well. (conditional)

_____

Independent Practice

For numbers 1 and 2, which answer shows the effect of changing from passive voice to active voice?

1 Molly was shown by the instructor how to run through the obstacle course.

A The instructor showed Molly how to run through the obstacle course.

B Molly was shown by the instructor running through the obstacle course.

C How to run through the obstacle course was shown to Molly by the instructor.

D The obstacle course and how to run through it was shown to Molly by the instructor.

2 The contest prize was won by an unknown dog.

A The contest prize was received by an unknown dog.

B The contest prize was taken by an unknown dog.

C An unknown dog was given a prize by the contest.

D An unknown dog received the contest prize.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/3

For number 3, choose the answer that best shows the effect of the sentence rewritten in the mood shown in parentheses.

3 The judges wanted owners to keep dogs on a leash after the race and made that suggestion. (subjunctive mood)

A Keeping the dogs on a leash after the race was the judges' suggestion.

B The judges liked the idea of keeping the dogs on a leash.

C The judges suggested that owners keep dogs on a leash.

D Being kept on a leash was good for the dogs.

▶ **Try It** Show what you know about using verbs for effect to revise what you wrote in Part 1. Challenge yourself to include at least one new sentence that uses the conditional mood to express uncertainty or possibility and one new sentence that uses the subjunctive mood to express a wish.

Read the passage. Then answer the questions that follow.

Code Breaking and Computers in Bletchley Park

by Thomas Bender

1 If you didn't know the history of Bletchley Park, it would be easy to walk by this sprawling yet unassuming mansion in England without giving it a second look. Today, it is the location of both the National Codes Centre and the National Museum of Computing. However, during the Second World War, it was a top-secret location where undercover codebreakers reported for duty. The codebreakers quietly but determinedly helped the Allies (the countries that joined together against German forces) to win the war. The work done at Bletchley Park was significant both because it allowed the Allies to gather information from behind enemy lines, and because it was where the first computer was developed.

Communication During War Time

2 The Germans went to great lengths to protect sensitive military information during World War II. One of the ways they did this was by using codes to communicate. Sending important military and intelligence messages by code was meant to keep them secret from the enemy. For instance, the following string of letters uses a substitution code: GISSN. In this "word," G is used in place of H, I in place of E, S in place of L, and N in place of O. Once a person has this information, it is easy to see that these letters spell "hello." This is a simplified example, but it shows the idea of how using a code worked.

3 During the war, a person who received an encoded message would be able to comprehend its meaning because he or she would have the key necessary to interpret it. However, an average person would merely see what looked like a random string of numbers, letters, or symbols. It wouldn't make any sense at all.

4 The Germans thought that the communication system they had created was foolproof and that their code would be impossible for an outsider to decipher. Those who worked at Bletchley Park and other key players ultimately proved them wrong.

The Players in the Code Game

5 The names of certain individuals—especially the mathematician Alan Turing—are practically synonymous with Bletchley Park. But, the drama of figuring out the various intelligence codes used during the Second World War actually involved a cast of thousands.

6 These individuals can be divided into four main groups: the informers, the interceptors, the decoders, and the reporters. The first group consisted of insiders in Poland. They not only broke an early version of the German Enigma code, but they also succeeded in recreating a machine used to read it. They shared what they knew with Britain. Without this vital information, it's quite possible nobody would know the name of Bletchley Park today. The interceptors covertly eavesdropped on Germany's radio messages, sending them along to the team at Bletchley. Here, the codebreakers made sense of the communications. The final group used the decoded messages to compile intelligence reports focusing on the activities of the German Navy, Army, and Air Force.

Enigma: Cracking the Code

7 Enigma was a very clever code that involved using a machine by the same name. German officials would rotate the wheels of the machine into a certain position and then type their message. The recipient of the message could unscramble it using the same machine only because they knew the position of its wheels. Billions of code variations could be produced using this deceptively simple-looking contraption. The Germans also changed the code regularly to prevent anyone who might be trying to crack it from making progress.

8 The mathematicians Alan Turing and Gordon Welchman created a device called the Bombe to convert German messages into a form that could be easily understood. The machine worked by using the process of elimination principle. By ruling out potential code variations, the correct one could eventually be pinpointed.

9 The Bombe creators knew that messages often had commonly used words and phrases. They also knew that no letter would ever stand for itself; the letter A, for instance, would always represent another letter. This knowledge allowed them to reduce the billions of possibilities down to a more manageable number.

Keeping Up: Deciphering Later Codes and the First Computer

10 After the team at Bletchley Park figured out the Enigma code, the Germans moved on to an even more sophisticated method of encryption that they honed and perfected. The British called this new code Fish. By 1944, cracking the code by hand was no longer possible. It became necessary to invent a machine that could process more digital information in a much shorter time than a human codebreaker was capable of processing.

11 The ultimate solution to figuring out Fish was a machine called Colossus. It is often described as the ancestor of the modern computer, but comparing it to an Internet-wired laptop is a little like equating a house cat to a tiger. They are related, but the differences are at least as numerous as the similarities.

12 Colossus was absolutely massive, and it operated thanks to well over 1,000 vacuum tubes. Still, its capabilities were impressive, at least for the time. Using it, the Bletchley Park team could complete mathematical calculations that would have taken weeks to do by hand in a matter of hours. This allowed them to do the extensive work necessary to crack the mind-boggling German code. Colossus also laid the groundwork for the development of the faster, smaller, and more user-friendly computers people use today.

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

Part A

How does the author acknowledge the viewpoint of people who might not agree that Colossus was the first computer?

A He admits that Colossus was extremely different from modern computers.

B He agrees that Colossus was more like a calculator than a laptop.

C He points out that Colossus wasn't able to process digital information very efficiently.

D He recognizes that today's computers would exist even if Colossus had never been built.

Part B

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

A "It became necessary to invent a machine that could process more digital information in a much shorter time than a human codebreaker was capable of processing."

B "The ultimate solution to figuring out Fish was a machine called Colossus."

C "It is often described as the ancestor of the modern computer, but comparing it to an Internet-wired laptop is a little like equating a house cat to a tiger."

D "Colossus also laid the groundwork for the development of the faster, smaller, and more user-friendly computers people use today."

2 Which describes an important similarity between codemakers and codebreakers?

A Both groups depend on perfect secrecy to accomplish their missions.

B Historically, both groups have relied on machines to do their work.

C Both groups need the code, but not necessarily the key, to do their jobs.

D In order to succeed, both groups must constantly improve their technology.

3 Read the following sentence from the passage.

> But, the drama of figuring out the various intelligence codes used during the Second World War actually involved a cast of thousands.

What does the word "drama" suggest about the events at Bletchley Park during World War II?

A They didn't seem real at the time.

B They were full of emotion and excitement.

C They involved numerous conflicts between the decoders.

D They would later be turned into a stage play.

E They were made stressful by people who overreacted.

F They were more complicated than they needed to be.

4 Read the last paragraph of the passage. Which sentence **most clearly** develops the idea that a technology's effect is relative to its era?

A "Colossus was absolutely massive, and it operated thanks to well over 1,000 vacuum tubes."

B "Still, its capabilities were impressive, at least for the time."

C "Using it, the Bletchley Park team could complete mathematical calculations that would have taken weeks to do by hand in a matter of hours."

D "This allowed them to do the extensive work necessary to crack the mind-boggling German code."

Grade 8

MATH

Applying Properties for Powers with the Same Base

➤ **Rewrite each expression as a single power.**

1. $6^4 \cdot 6^4$

2. $(-5^5)^2$

3. $\frac{2^9}{2^5}$

4. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3^2$

5. $\frac{12^5 \cdot 12^7}{-12^4}$

6. $\left(\frac{7^5}{7^2}\right)^2$

➤ **Evaluate each expression.**

7. $\frac{4^8}{4^5}$

8. $(-10) \cdot (-10)^4$

9. $\left(\frac{(-3)^4}{(-3)^2}\right)^3$

➤ **What value of *x* makes the equation true?**

10. $\frac{8^x}{8^5} = 8^7$

11. $(-11)^x \cdot (-11)^4 = \frac{(-11)^{10}}{(-11)^3}$

12. $(6^x)^{10} = \frac{(6^{12})^2}{6^4}$

13. Explain how you solved for *x* in problem 12.

Applying Properties for Powers with the Same Exponent

➤ **Rewrite each expression as a single power.**

1. $9^4 \cdot 10^4$

2. $(12 \cdot 6)^3$

3. $\frac{3^3}{2^3}$

4. $\frac{6^2}{2^2}$

5. $(-5)^6 \cdot (-7)^6$

6. $\left(\frac{6^4}{12^4}\right)^2$

➤ **Rewrite each expression as a product of two powers or quotient of two powers.**

7. $5^5(16^2 \cdot 5^3)^3$

8. $\left(\frac{8^4 \cdot 5^3}{8^5}\right)^2$

9. $\left(\frac{5^8 \cdot 3^7}{5^4}\right)^{10}$

10. How does multiplying powers with the same base differ from multiplying powers with the same exponent but different bases?

Applying Properties of Negative Exponents

➤ **Rewrite each expression using only positive exponents. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. $7^3 \cdot 16^{-9}$

2. $\frac{8^{-6}}{21^{-4}}$

3. $\left(\frac{7}{16}\right)^{-3}$

4. $16^3 \cdot (-7)^{-3}$

5. $(8 \cdot 21)^{-4}$

6. $8 \cdot 21^{-3}$

7. $\frac{11^{-7} \cdot 5^9}{6^9}$

8. $\frac{11^{-7} \cdot 5^9}{6^{-9}}$

9. $6^9 \cdot 11^{-7} \cdot 5^{-9}$

10. $\frac{3^5 \cdot (-4)^{-10}}{7^9 \cdot 21^{-4}}$

11. $\frac{(-21)^{-4} \cdot (-4)^0}{3^{-5} \cdot 7^{-9}}$

12. $\left(\frac{3}{7}\right)^{-5} \cdot (-21)^{-4} \cdot (-4)^2$

Answers

$\frac{1}{(8 \cdot 21)^4}$ $\quad \frac{6^9}{11^7 \cdot 5^9}$ $\quad \frac{16^3}{7^3}$ $\quad \frac{7^5 \cdot (-4)^2}{3^5 \cdot (-21)^4}$

$\frac{21^4}{8^6}$ $\quad \frac{6^9 \cdot 5^9}{11^7}$ $\quad \frac{16^3}{(-7)^3}$ $\quad \frac{3^5 \cdot 21^4}{7^9 \cdot (-4)^{10}}$

$\frac{3^5 \cdot 7^2}{(-21)^4}$ $\quad \frac{8}{21^3}$ $\quad \frac{5^9}{11^7 \cdot 6^9}$ $\quad \frac{7^3}{16^9}$

Applying Properties of Integer Exponents

➤ **Evaluate each expression.**

1. $18^{-4} \cdot 6^{7}$

2. $3^{4} \cdot 3^{-6} \cdot 9^{0}$

3. $\left(\frac{3^{-4} \cdot 3^{6}}{6^{3} \cdot 6^{-1}}\right)^{-2}$

➤ **Write each expression using only positive exponents.**

4. $19^{-3} \cdot 19 \cdot 19^{-4} \cdot 19^{3}$

5. $\frac{6^{-3} \cdot 17^{3} \cdot 2}{6^{5} \cdot 17^{-4} \cdot 2^{-1}}$

6. $24^{-3} \cdot 24^{7} \cdot (24^{-3})^{4} \cdot 24^{9}$

7. $\left(\frac{7^{-3} \cdot 3^{-8}}{7^{-2} \cdot 3^{-2}}\right)^{-4}$

8. $(2^{-1} \cdot 3^{0})^{-3} \cdot (2^{0} \cdot 5^{3})^{5}$

9. $\left(\frac{5^{6} \cdot 3^{-3}}{3^{-3}}\right)^{4}$

10. How could you have simplified problem 7 in a different way?

Writing Numbers in Scientific Notation

➤ **Write each number in scientific notation.**

1. 8 _____
2. 54 _____
3. 0.02 _____
4. 229 _____
5. 187 _____
6. 0.452 _____
7. 0.006009 _____
8. 452 _____
9. 35,710 _____
10. 0.00005026 _____
11. 787,000 _____
12. 45.2 _____
13. $934\frac{1}{2}$ _____
14. 0.000000452 _____
15. 11,235,000,000 _____
16. How are the answers to problems 6, 8, 12, and 14 similar? How are they different?

