5th Grade Scholars Work Packets

Dear 5th Grade Parents and Guardians,

In this packet you will find helpful website links as well as a calendar of activities for your scholar to do at home. On Mondays, the calendar lists activities in the I-Ready Workbook for the week, to be done at your scholar's own pace. The rest of the week has enrichment activities. We will be using ClassDojo as a primary means of communication. If you have not connected to our ClassDojo account you may email Mrs. Clark for more information. Weekly fun activities as well as video conferencing/tutoring opportunities are available on ClassDojo, so please get signed up!

The link below is to our online Padlet, which will have the same assignments updated weekly with some extra enrichment activities for your scholar to do online, via Dojo, videos, and online games.

https://padlet.com/rtclark1/lincoln5thgrade

The school will be open for phone-call only assistance from 9-11 am daily. You can call 731-988-3800 with any questions/concerns.

clever.com/jmcss is the website you can access at home for your child to get on the I-Ready platform for lessons aligned to the workbook pages. If you need extra materials, please refer to the lessons assigned on I-Ready. Also, the Embarc video posted each week should also be of assistance

Mrs. Clark	731-506-3349	rtclark@jmcss.org
Mr. Webster	731-506-3480	srwebster@jmcss.org

Website Resources

Free Books on Epic: www.getepic.com (Class code: rqs8158)
Khan Academy: www.khanacademy.com
Accelerated Reader: ar.jmcss.org
Corona Virus Updates: www.jmcss.org/coronavirus
PowerSchool Assessments: www.jmcss.org (Scroll to the bottom of the pages and click on PowerSchool under the student section)
Curriculum Associates: https://curriculumassociates.com/supporting-students-away-from-school

Sincerely,
5th Grade Teachers

May 4-8

I-Ready Assignments

Lesson 18
Finding Information from Multiple Sources

Learning Target

Knowing how to get information from many sources can help you answer questions, solve problems, and gather information quickly.

Read When looking for information or the answer to a question, you must often read several **sources.** Sometimes you can find that information in a **print source** such as a book or magazine. Other times you can find the information in a **digital source** such as a website.

Use text features such as tables of contents, website menus, headings, picture captions, and keywords to help you locate information quickly and efficiently.

In the cartoon below, a family wants to get to a theme park. Circle the sources of information they are using to get there.

Think Consider what you know about print and digital sources. You can use a chart to keep track of the information you find in multiple sources.

Complete the chart below to describe the information they probably got from each of the four sources.

Sign	Map	Computer	Smartphone
Shows that either road leads to the theme park			

Talk Share your chart with a partner.

- Which sources in the cartoon are print sources?
- Which sources are digital sources?
- How will using multiple sources help the family decide which road to take to the theme park?

Academic Talk

Use these words and phrases to talk about the text.

- **digital source**
- **print source**
- **source**

Read

Genre: Science Texts

Watch Your Body Language

by Mario Ehlers

People don't always tell you what they're thinking, but body language often tells us quite a lot. For example, if a person were to drum her fingers, she is probably impatient. If a person shreds a paper cup while he is talking, he might be nervous. Even a person's eyes can give you information about what's going on in his or her mind. Be observant and you might find out a lot about your classmates!

bored

nervous

angry

It's in the Eyes

Body language isn't just how we stand, sit, or move our bodies. You can find out so much information from facial expressions—especially the eyes. If someone blinks a lot, he might be very nervous. If someone's eyes dart to their right, it's possible that they're lying. Such eye-catching movements can tell you a lot about what someone might be thinking or feeling at a given moment.

guessing

remembering truth

lying

Close Reader Habits

When you reread these sources, **underline** the main idea of each one. Then **circle** an idea that appears in *both* sources.

Explore **How does reading two sources give you a deeper understanding of body language than if you had read just one source?**

Look for similar information in both sources. This is a clue the information is important.

Think

1 Complete the chart below with information from each source.

"Watch Your Body Language"	"It's in the Eyes"
Drumming fingers could show impatience.	

Talk

2 What important ideas are found in "Watch Your Body Language" and "It's in the Eyes"? If necessary, revise your charts to add more information.

HINT Always study pictures and captions. They can provide as much useful information as the text itself.

Write

3 **Short Response** The topic of each source is body language. But what specific idea appears in **both** sources? Use details from both sources to support your response. Use the space provided on page 328 to write your answer.