Adding and Subtracting with Scientific Notation

➤ **Find each sum or difference. Write your answer in scientific notation.**

1. $(6 \times 10^1) + (9 \times 10^1)$

2. $32 - (2.1 \times 10^1)$

3. $(7 \times 10^0) + (3 \times 10^1)$

4. $100 - (1.4 \times 10^1)$

5. $(8.8 \times 10^2) + (3 \times 10^2)$

6. $(3.05 \times 10^2) + 64$

Adding and Subtracting with Scientific Notation *continued*

7 $(4 \times 10^2) + 120.5$

8 $(2.75 \times 10^3) - 100$

9 $(9.5 \times 10^2) - (4.3 \times 10^1)$

10 $18 - (2 \times 10^{-1})$

11 $0.071 + (6 \times 10^{-2})$

12 $2{,}000 + (8 \times 10^3)$

13 When adding or subtracting with scientific notation, why is it important to have the same power of 10?

Multiplying and Dividing with Scientific Notation

➤ **Find each product or quotient. Write your answer in scientific notation.**

1. $(3.6 \times 10^1) \div 6$

2. $(2 \times 10^2) \times (3 \times 10^1)$

3. $7 \times (2 \times 10^1)$

4. $(2.5 \times 10^0) \times (1.5 \times 10^1)$

5. $(4 \times 10^2) \div (4 \times 10^1)$

6. $45 \div (5 \times 10^0)$

Multiplying and Dividing with Scientific Notation *continued*

7 $(2.5 \times 10^2) \times 5$

8 $900 \div (4.5 \times 10^0)$

9 $(4 \times 10^5) \times 0.0375$

10 $(6 \times 10^{-10}) \div (2.5 \times 10^{-12})$

11 $(2.8 \times 10^{-7}) \times (7 \times 10^{12})$

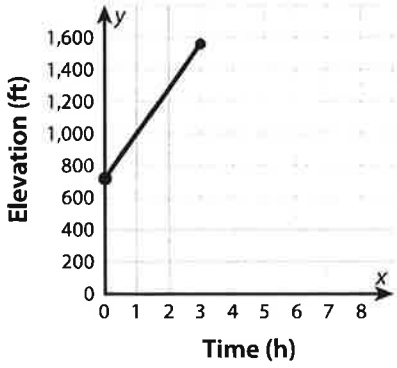
12 $0.000068 \div (2 \times 10^8)$

13 How do you divide two numbers in scientific notation?

Interpreting a Linear Function

➤ **Interpret the linear function to solve the problems. Show your work.**

1. A group of volunteers is spending a week cleaning up the trails in the Hudson Highlands. On day 2 the volunteers begin at the point on the trail where they ended the day before. The graph shows their elevation, in feet, as a function of the number of hours they work to clean the trails.



a. What does the ordered pair (1, 1000) on the graph represent?

b. The graph begins at 720 on the *y*-axis. What does this value represent? Is this the rate of change or the initial value?

c. By how many feet does the elevation increase for one hour of work? What does this value represent, rate of change or initial value?

d. What is the equation that represents this function?

2. The table shows number of people as a function of time in hours. Write an equation for the function and describe a situation that it could represent. Include the initial value, rate of change, and what each quantity represents in the situation.

Hours	Number of People
1	150
3	250
5	350

Interpreting a Linear Function *continued*

3 Amber plans to cook a turkey and macaroni and cheese for a special dinner. Since she will need to use the oven for both dishes, and they won't both fit in the oven at the same time, she has to determine how much time all the cooking will take. The macaroni and cheese will take a set amount of time, while the turkey takes a certain number of minutes per pound that the turkey weighs.

The equation models the total cooking time Amber will need to prepare her dishes.

$$y = 15x + 40$$

a. What do variables x and y represent? Use the phrase *is a function of* to describe how the two quantities relate to each other.

b. What does the value 40 represent?

c. What does the rate of change represent?

d. What is the total cooking time for just the turkey if it weighs 12 pounds? How do you know?

Writing an Equation for a Linear Function from a Verbal Description

➤ **Write an equation for each linear function described. Show your work.**

1. The graph of the function passes through the point (2, 1), and y increases by 4 when x increases by 1.

2. the function with a rate of change of $\frac{3}{2}$ whose graph passes through the point (4, 10.5)

3. the function with a rate of change of $\frac{4}{5}$ that has a value of 10 at $x = 10$

4. the function that has an x-intercept of -2 and a y-intercept of $-\frac{2}{3}$

5. Cameron stops to get gas soon after beginning a road trip. He checks his distance from home 2 hours after filling his gas tank and checks again 3 hours later. The first time he checked, he was 170 miles from home. The second time, he was 365 miles from home. What equation models Cameron's distance from home as a function of the time since getting gas?

6. A charity organization is holding a benefit event. It receives $28,000 in donations and $225 for each ticket sold for the event. What equation models the total amount earned from the event as a function of the number of tickets sold?

Writing an Equation for a Linear Function from a Verbal Description *continued*

7 The same charity organization from problem 6 has to pay $4,700 for the banquet hall as well as $110 per plate for each ticket sold.

a. What equation models the total amount spent as a function of the number of tickets sold?

b. Using your answer from problem 6, write an equation for the charity's profit as a function of ticket sales. (profit = amount earned − amount spent)

8 A school pays $1,825 for 150 shirts. This includes the $25 flat-rate shipping cost.

a. What equation models the total cost as a function of the number of T-shirts ordered?

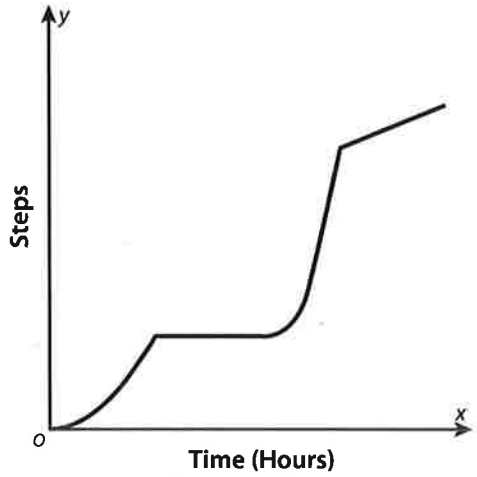
b. What does each variable represent?

c. What are the initial value and rate of change of the function? What does each one represent?

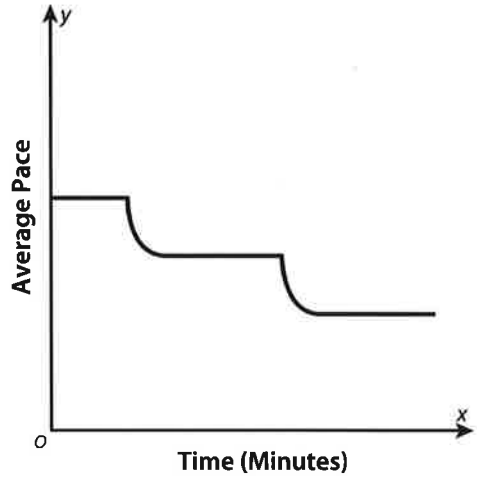
Using Graphs to Describe Functions Qualitatively

➤ **Tell a story that could be represented by the graph shown.**

1. The graph represents steps taken as a function of time.

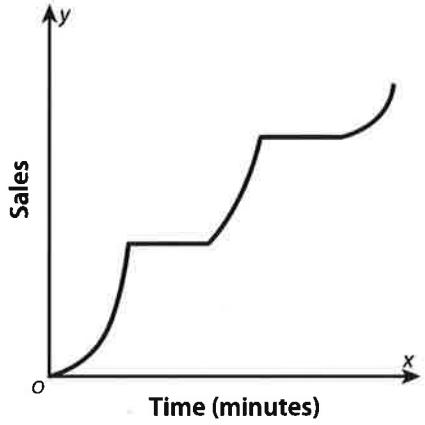


2. The graph represents average pace as a function of time.

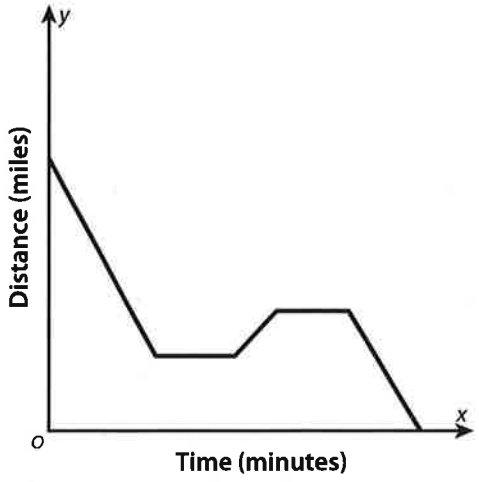


Using Graphs to Describe Functions Qualitatively *continued*

3 The graph shows sales as a function of time.



4 The graph shows distance as a function of time.



5 For an interval on a graph that shows that a change is happening, explain how the shape of the graph on that interval tells you whether the change is happening gradually or quickly.

Finding the Slope of a Line

➤ **Use the information provided to find the slope of each line. State what the slope represents.**

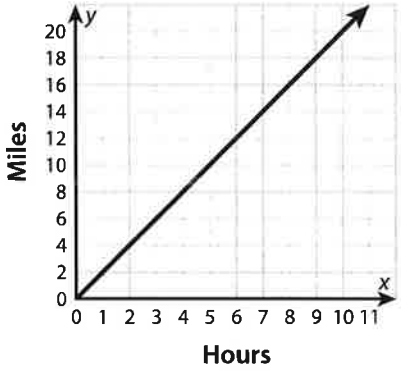
1

Seconds	0	5	10
Feet	0	30	60

2

Hours	0	2	5
Dollars	0	18	45

3



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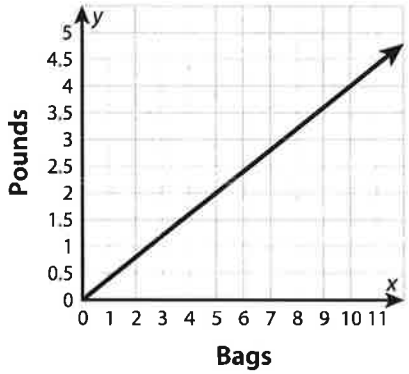

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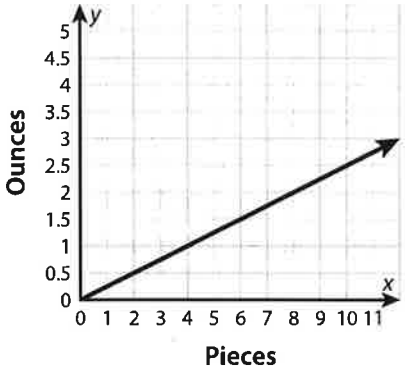

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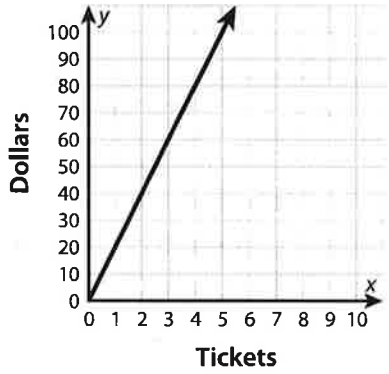
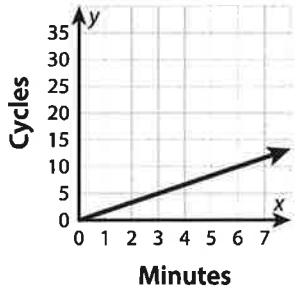


Finding the Slope of a Line *continued*

7



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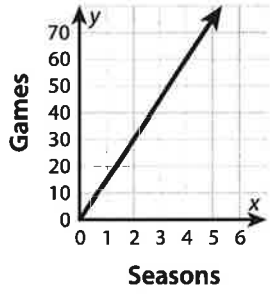

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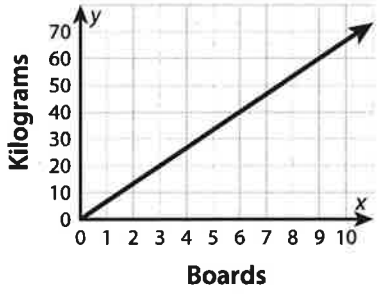

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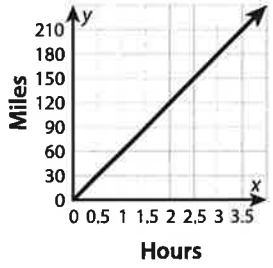
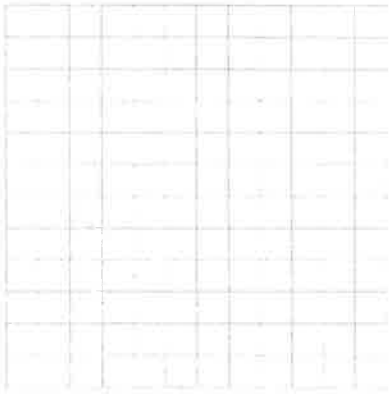


11 Compare finding the slope using a table and using a graph.

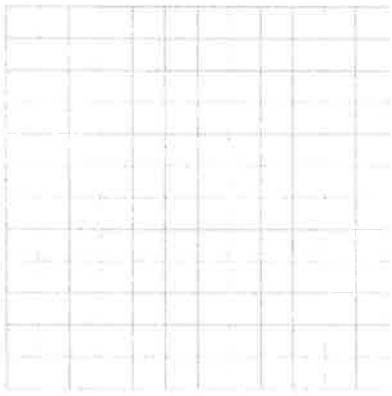
Graphing a Linear Equation Given in Any Form

➤ **Graph each linear equation on the grid provided. Be sure to label the units on the *x*- and *y*-axes.**

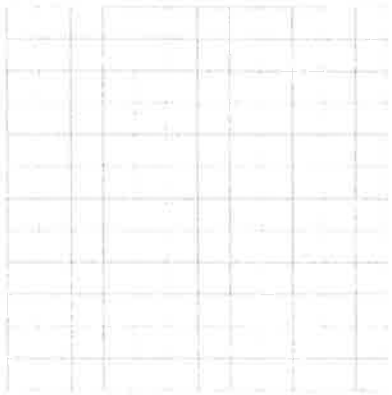
1. $5x + 2y = 10$



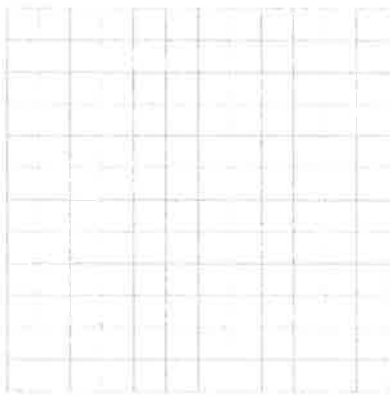
2. $200x - 300y = 600$



3. $-\frac{1}{2}x - 2y = 4$

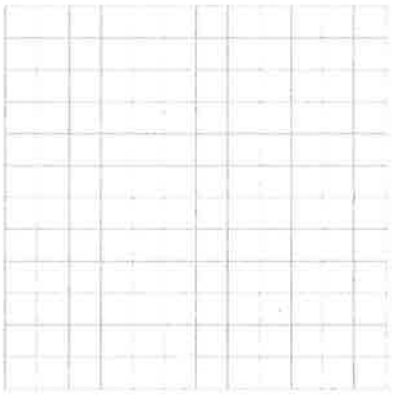


4. $6x - 12y + 24 = 0$

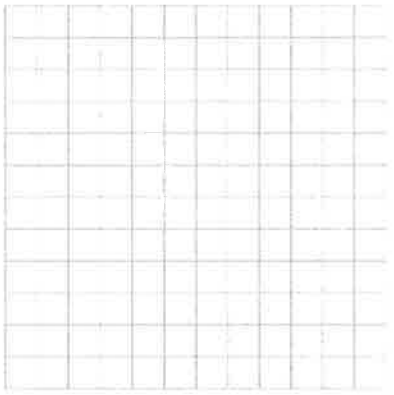


Graphing a Linear Equation Given in Any Form *continued*

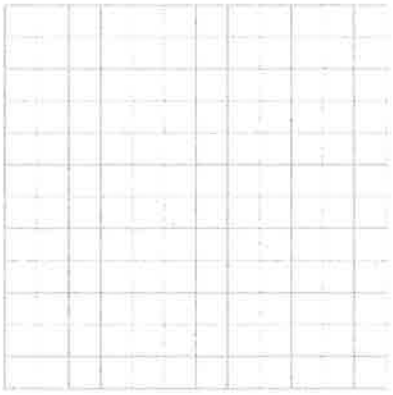
5 $-150x + 5y = 300$



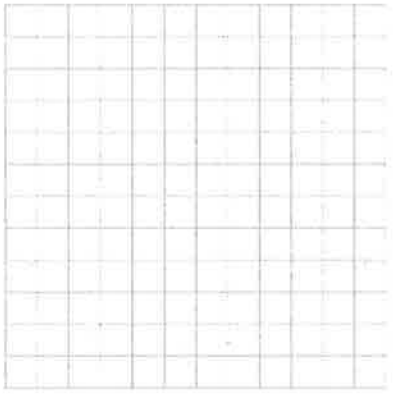
6 $-4x - 40y - 80 = 0$



7 $-6x + 7y = 42$



8 $10x + \frac{1}{3}y = 30$

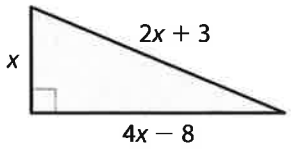


9 Which method do you prefer for graphing linear equations that are not in the form $y = mx + b$?

Representing and Solving Problems with One-Variable Equations

➤ **Write and solve an equation to answer each question.**

1. The perimeter of the triangle shown is 30 inches. What is the length of the longest side of the triangle?



2. Two times the quantity of seven less than one-fourth of a number is equal to four more than one-third of the number. What is the number?

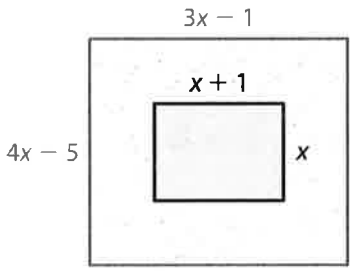
3. Amanda uses a rectangular canvas for a painting. The length is $6x - 3$ centimeters. The width is $2x + 6$ centimeters, and is $\frac{4}{5}$ of the length. What are the dimensions of the canvas?

4. Three friends fill bags with trash at a neighborhood cleanup. Randall's bag weighs $3x - 7$ pounds, Seth's bag weighs $2x - 10$ pounds, and Joanna's bag weighs $2x + 2$ pounds. Together, Randall's and Joanna's bags weigh 3 times as much as Seth's bag. How many pounds of trash does each friend pick up?

Representing and Solving Problems with One-Variable Equations *continued*

5 Eli and Angela are saving money to buy their grandparents an anniversary gift. Eli has saved \$8 more than $\frac{1}{3}$ of Angela's savings. If they each save \$10 more, Eli will have saved \$4 more than Angela's savings. How much has Eli saved?

6 The perimeter of the larger rectangle is 2 meters greater than twice the perimeter of the smaller rectangle. What is the perimeter of the larger rectangle?



Solving Systems of Linear Equations by Substitution

➤ **Find the solution of each system of equations.**

1. $y = 2x - 1$

   $y = 3x + 2$

2. $x = y + 4$

   $2x + 2y = 16$

3. $x + y = 5$

   $6x + 3y = 27$

4. $5x + 2y = 10$

   $2x + y = 2$

5. $4x - 8y = -26$

   $9x + 4y = 13$

6. $2x - 3y = 24$

   $2x + y = 4$

7. How do you decide which variable to substitute when solving a system of equations by substitution? Explain.

Solving Systems of Linear Equations by Elimination

➤ **Find the solution to each system of equations.**

1. $4x - 12y = -8$

   $-3x + 12y = 12$

2. $6x - 9y = 18$

   $-6x + 2y = -4$

3. $6x + 3y = 3$

   $3x - y = 4$

4. $-3x + 2y = -17$

   $-6x + 3y = -30$

5. $7x + 6y = 16$

   $4x - 2y = 1$

6. $16x + 5y = -2$

   $4x - y = -2$

7. When using the elimination method to solve a system of equations, how do you choose which variable to eliminate?

Solving Real-World Problems with Systems of Linear Equations

➤ **Solve the problems by solving a system of equations.**

1. Otis paints the interior of a home for $45 per hour plus $75 for supplies. Shireen paints the interior of a home for $55 per hour plus $30 for supplies. The equations give the total cost for x hours of work for each painter. For how many hours of work are Otis's and Shireen's costs equal? What is the cost for this number of hours?

   $y = 45x + 75$

   $y = 55x + 30$

2. Calvin has 13 coins, all of which are quarters or nickels. The coins are worth $2.45. How many of each coin does Calvin have?

3. There are 47 people attending a play at an outdoor theater. There are 11 groups of people sitting in groups of 3 or 5. How many groups of each size are there?

4. Agnes has 23 collectible stones, all of which are labradorite crystals or galena crystals. Labradorite crystals are worth $20 each, while galena crystals are worth $13 each. Agnes earns $439 by selling her entire collection. How many stones of each type did she sell?

Solving Real-World Problems with Systems of Linear Equations *continued*

5 A dog groomer buys 7 packages of treats. Gourmet treats are sold in packs of 2. Treats that help clean a dog's teeth are sold in packs of 5. The dog groomer buys 26 treats in all. How many packages of each did she buy?

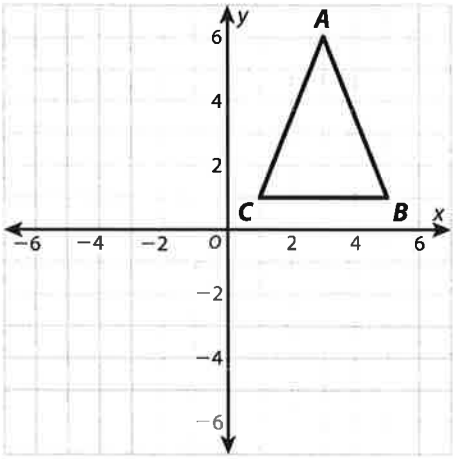
6 Copland competes in 27 swimming events this season. He wins either first place or second place in each event. Copland has 3 more first-place wins than second-place wins. In how many events did he win first place, and in how many did he win second place?

7 Choose one problem from problems 1–6. Check your answer by solving the system of equations in a different way.

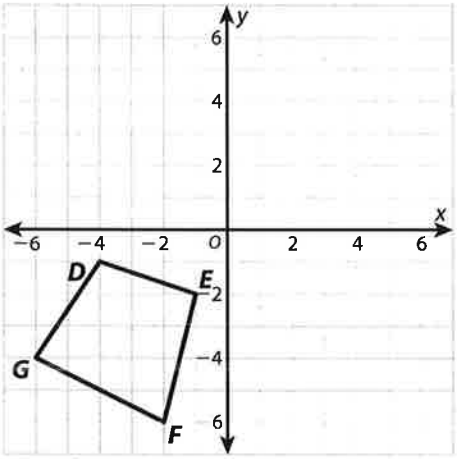
Performing Sequences of Rigid Transformations

➤ **Perform the given sequence of transformations on each figure. Write the coordinates of the vertices of the final image. Then tell whether the final image is congruent to the original figure.**

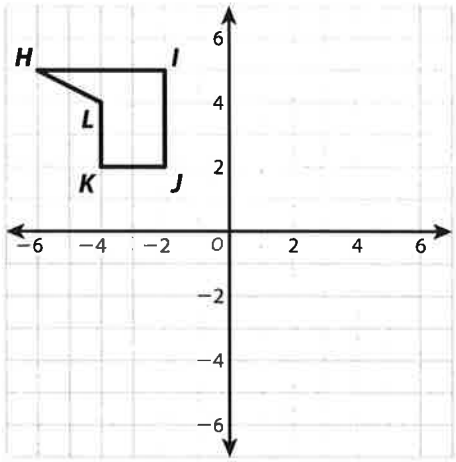
1. Reflect across the *x*-axis.
   Translate 5 units left.



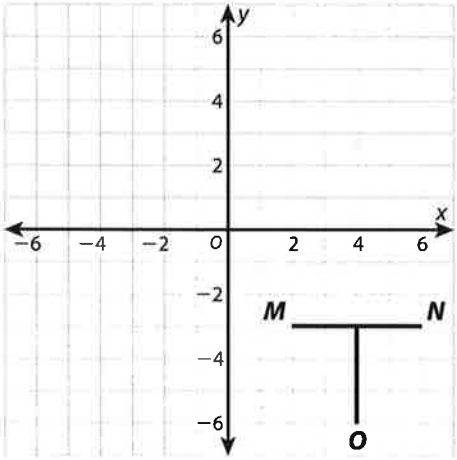
2. Rotate 90° clockwise around the origin.
   Reflect across the *x*-axis.