Read

Genre: Science Article

Incredible Animal Ears

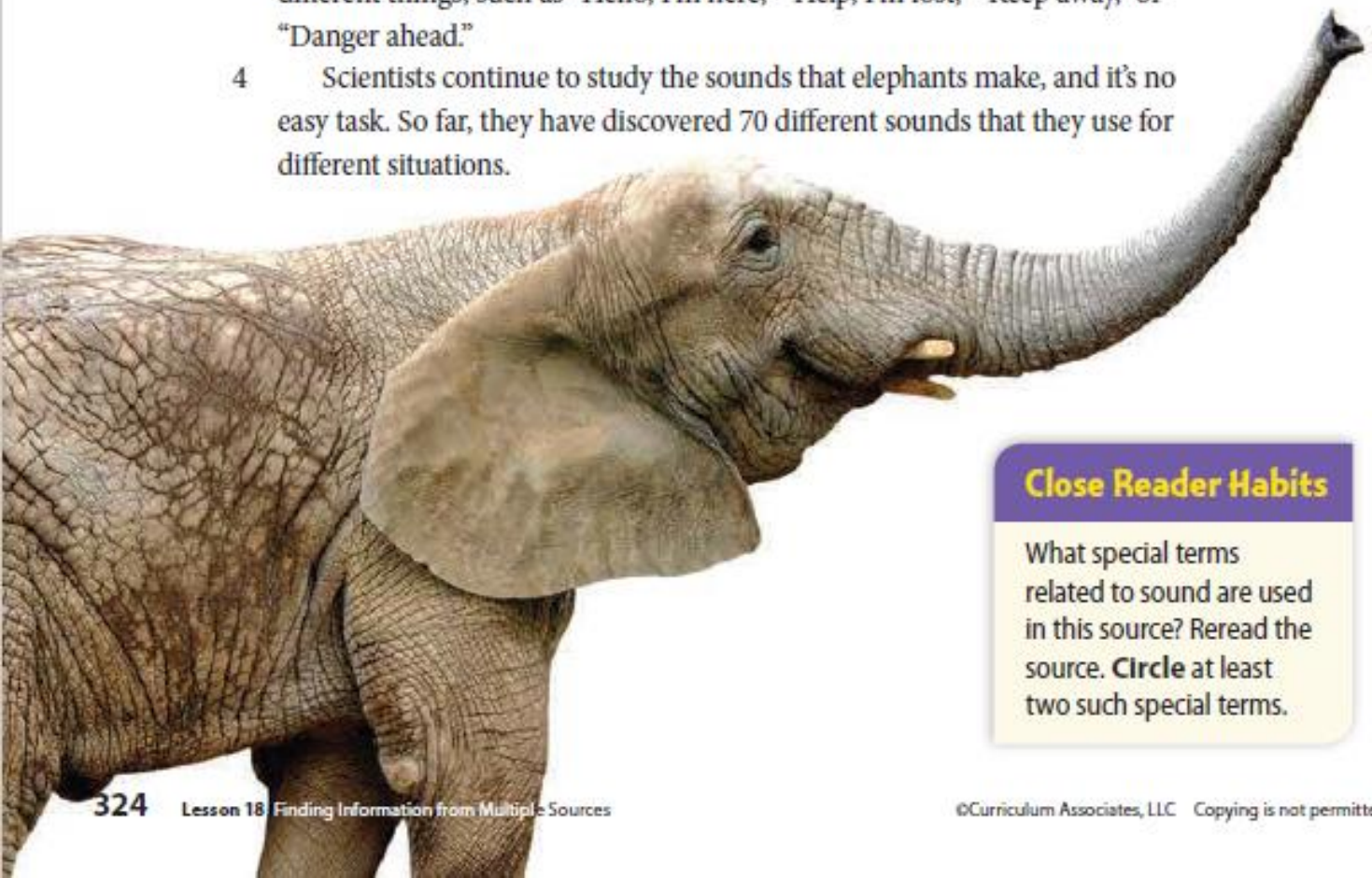
by Ari Griffen

1 Elephants storm across a hot, African desert toward a source of water. Suddenly, they stop. Their ears open up wide and appear to hear distinct sounds, and yet humans observing the scene nearby hear nothing. What is happening? Actually, the elephants are hearing a sound, but it has a pitch so low that humans can't detect it. We call this low pitch infrasound.