3. Translate 2 units right and 4 units down.
   Rotate 180° around the origin.

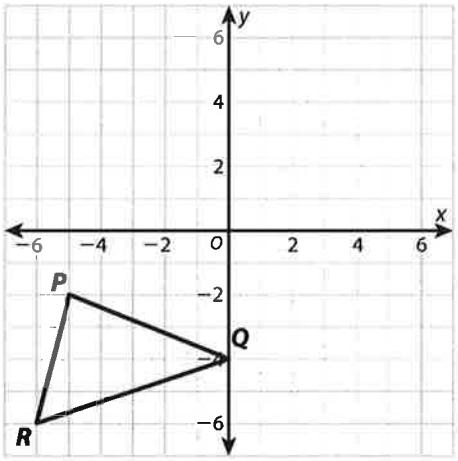


4. Reflect across the *x*-axis. Rotate 90° counterclockwise around the origin.

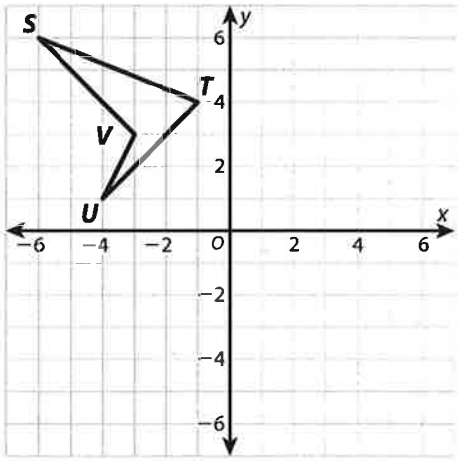


Performing Sequences of Rigid Transformations *continued*

5 Reflect across the *y*-axis.
Translate 5 units up.
Rotate 90° clockwise around the origin.



6 Translate 6 units right.
Rotate 180° around the origin.
Reflect across the *y*-axis.

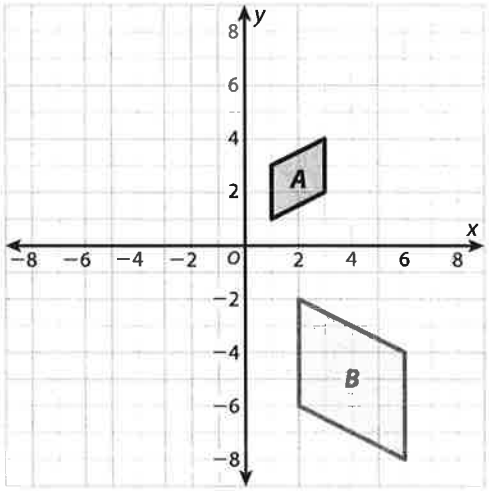


7 How did you determine the label for each vertex when you transformed the triangles in problem 5?

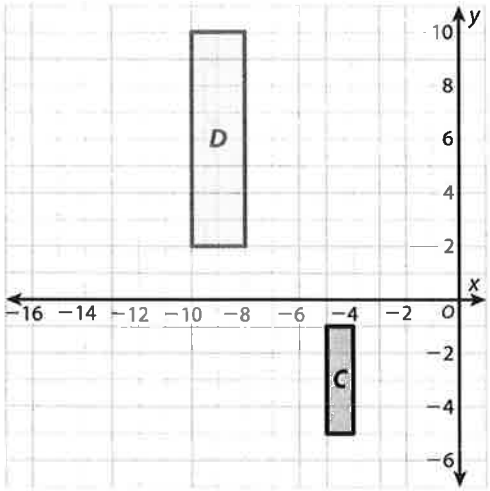
Describing Sequences of Transformations Involving Dilations

➤ **For each pair of figures, describe a sequence of three or fewer transformations that can be used to map one figure onto the other.**

1



2



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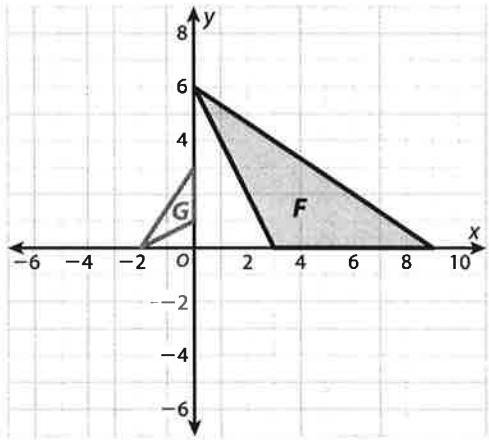

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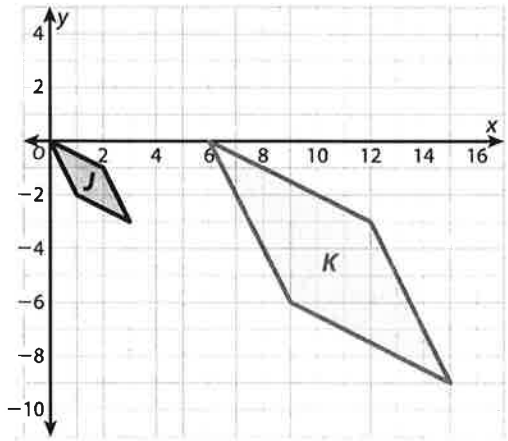
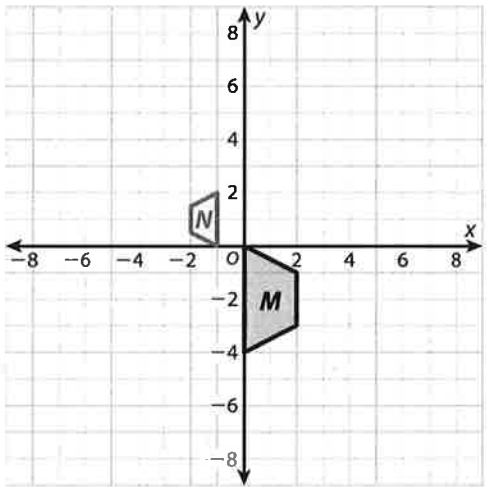


Describing Sequences of Transformations Involving Dilations *continued*

5



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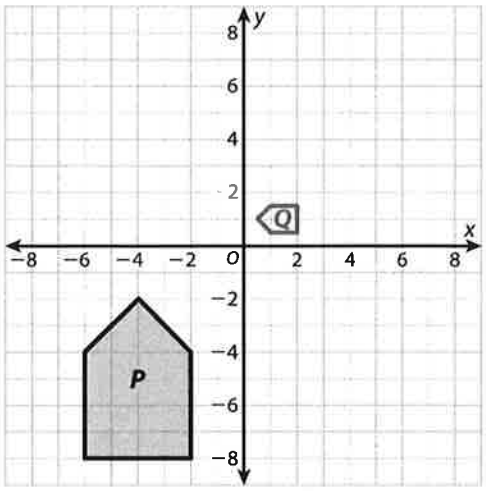


7 Give an example of a sequence of transformations that can be performed in any order and will result in the same image.

8 Give an example of a sequence of transformations for which changing the order results in a different final image.

Certificate of Completion

This Award Is Presented to

_____

for completing the

Summer Learning Packet

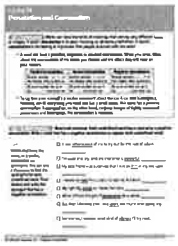
_____ _____

Signature Date

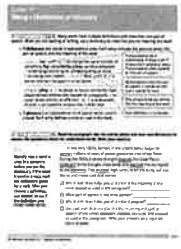
Grade 8

Learning Packet Answer Key

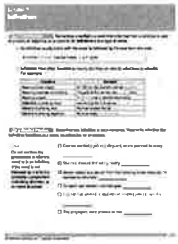
Grade 8 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
9	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 16 Using a Thesaurus 	Guided Practice: 1. strive for, seek 2. Definition 2 3. decrease, diminish, lessen, wane 4. increase, improve, grow Independent Practice: 1. B 2. C 3. D	**31**
10	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 19 Denotation and Connotation 	Guided Practice: Responses will vary. Sample answers: 1. Reckless 2. Pushy, dominating 3. Stubborn, obstinate 4. Clutched 5. Wobbled, trembled 6. Agonized, worried 7. Wasted, squandered 8. Antics, escapades Independent Practice: 1. B 2. D 3. A 4. C 5. A	**34**

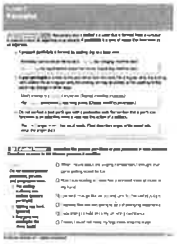
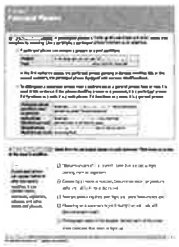
Grade 8 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
7	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 12 Using Verbs for Effect 	Guided Practice: Responses will vary. Sample answers: 1. The trainers lined up the dogs. 2. I wish my dog were not afraid. 3. My dog was pushed off the course by another dog. 4. A friend suggested this competition. 5. She thought my dog would have done well. Independent Practice: 1. A 2. D 3. C	**25**
8	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 15 Using a Dictionary or Glossary 	Guided Practice: 1. Definition 1 2. Verb 3. Definition 2 4. intolerant: adjective; unable to survive under certain conditions 5. exposed: verb; lay it open to something harmful 6. elements: noun; the forces of weather 7. enabled: verb; made possible or allowed Independent Practice: 1. D 2. A 3. B 4. C	**28**

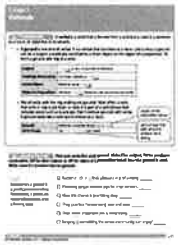
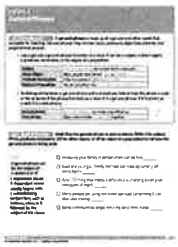
Grade 8 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
5	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 5 Infinitives 	Guided Practice: 1. to apply: noun 2. to qualify: adverb 3. to volunteer: noun 4. to teach: noun 5. to consider: adjective 6. to hire: adverb Independent Practice: 1. D 2. D 3. A 4. B	**19**
6	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 6 Infinitive Phrases 	Guided Practice: 1. to tell a funny story about space travel: adverb 2. to imagine what would happen in the future: direct object 3. to send people to the moon: adjective 4. to experience a type of weightlessness: predicate nominative 5. To splash down in the ocean: subject Independent Practice: 1. D 2. B 3. D 4. B	**22**

Grade 8 Writing and Language Activities (Cont.)

Entry	Writing Prompt	Resource	Answer Key	Page
3	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 3 Participles 	Guided Practice: 1. singing, arrow to "competition" 2. wrinkled, arrow to "sheet" 3. seated, arrow to "judges" 4. challenging, arrow to "experience" 5. shrinking, arrow to "confidence" 6. Frozen, arrow to "I" Independent Practice: 1. C 2. B 3. B 4. D 5. B	**13**
4	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 4 Participial Phrases 	Guided Practice: 1. coming from an organism: light 2. caused by a chemical reaction: bioluminescence 3. producing their own light: animals 4. flickering on a summer's night: firefly 5. taken in the deepest, darkest parts of the ocean: photographs Independent Practice: 1. A 2. B 3. B 4. A 5. A	**16**

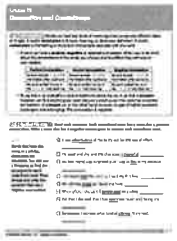
Grade 8 Writing and Language Activities

Entry	Writing Prompt	Resource	Answer Key	Page
1	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 1 Gerunds 	Guided practice: 1. performing: OP 2. Planning: S 3. None 4. harmonizing: DO 5. advertising: PN 6. Singing: S Independent practice: 1. D 2. A 3. C 4. D 5. B	**7**
2	Part 1 	Part 2 Grade 8 Ready Language Handbook, Lesson 2 Gerund Phrases 	Guided Practice: 1. Involving your family in conservation: S 2. turning off extra lights: OP 3. shutting down your computer at night: PN 4. conserving it: S 5. reducing electronic waste: DO Independent Practice: 1. A 2. D 3. C 4. A 5. A	**10**

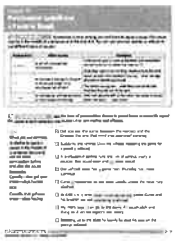
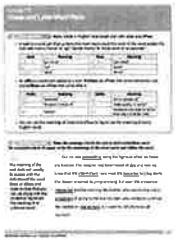
Grade 8 Reading Activities in Section 2 (Cont.)

Lesson	Resource	Instructions	Answer Key	Pages
6	Grade 8, Ready Reading Lesson 10 	• Complete Independent Practice: "Animal Regeneration."	1. D, 2. C, 3. D, 4. B, 5. A	**45–47**
7	Grade 8 Ready Assessment Practice 	• Read "The Glowing Beagle." • Complete questions 1–5.	1a. D, 1b. B, 2. D, 3. C, 4. C, 5. Responses will vary.	**48–51**
8	Grade 8 Ready Assessment Practice 	• Read "Cars Without Gasoline Are Here." • Complete questions 1–5.	1a. D, 1b. B, 2. B, 3. C, 4. A, B, F, 5. Responses will vary.	**52–55**
9	Grade 8 Ready Assessment Practice 	• Read "Code Breaking and Computers in Bletchley Park." • Complete questions 22–26.	22a. A, 22b. C, 23. D, 24. B, 25. B, 26. Responses will vary.	**56–60**

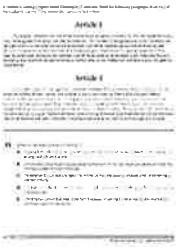
Grade 8 Reading Activities in Section 2 (Cont.)

Lesson	Resource	Instructions	Answer Key	Pages
3	Grade 8 Ready Language Handbook Lesson 19 	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**Guided Practice:** Responses will vary. Sample Answers: 1. reckless, 2. pushy, dominating 3. stubborn, obstinate 4. clutched 5. wobbled, trembled 6. agonized, worried 7. wasted, squandered 8. antics, escapades **Independent Practice:** 1. B, 2. D, 3. A, 4. C, 5. A	**38–39**
4	Grade 8, Ready Reading Lesson 10 	• Read the Introduction. • Complete Modeled and Guided Instruction: "The Mollusk Family."	**Modeled Instruction:** Figurative: "The mantle functions like a suit of armor"; The image "suit of armor" is used to show that mollusk mantles are tough and durable. Connotative: "amazing"; The word gives mollusks a positive feeling by showing that the author admires them. Technical: "octopods"; a plural form of octopus **Guided Instruction:** Close Reading: "protect themselves from predators"; "defends itself" Multiple Choice: B	**40–42**
5	Grade 8, Ready Reading Lesson 10 	• Complete Guided Practice: "Armadillo Attributes."	1. B, 2. C, 3. Responses will vary.	**43–44**

Grade 8 Reading Activities in Section 2

Lesson	Resource	Instructions	Answer Key	Pages
1	Grade 8 Ready Language Handbook Lesson 10 	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**Guided Practice:** 1. Did you see the game between the Hornets and the Grizzlies, the one that went into overtime? 2. Suddenly the referee blew his whistle . . . stopping the game for a penalty. 3. A professional athlete runs the risk of a serious injury—a disaster that could even end a career. 4. Our softball team has a game next Thursday, not Friday. 5. Curtis—a newcomer to our team—usually scores the most runs. 6. At 6:00 a.m., a time when most people are asleep, Curtis and his brother are out practicing. 7. My mom says I can go to the game if I accomplish one thing—an A on my algebra test. 8. Stepping up to the plate . . . he keenly focused his eyes on the pitcher. **Independent Practice:** 1. D, 2. A, 3. D, 4. B, 5. C	**34–35**
2	Grade 8 Ready Language Handbook Lesson 14 	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**Guided Practice:** 1. ceed; *ceed* means "move or go"; *pro–* means "forward"; "moving or going forward." 2. mit; *inter–* means "between"; *mit* means "send;" *–ent* means "occurring in a certain way"; sent between other things" or "not continuous." 3. cur; *pre–* means "before"; *cur* means "run"; *–or* means "state, quality, or action"; "something that comes before something else." 4. ject; *inter–* means "between"; *ject* means "throw"; *–ed* indicates past tense; "inserted between other elements, or interrupted something that is going on." **Independent Practice:** 1. C, 2. A, 3. B, 4. D	**36–37**

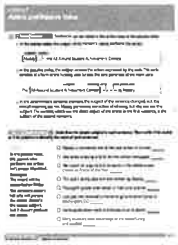
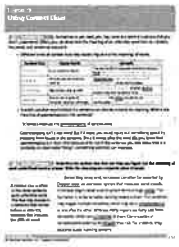
Grade 8 Reading Activities in Section 1 (Cont.)

Lesson	Resource	Instructions	Answer Key	Page(s)
6	Grade 8 Ready Assessment Practice 	• Read "The Battle Picnic." • Complete questions 6–11.	6a. A, 6b. C, E, F, 7. A, C, 8. A, 9. D, 10. B, 11. Responses will vary.	**21–24**
7	Grade 8 Ready Assessment Practice 	• Read "The Gift of the Flute." • Complete questions 6–11.	6a. D, 6b. E, 7. C, 8. A, C, E, 9. C, 10. B, 11. Responses will vary.	**25–28**
8	Grade 8 Ready Assessment Practice 	• Read "Article 1" and "Article 2." • Complete questions 35–37.	35. A, 36. C, 37. Article 1 focuses on things Columbus did at specific points in time; Article 2 focuses on the action and its consequences.	**29–30**
9	Tools for Instruction 	• **Parent/Guardian**: Read the instructions and guide the student through the activity. Use this with a text the student read in a previous lesson.	N/A	**31–33**

Grade 8 Reading Activities in Section 1 (Cont.)

Lesson	Resource	Instructions	Answer Key	Page(s)
3	Grade 8, Ready Reading Lesson 8 	•Read the Introduction. •Complete Modeled and Guided Instruction: "Holden and Pops."	**Introduction:** Answers may vary. Sample response: circle the blindfold and the rope link in the image; circle "a blind runner and his guide" in the caption **Modeled Instruction:** Attitude toward Pops: thinks Pops doesn't understand technology **Guided Instruction:** Circle: "Wanna see?"; gape in shock Multiple Choice: D Written response: Responses will vary.	**13–15**
4	Grade 8, Ready Reading Lesson 8 	•Complete Guided Practice: "One Word of Advice."	**Circle:** having the time of her life; call me Angie the Delegator **Draw an X:** Paragraph 6 **Multiple Choice:** 1. C, 2. B, 3. "I could never have come up with that myself"; "the best thing I ever did was hand that clipboard to you"	**16–17**
5	Grade 8, Ready Reading Lesson 8 	•Complete Independent Practice: "from 'The Canoe Breaker.'"	1. B, 2. D, 3. A 4. Responses will vary.	**18–20**

Grade 8 Reading Activities in Section 1

Lesson	Resource	Instructions	Answer Key	Page(s)
1	Grade 8 Ready Language Handbook Lesson 7 	• Read the Introduction. • Complete Guided Practice. • Complete the Independent Practice.	**Guided Practice:** 1. Maddy; P 2. She; A 3. report; P 4. play; P 5. eighth grader; A 6. she; A 7. applications; P 8. students; A **Independent Practice:** 1. B, 2. D, 3. A, 4. C	**9–10**
2	Grade 8 Ready Language Handbook Lesson 13 	• Read the Introduction. • Complete Guided Practice. • Complete the Independent Practice.	**Guided Practice:** Responses will vary. Sample answers: 1. Doppler radar: an electronic system that measures wind speeds; definition same as clue 2. vortex: formation is similar to water swirling toward a drain; a swirling formation 3. simultaneously: or one after the other; at the same time—*not* one after the other 4. susceptible: Whereas… fairly safe from tornadoes; vulnerable to—*not* safe from 5. mitigate: For instance, they establish public warning systems; lessen **Independent Practice:** 1. C, 2. C, 3. A, 4. D	**11–12**

5 Read the inference about the passage at the top of the chart below. Then select **two** sentences from the passage that **best** support the inference and write them in the blanks.

Inference: Speed was an essential element of codebreaking.	
Support	

Applying Properties for Powers with the Same Base

➤ **Rewrite each expression as a single power.**

1. $6^4 \cdot 6^4$

6^8

2. $(-5^5)^2$

5^{10}

3. $\frac{2^9}{2^5}$

2^4

4. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3^2$

3^6

5. $\frac{12^5 \cdot 12^7}{-12^4}$

-12^8

6. $\left(\frac{7^5}{7^2}\right)^2$

7^6

➤ **Evaluate each expression.**

7. $\frac{4^8}{4^5}$

64

8. $(-10) \cdot (-10)^4$

$-100{,}000$

9. $\left(\frac{(-3)^4}{(-3)^2}\right)^3$

729

➤ **What value of x makes the equation true?**

10. $\frac{8^x}{8^5} = 8^7$

$x = 12$

11. $(-11)^x \cdot (-11)^4 = \frac{(-11)^{10}}{(-11)^3}$

$x = 3$

12. $(6^x)^{10} = \frac{(6^{12})^2}{6^4}$

$x = 2$

13. Explain how you solved for x in problem 12.

Possible answer: I know that $(a^m)^n = a^{m \cdot n}$. So, I simplified the left side of the equation to be 6^{10x} and the right side of the equation to be $\frac{6^{24}}{6^4}$. Also, I know $\frac{a^m}{a^n} = a^{m-n}$, so I subtracted the exponents on the right side of the equation. Therefore, $6^{10x} = 6^{20}$. Since $10 \cdot 2 = 20$, $x = 2$.

Applying Properties for Powers with the Same Exponent

➤ **Rewrite each expression as a single power.**

1. $9^4 \cdot 10^4$

   90^4

2. $(12 \cdot 6)^3$

   72^3

3. $\frac{3^3}{2^3}$

   $\left(\frac{3}{2}\right)^3$

4. $\frac{6^2}{2^2}$

   3^2

5. $(-5)^6 \cdot (-7)^6$

   35^6

6. $\left(\frac{6^4}{12^4}\right)^2$

   $\left(\frac{1}{2}\right)^8$

➤ **Rewrite each expression as a product of two powers or quotient of two powers.**

7. $5^5(16^2 \cdot 5^3)^3$

   $16^6 \cdot 5^{14}$

8. $\left(\frac{8^4 \cdot 5^3}{8^5}\right)^2$

   $\frac{5^6}{8}$

9. $\left(\frac{5^8 \cdot 3^7}{5^4}\right)^{10}$

   $5^{40} \cdot 3^{70}$

10. How does multiplying powers with the same base differ from multiplying powers with the same exponent but different bases?

    Possible answer: When powers with the same base are multiplied, the bases remain the same and the exponents are added. When powers with the same exponent but different bases are multiplied, the bases are multiplied and the exponents remain the same.

Applying Properties of Negative Exponents

➤ **Rewrite each expression using only positive exponents. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1. $7^3 \cdot 16^{-9}$

   $\frac{7^3}{16^9}$

2. $\frac{8^{-6}}{21^{-4}}$

   $\frac{21^4}{8^6}$

3. $\left(\frac{7}{16}\right)^{-3}$

   $\frac{16^3}{7^3}$

4. $16^3 \cdot (-7)^{-3}$

   $\frac{16^3}{(-7)^3}$

5. $(8 \cdot 21)^{-4}$

   $\frac{1}{(8 \cdot 21)^4}$

6. $8 \cdot 21^{-3}$

   $\frac{8}{21^3}$

7. $\frac{11^{-7} \cdot 5^9}{6^9}$

   $\frac{5^9}{11^7 \cdot 6^9}$

8. $\frac{11^{-7} \cdot 5^9}{6^{-9}}$

   $\frac{6^9 \cdot 5^9}{11^7}$

9. $6^9 \cdot 11^{-7} \cdot 5^{-9}$

   $\frac{6^9}{11^7 \cdot 5^9}$

10. $\frac{3^5 \cdot (-4)^{-10}}{7^9 \cdot 21^{-4}}$

    $\frac{3^5 \cdot 21^4}{7^9 \cdot (-4)^{10}}$

11. $\frac{(-21)^{-4} \cdot (-4)^0}{3^{-5} \cdot 7^{-9}}$

    $\frac{3^5 \cdot 7^2}{(-21)^4}$

12. $\left(\frac{3}{7}\right)^{-5} \cdot (-21)^{-4} \cdot (-4)^2$

    $\frac{7^5 \cdot (-4)^2}{3^5 \cdot (-21)^4}$

Answers

$\frac{1}{(8 \cdot 21)^4}$ $\quad$ $\frac{6^9}{11^7 \cdot 5^9}$ $\quad$ $\frac{16^3}{7^3}$ $\quad$ $\frac{7^5 \cdot (-4)^2}{3^5 \cdot (-21)^4}$

$\frac{21^4}{8^6}$ $\quad$ $\frac{6^9 \cdot 5^9}{11^7}$ $\quad$ $\frac{16^3}{(-7)^3}$ $\quad$ $\frac{3^5 \cdot 21^4}{7^9 \cdot (-4)^{10}}$

$\frac{3^5 \cdot 7^2}{(-21)^4}$ $\quad$ $\frac{8}{21^3}$ $\quad$ $\frac{5^9}{11^7 \cdot 6^9}$ $\quad$ $\frac{7^3}{16^9}$

Applying Properties of Integer Exponents

➤ **Evaluate each expression.**

1. $18^{-4} \cdot 6^{7}$

   $\frac{8}{3}$

2. $3^{4} \cdot 3^{-6} \cdot 9^{0}$

   $\frac{1}{9}$

3. $\left(\frac{3^{-4} \cdot 3^{6}}{6^{3} \cdot 6^{-1}}\right)^{-2}$

   16

➤ **Write each expression using only positive exponents.**

4. $19^{-3} \cdot 19 \cdot 19^{-4} \cdot 19^{3}$

   $\frac{1}{19^{3}}$

5. $\frac{6^{-3} \cdot 17^{3} \cdot 2}{6^{5} \cdot 17^{-4} \cdot 2^{-1}}$

   $\frac{17^{7} \cdot 2^{2}}{6^{8}}$

6. $24^{-3} \cdot 24^{7} \cdot (24^{-3})^{4} \cdot 24^{9}$

   24

7. $\left(\frac{7^{-3} \cdot 3^{-8}}{7^{-2} \cdot 3^{-2}}\right)^{-4}$

   $7^{4} \cdot 3^{24}$

8. $(2^{-1} \cdot 3^{0})^{-3} \cdot (2^{0} \cdot 5^{3})^{5}$

   $2^{3} \cdot 5^{15}$

9. $\left(\frac{5^{6} \cdot 3^{-3}}{3^{-3}}\right)^{4}$

   5^{24}

10. How could you have simplified problem 7 in a different way?

    Possible answer: I simplified in the parentheses first by subtracting the exponents of 7 and the exponents of 3. Then I multiplied the resulting exponents by −4. I could have multiplied the exponents by −4 before subtracting the exponents.

Writing Numbers in Scientific Notation

➤ **Write each number in scientific notation.**

1. 8

   8×10^0

2. 54

   5.4×10^1

3. 0.02

   2×10^{-2}

4. 229

   2.29×10^2

5. 187

   1.87×10^2

6. 0.452

   4.52×10^{-1}

7. 0.006009

   6.009×10^{-3}

8. 452

   4.52×10^2

9. 35,710

   3.571×10^4

10. 0.00005026

    5.026×10^{-5}

11. 787,000

    7.87×10^5

12. 45.2

    4.52×10^1

13. $934\frac{1}{2}$

    9.345×10^2

14. 0.000000452

    4.52×10^{-7}

15. 11,235,000,000

    1.1235×10^{10}

16. How are the answers to problems 6, 8, 12, and 14 similar? How are they different?

    Possible answer: When writing these numbers in scientific notation, they all begin with 4.52. The power of 10 is different.

Adding and Subtracting with Scientific Notation

➤ **Find each sum or difference. Write your answer in scientific notation.**

1. $(6 \times 10^1) + (9 \times 10^1)$

1.5×10^2

2. $32 - (2.1 \times 10^1)$

1.1×10^1

3. $(7 \times 10^0) + (3 \times 10^1)$

3.7×10^1

4. $100 - (1.4 \times 10^1)$

8.6×10^1

5. $(8.8 \times 10^2) + (3 \times 10^2)$

1.18×10^3

6. $(3.05 \times 10^2) + 64$

3.69×10^2

Adding and Subtracting with Scientific Notation *continued*

7 $(4 \times 10^2) + 120.5$

5.205×10^2

8 $(2.75 \times 10^3) - 100$

2.65×10^3

9 $(9.5 \times 10^2) - (4.3 \times 10^1)$

9.07×10^2

10 $18 - (2 \times 10^{-1})$

1.78×10^1

11 $0.071 + (6 \times 10^{-2})$

1.31×10^{-1}

12 $2{,}000 + (8 \times 10^3)$

1.0×10^4

13 When adding or subtracting with scientific notation, why is it important to have the same power of 10?

Possible answer: Writing both numbers with the same power of 10 aligns the place values before adding or subtracting.

Multiplying and Dividing with Scientific Notation

➤ **Find each product or quotient. Write your answer in scientific notation.**

1. $(3.6 \times 10^1) \div 6$

6×10^0

2. $(2 \times 10^2) \times (3 \times 10^1)$

6×10^3

3. $7 \times (2 \times 10^1)$

1.4×10^2

4. $(2.5 \times 10^0) \times (1.5 \times 10^1)$

3.75×10^1

5. $(4 \times 10^2) \div (4 \times 10^1)$

1×10^1

6. $45 \div (5 \times 10^0)$

9×10^0

Multiplying and Dividing with Scientific Notation *continued*

7 $(2.5 \times 10^2) \times 5$

1.25×10^3

8 $900 \div (4.5 \times 10^0)$

2×10^2

9 $(4 \times 10^5) \times 0.0375$

1.5×10^4

10 $(6 \times 10^{-10}) \div (2.5 \times 10^{-12})$

2.4×10^2

11 $(2.8 \times 10^{-7}) \times (7 \times 10^{12})$

1.96×10^2

12 $0.000068 \div (2 \times 10^8)$

3.4×10^{-13}

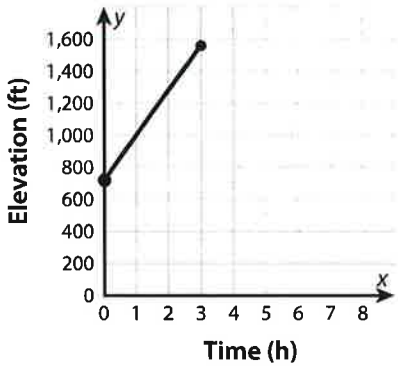
13 How do you divide two numbers in scientific notation?

Possible answer: To divide two numbers in scientific notation, divide the number factors and then subtract the exponents of the powers of 10.

Interpreting a Linear Function

➤ **Interpret the linear function to solve the problems. Show your work.**

1. A group of volunteers is spending a week cleaning up the trails in the Hudson Highlands. On day 2 the volunteers begin at the point on the trail where they ended the day before. The graph shows their elevation, in feet, as a function of the number of hours they work to clean the trails.



a. What does the ordered pair (1, 1000) on the graph represent?

They were at an elevation of 1,000 feet after 1 hour of work.

b. The graph begins at 720 on the *y*-axis. What does this value represent? Is this the rate of change or the initial value?

It represents the elevation where they began their work. This is the initial value.

c. By how many feet does the elevation increase for one hour of work? What does this value represent, rate of change or initial value?

280 feet; This is the rate of change.

d. What is the equation that represents this function?

$y = 280x + 720$

2. The table shows number of people as a function of time in hours. Write an equation for the function and describe a situation that it could represent. Include the initial value, rate of change, and what each quantity represents in the situation.

Hours	Number of People
1	150
3	250
5	350

$y = 50x + 100$; Possible answer: A carnival opens at 5:00 PM, and the carnival attendance is estimated each hour after opening. The initial value is 100 and represents the number of people that were there at 5:00 PM. The rate of change is 50 and represents the number of people that enter each hour.

Interpreting a Linear Function *continued*

3 Amber plans to cook a turkey and macaroni and cheese for a special dinner. Since she will need to use the oven for both dishes, and they won't both fit in the oven at the same time, she has to determine how much time all the cooking will take. The macaroni and cheese will take a set amount of time, while the turkey takes a certain number of minutes per pound that the turkey weighs.

The equation models the total cooking time Amber will need to prepare her dishes.

$$y = 15x + 40$$

a. What do variables x and y represent? Use the phrase *is a function of* to describe how the two quantities relate to each other.

x represents the weight of the turkey in pounds; y represents the total cooking time; The total cooking time is a function of the weight of the turkey.

b. What does the value 40 represent?

It represents the cooking time for the macaroni and cheese only.

c. What does the rate of change represent?

The rate of change, 15, represents the number of minutes per pound the turkey has to cook.

d. What is the total cooking time for just the turkey if it weighs 12 pounds? How do you know?

180 minutes; Possible answer: The rate of change is 15 minutes per pound, and $15(12) = 180$.

Writing an Equation for a Linear Function from a Verbal Description

➤ **Write an equation for each linear function described. Show your work.**

1. The graph of the function passes through the point (2, 1), and y increases by 4 when x increases by 1.

   $y = 4x - 7$

2. the function with a rate of change of $\frac{3}{2}$ whose graph passes through the point (4, 10.5)

   $y = \frac{3}{2}x + \frac{9}{2}$

3. the function with a rate of change of $\frac{4}{5}$ that has a value of 10 at $x = 10$

   $y = \frac{4}{5}x + 2$

4. the function that has an x-intercept of -2 and a y-intercept of $-\frac{2}{3}$

   $y = -\frac{1}{3}x - \frac{2}{3}$

5. Cameron stops to get gas soon after beginning a road trip. He checks his distance from home 2 hours after filling his gas tank and checks again 3 hours later. The first time he checked, he was 170 miles from home. The second time, he was 365 miles from home. What equation models Cameron's distance from home as a function of the time since getting gas?

   $y = 65x + 40$

6. A charity organization is holding a benefit event. It receives $28,000 in donations and $225 for each ticket sold for the event. What equation models the total amount earned from the event as a function of the number of tickets sold?

   $y = 225x + 28{,}000$

Writing an Equation for a Linear Function from a Verbal Description *continued*

7 The same charity organization from problem 6 has to pay $4,700 for the banquet hall as well as $110 per plate for each ticket sold.

a. What equation models the total amount spent as a function of the number of tickets sold?

$y = 110x + 4{,}700$

b. Using your answer from problem 6, write an equation for the charity's profit as a function of ticket sales. (profit = amount earned − amount spent)

$y = 115x + 23{,}300$

8 A school pays $1,825 for 150 shirts. This includes the $25 flat-rate shipping cost.

a. What equation models the total cost as a function of the number of T-shirts ordered?

$y = 12x + 25$

b. What does each variable represent?

x represents the number of shirts purchased, and y represents the total cost.

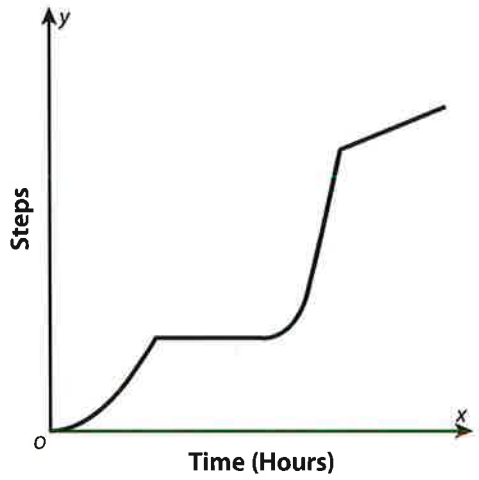
c. What are the initial value and rate of change of the function? What does each one represent?

The initial value, 25, represents the flat-rate shipping cost. The rate of change, 12, is the cost per T-shirt.

Using Graphs to Describe Functions Qualitatively

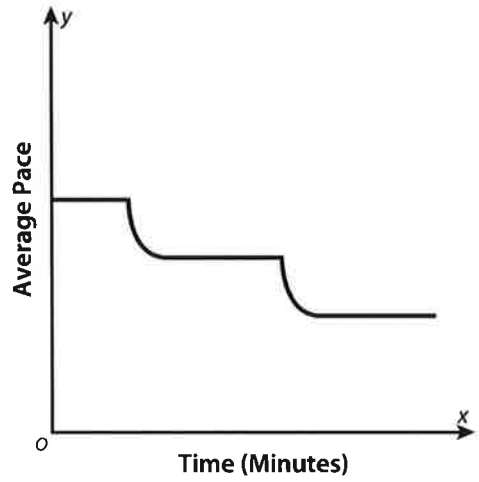
➤ **Tell a story that could be represented by the graph shown.**

1. The graph represents steps taken as a function of time.



Possible answer: Jason starts off walking slowly, gradually increasing his steps. He then sits still for several hours before very quickly increasing his steps. After that he continues moving, but at a slower rate.

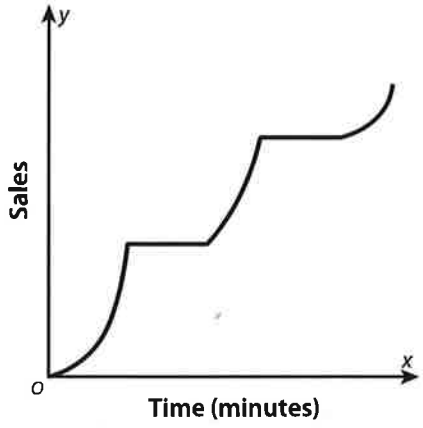
2. The graph represents average pace as a function of time.



Possible answer: A runner starts to run at an even pace; then her pace quickly decreases at a varying rate. She then runs at a slower steady pace. Her pace quickly decreases at a varying rate again. She then maintains a steady pace until the end of her run.

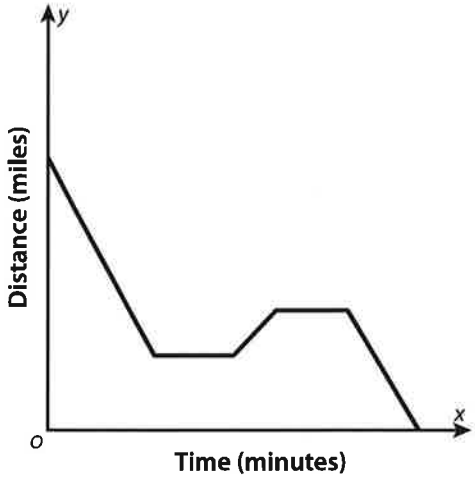
Using Graphs to Describe Functions Qualitatively *continued*

3 The graph shows sales as a function of time.



Possible answer: Concession stand sales increase rapidly at a varying rate before a game starts. Sales stop during the first half of the game and then increase quickly during half time. The sales stop again during the second half of the game and then increase at a varying rate after the game is over.

4 The graph shows distance as a function of time.



Possible answer: Mrs. Workum is driving toward her home at a constant rate. She stops to drop a friend at her house and stays for a few minutes. Mrs. Workum then drives to the store and is there for a few minutes before continuing to her home.

5 For an interval on a graph that shows that a change is happening, explain how the shape of the graph on that interval tells you whether the change is happening gradually or quickly.

Possible answer: The steeper a line or part of a curve is, the more quickly the change is happening.

Finding the Slope of a Line

➤ **Use the information provided to find the slope of each line. State what the slope represents.**

1

Seconds	0	5	10
Feet	0	30	60

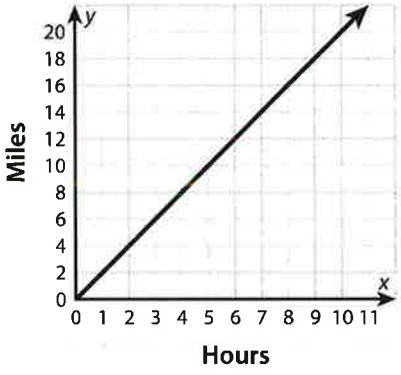
6; feet per second

2

Hours	0	2	5
Dollars	0	18	45

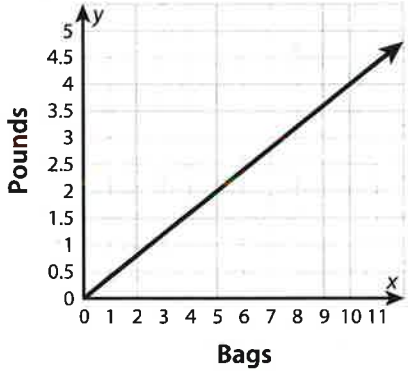
9; dollars per hour

3



2; miles per hour

4

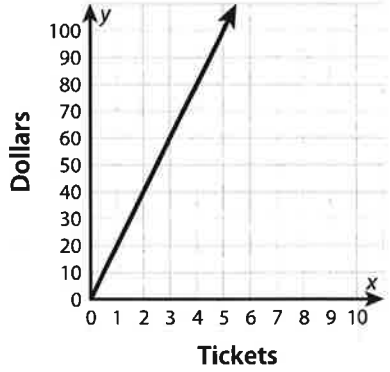


$\frac{2}{5}$; pounds per bag

5

$\frac{1}{4}$; ounces per piece

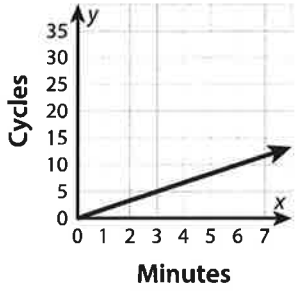
6



20; dollars per ticket

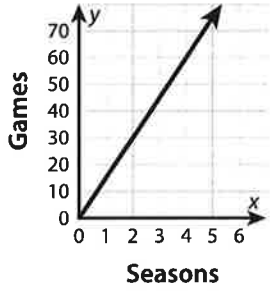
Finding the Slope of a Line *continued*

7



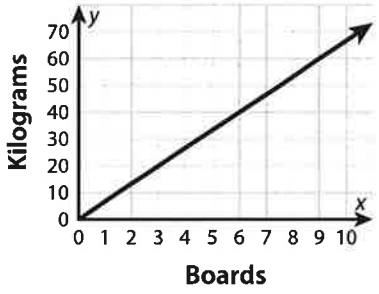
$\frac{5}{3}$; cycles per minute

8



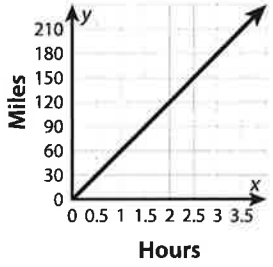
15; games per season

9



$\frac{20}{3}$; kilograms per board

10



60; miles per hour

11 Compare finding the slope using a table and using a graph.

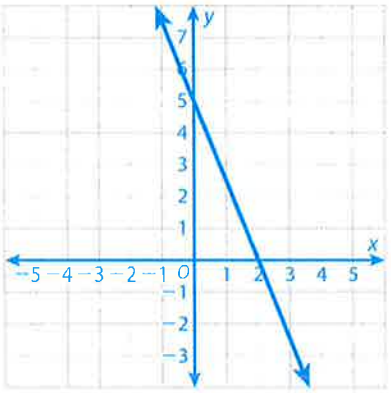
Possible answer: When using a table, the coordinates are given to you. When using a graph, you have to determine the coordinates by looking at the graph. When using a table and a graph, you need to find the ratio of the vertical change (*y*-values) to the horizontal change (*x*-values) between two points.

Graphing a Linear Equation Given in Any Form

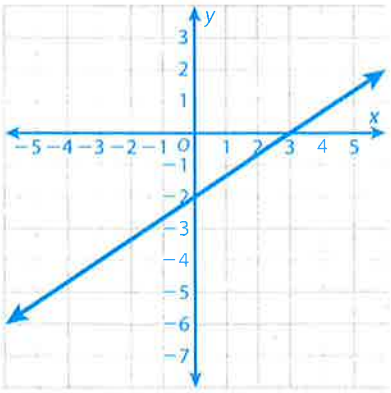
➤ **Graph each linear equation on the grid provided. Be sure to label the units on the *x*- and *y*-axes.**

Possible graphs are shown.

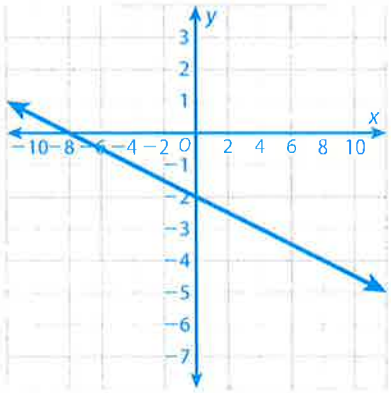
1. $5x + 2y = 10$



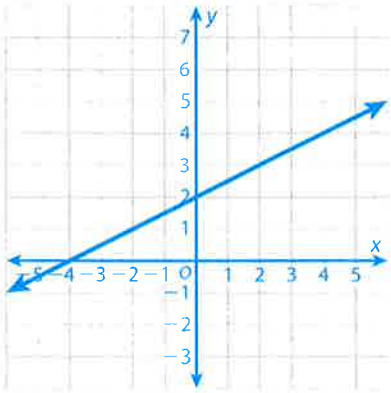
2. $200x - 300y = 600$



3. $-\frac{1}{2}x - 2y = 4$

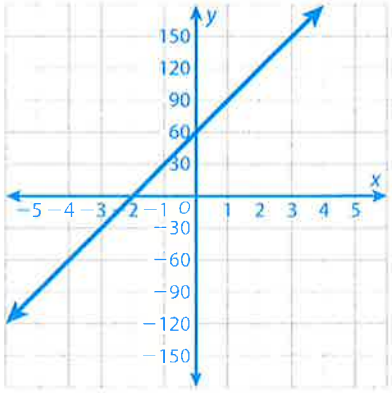


4. $6x - 12y + 24 = 0$

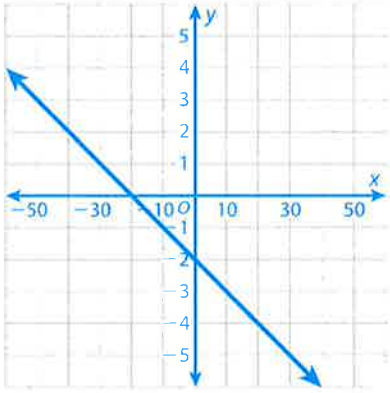


Graphing a Linear Equation Given in Any Form *continued*

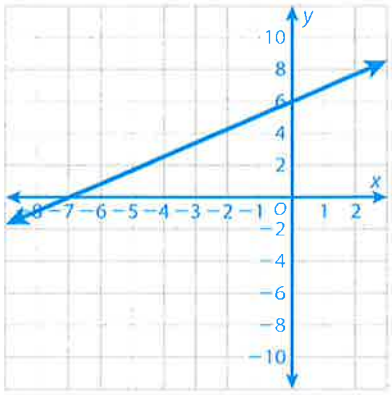
5 $-150x + 5y = 300$



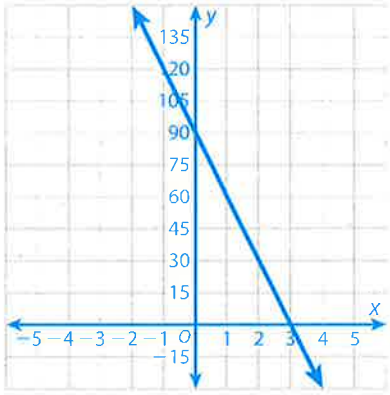
6 $-4x - 40y - 80 = 0$



7 $-6x + 7y = 42$



8 $10x + \frac{1}{3}y = 30$



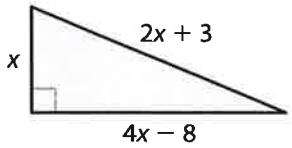
9 Which method do you prefer for graphing linear equations that are not in the form $y = mx + b$?

Possible answer: I prefer to substitute 0 for x and then for y to find the intercepts. Rearranging the terms into slope-intercept form usually requires more steps.

Representing and Solving Problems with One-Variable Equations

➤ **Write and solve an equation to answer each question.**

1. The perimeter of the triangle shown is 30 inches. What is the length of the longest side of the triangle?



$x + (2x + 3) + (4x - 8) = 30$; 13 in.

2. Two times the quantity of seven less than one-fourth of a number is equal to four more than one-third of the number. What is the number?

$2\left(\frac{1}{4}n - 7\right) = \frac{1}{3}n + 4$; 108

3. Amanda uses a rectangular canvas for a painting. The length is $6x - 3$ centimeters. The width is $2x + 6$ centimeters, and is $\frac{4}{5}$ of the length. What are the dimensions of the canvas?

$\frac{4}{5}(6x - 3) = 2x + 6$; The length is 15 cm, and the width is 12 cm.

4. Three friends fill bags with trash at a neighborhood cleanup. Randall's bag weighs $3x - 7$ pounds, Seth's bag weighs $2x - 10$ pounds, and Joanna's bag weighs $2x + 2$ pounds. Together, Randall's and Joanna's bags weigh 3 times as much as Seth's bag. How many pounds of trash does each friend pick up?

$(3x - 7) + (2x + 2) = 3(2x - 10)$; Randall picks up 68 pounds, Joanna picks up 52 pounds, and Seth picks up 40 pounds.

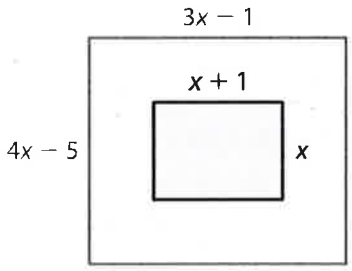
Representing and Solving Problems with One-Variable Equations *continued*

5 Eli and Angela are saving money to buy their grandparents an anniversary gift. Eli has saved \$8 more than $\frac{1}{3}$ of Angela's savings. If they each save \$10 more, Eli will have saved \$4 more than Angela's savings. How much has Eli saved?

$\frac{1}{3}a + 8 + 10 = a + 4 + 10$; \$10

6 The perimeter of the larger rectangle is 2 meters greater than twice the perimeter of the smaller rectangle. What is the perimeter of the larger rectangle?

$2(3x - 1) + 2(4x - 5) = 2[2(x + 1) + 2x] + 2$; 30 m



Solving Systems of Linear Equations by Substitution

➤ **Find the solution of each system of equations.**

1. $y = 2x - 1$

   $y = 3x + 2$

   $(-3, -7)$

2. $x = y + 4$

   $2x + 2y = 16$

   $(6, 2)$

3. $x + y = 5$

   $6x + 3y = 27$

   $(4, 1)$

4. $5x + 2y = 10$

   $2x + y = 2$

   $(6, -10)$

5. $4x - 8y = -26$

   $9x + 4y = 13$

   $\left(0, \frac{13}{4}\right)$

6. $2x - 3y = 24$

   $2x + y = 4$

   $\left(\frac{9}{2}, -5\right)$

7. How do you decide which variable to substitute when solving a system of equations by substitution? Explain.

   Possible answer: If neither equation is already solved for one of the variables, I look for an equation with a variable that has a coefficient of 1 and solve the equation for that variable.

Solving Systems of Linear Equations by Elimination

➤ **Find the solution to each system of equations.**

1. $4x - 12y = -8$
   $-3x + 12y = 12$

   (4, 2)

2. $6x - 9y = 18$
   $-6x + 2y = -4$

   (0, −2)

3. $6x + 3y = 3$
   $3x - y = 4$

   (1, −1)

4. $-3x + 2y = -17$
   $-6x + 3y = -30$

   (3, −4)

5. $7x + 6y = 16$
   $4x - 2y = 1$

   $\left(1, \frac{3}{2}\right)$

6. $16x + 5y = -2$
   $4x - y = -2$

   $\left(-\frac{1}{3}, \frac{2}{3}\right)$

7. When using the elimination method to solve a system of equations, how do you choose which variable to eliminate?

   Possible answer: I choose the variable whose coefficients have the lesser least common multiple.

Solving Real-World Problems with Systems of Linear Equations

➤ **Solve the problems by solving a system of equations.**

1. Otis paints the interior of a home for $45 per hour plus $75 for supplies. Shireen paints the interior of a home for $55 per hour plus $30 for supplies. The equations give the total cost for x hours of work for each painter. For how many hours of work are Otis's and Shireen's costs equal? What is the cost for this number of hours?

   $y = 45x + 75$

   $y = 55x + 30$

   4.5 hours; $277.50

2. Calvin has 13 coins, all of which are quarters or nickels. The coins are worth $2.45. How many of each coin does Calvin have?

   $q + n = 13$

   $0.25q + 0.05n = 2.45$

   9 quarters and 4 nickels

3. There are 47 people attending a play at an outdoor theater. There are 11 groups of people sitting in groups of 3 or 5. How many groups of each size are there?

   $t + f = 11$

   $3t + 5f = 47$

   7 groups of five and 4 groups of three

4. Agnes has 23 collectible stones, all of which are labradorite crystals or galena crystals. Labradorite crystals are worth $20 each, while galena crystals are worth $13 each. Agnes earns $439 by selling her entire collection. How many stones of each type did she sell?

   $\ell + g = 23$

   $20\ell + 13g = 439$

   20 labradorite crystals and 3 galena crystals

Solving Real-World Problems with Systems of Linear Equations *continued*

5 A dog groomer buys 7 packages of treats. Gourmet treats are sold in packs of 2. Treats that help clean a dog's teeth are sold in packs of 5. The dog groomer buys 26 treats in all. How many packages of each did she buy?

$g + c = 7$

$2g + 5c = 26$

3 packages of gourmet treats and

4 packages of teeth-cleaning treats

6 Copland competes in 27 swimming events this season. He wins either first place or second place in each event. Copland has 3 more first-place wins than second-place wins. In how many events did he win first place, and in how many did he win second place?

$f + n = 27$

$f - n = 3$

15 events are first-place wins, and

12 events are second-place wins.

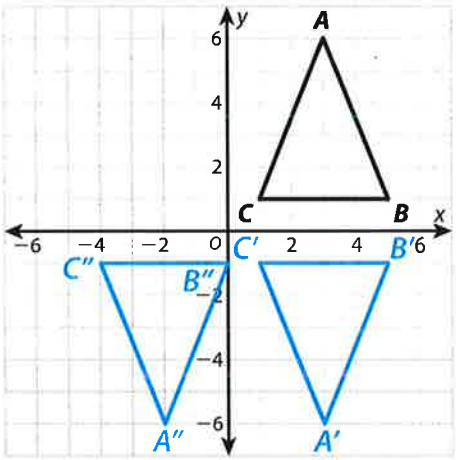
7 Choose one problem from problems 1–6. Check your answer by solving the system of equations in a different way.

Answers will vary.

Performing Sequences of Rigid Transformations

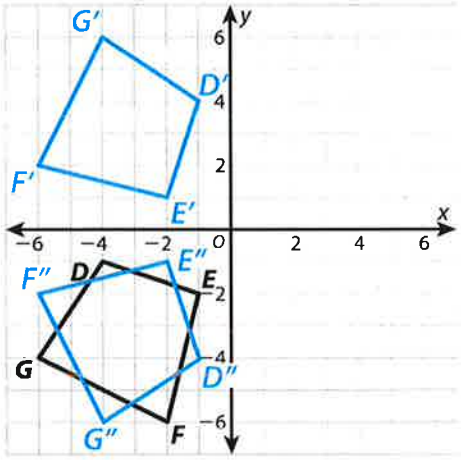
➤ **Perform the given sequence of transformations on each figure. Write the coordinates of the vertices of the final image. Then tell whether the final image is congruent to the original figure.**

1. Reflect across the *x*-axis.
   Translate 5 units left.



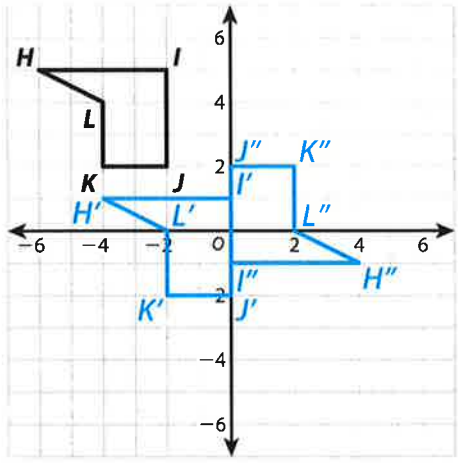
$A''(-2, -6)$, $B''(0, -1)$, $C''(-4, -1)$; congruent

2. Rotate 90° clockwise around the origin.
   Reflect across the *x*-axis.



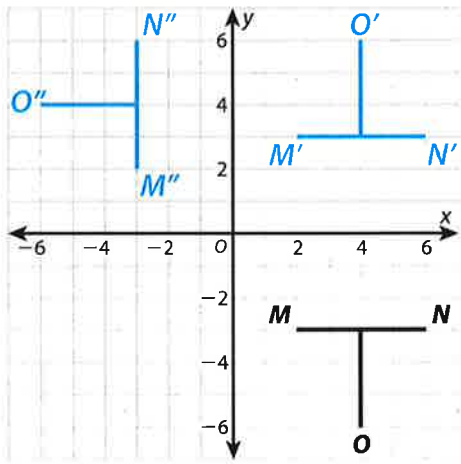
$D''(-1, -4)$, $E''(-2, -1)$, $F''(-6, -2)$, $G''(-4, -6)$; congruent

3. Translate 2 units right and 4 units down.
   Rotate 180° around the origin.



$H''(4, -1)$, $I''(0, -1)$, $J''(0, 2)$, $K''(2, 2)$, $L''(2, 0)$; congruent

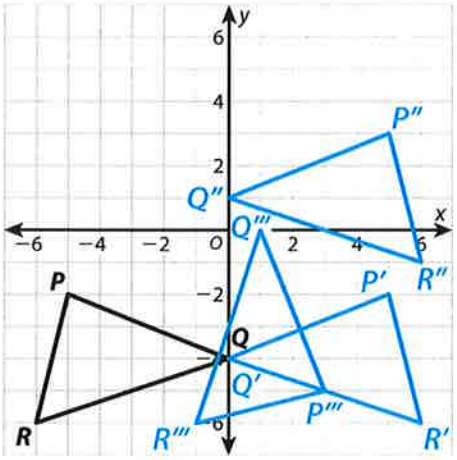
4. Reflect across the *x*-axis. Rotate 90° counterclockwise around the origin.



$M''(-3, 2)$, $N''(-3, 6)$, $O''(-6, 4)$; congruent

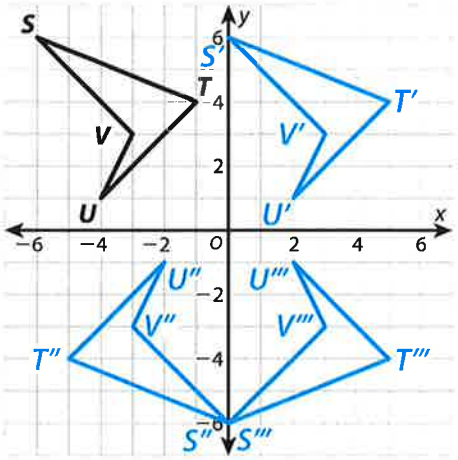
Performing Sequences of Rigid Transformations *continued*

5 Reflect across the *y*-axis.
Translate 5 units up.
Rotate 90° clockwise around the origin.



$P'''(3, -5)$, $Q'''(1, 0)$, $R'''(-1, -6)$; congruent

6 Translate 6 units right.
Rotate 180° around the origin.
Reflect across the *y*-axis.



$S'''(0, -6)$, $T'''(5, -4)$, $U'''(2, -1)$, $V'''(3, -3)$; congruent

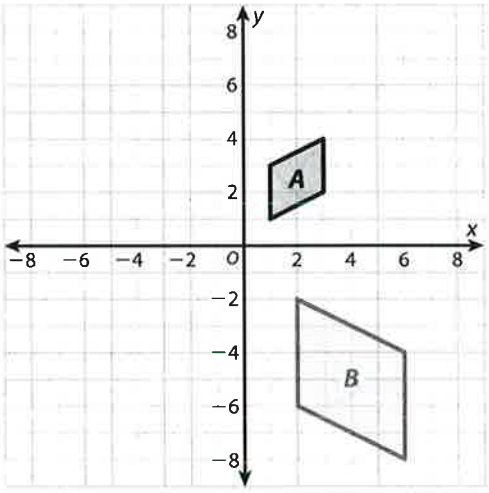
7 How did you determine the label for each vertex when you transformed the triangles in problem 5?

Possible answer: As I performed each transformation, I labeled the corresponding vertices in the new triangle with the same letter as in the original triangle and added one more prime symbol.

Describing Sequences of Transformations Involving Dilations

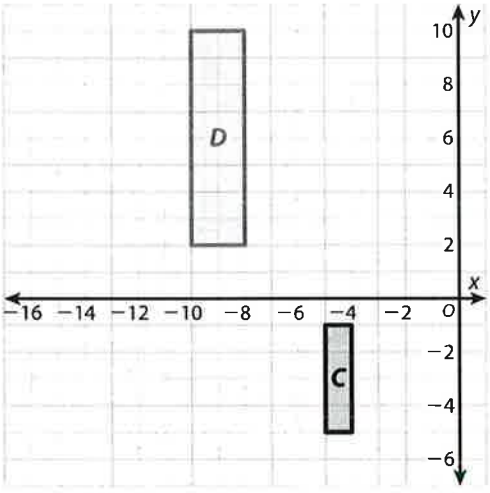
➤ **For each pair of figures, describe a sequence of three or fewer transformations that can be used to map one figure onto the other.**

1



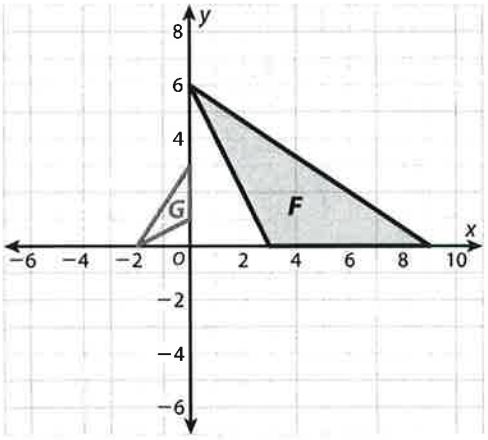
Possible answer: Reflect *B* across the *x*-axis and dilate by a scale factor of $\frac{1}{2}$ with center at the origin.

2



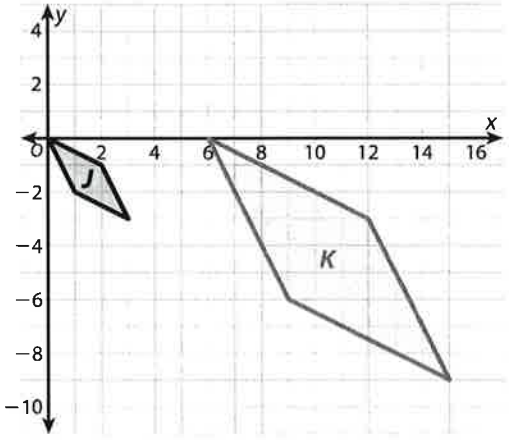
Possible answer: Dilate *C* by a scale factor of 2 with the center of dilation at the origin and translate 12 units up.

3



Possible answer: Rotate *G* 90° clockwise around the origin and dilate by a scale factor of 3 with the center of dilation at the origin.

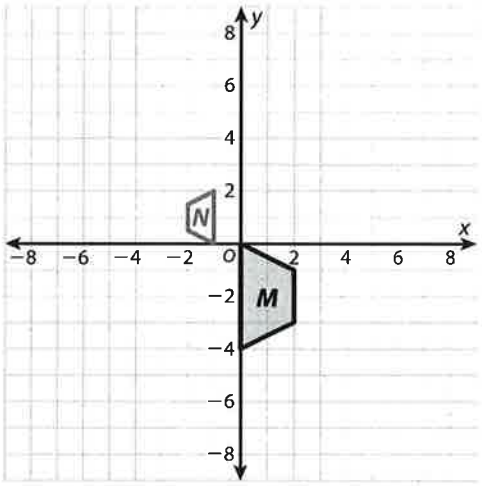
4



Possible answer: Dilate figure *K* by a scale factor of $\frac{1}{3}$ with the center of dilation at the origin and then translate 2 units to the left.

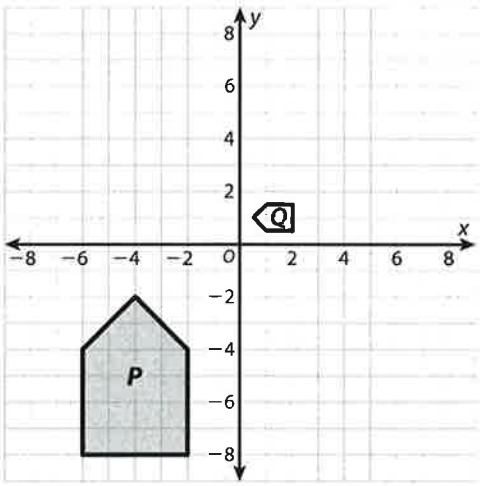
Describing Sequences of Transformations Involving Dilations *continued*

5



Possible answer: Rotate *M* 180° clockwise around the origin, dilate by a scale factor of $\frac{1}{2}$ with the center of dilation at the origin, and translate 1 unit to the left.

6



Possible answer: Reflect *P* across the *x*-axis, rotate 90° clockwise around the origin, and dilate by a scale factor of $\frac{1}{4}$ with the center of dilation at the origin.

7 Give an example of a sequence of transformations that can be performed in any order and will result in the same image.

Possible answer: I can reflect a triangle and then dilate it, or dilate it first and then reflect it.

8 Give an example of a sequence of transformations for which changing the order results in a different final image.

Possible answer: If I translate a rectangle and then dilate it, the result is different than if I dilate it first and then translate it.