2 Scientists first discovered this sound by using a machine called a spectrograph. This machine recorded the sounds and charted them so scientists could study them along with the elephants' behaviors. These scientists concluded that the low sounds were actually warning sounds from another herd.

3 The deepest rumbling sounds measure between 1 and 20 hertz, way below the sounds that human ears can detect. These infrasonic calls can mean different things, such as "Hello, I'm here," "Help, I'm lost," "Keep away," or "Danger ahead."

4 Scientists continue to study the sounds that elephants make, and it's no easy task. So far, they have discovered 70 different sounds that they use for different situations.



Close Reader Habits

What special terms related to sound are used in this source? Reread the source. **Circle** at least two such special terms.

Genre: Science Article

Animal Sounds

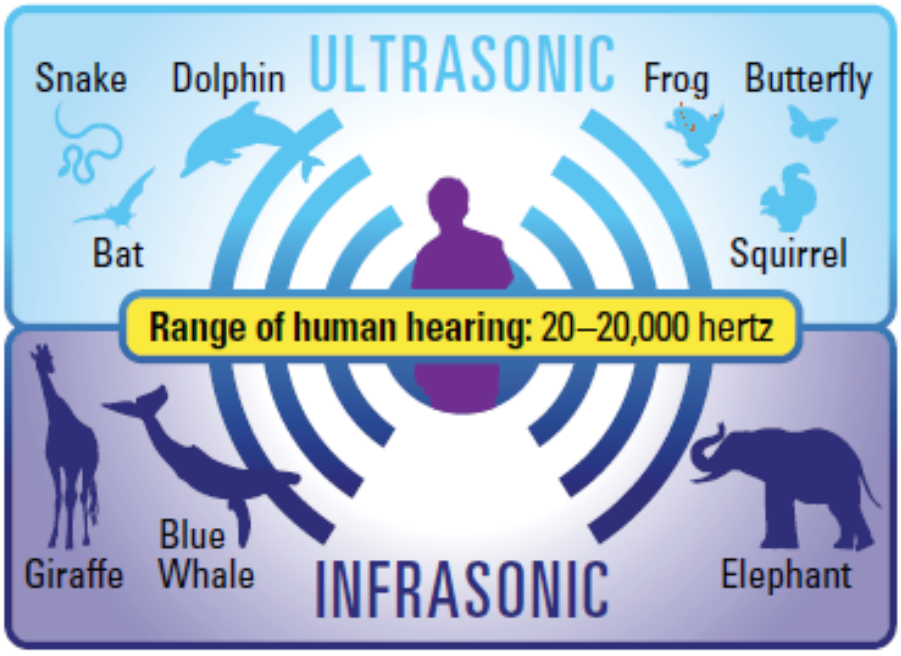
by Philipe Gelinas

1 Bees dance or emit smells to communicate with one another. Electric eels use electricity to communicate with one another. Horses rub noses, and giraffes press their necks together. Yet, one of the most important ways animals communicate is by sound.

2 Sound travels in waves, and its pitch, or frequency, is measured in a unit that scientists call *hertz*. The lowest frequency a person can hear is 20 hertz (20 cycles per second). The highest frequency we can hear is 20,000 hertz.

3 Some animals have incredible hearing. Elephants can communicate with other elephants up to ten miles away using a very low infrasound that the human ear cannot hear. Giraffes can pick up sounds less than 20 hertz. Some whales can hear sounds as low as 10 hertz.

4 Other types of whales, such as dolphins, mainly use high-pitched sounds. Most of these sounds are also out of the range of the human ear. We call these sounds *ultrasound*. Rats giggle at the ultrasound levels, and squirrels warn one another of danger by making high-pitched noises. And imagine this: bats can hear sounds that can measure as high as 100,000 hertz!



Close Reader Habits

The first source introduces the idea of "hertz." How does the second source help you understand that idea? Reread both sources. **Underline** sentences in both sources and **circle** details in the diagram that explain "hertz" to the reader.

Think Use what you learned from reading the sources to answer the following questions.

When you read different sources on the same topic, look for information in one source that clarifies what you read in the others.

1 This question has two parts. Answer Part A. Then answer Part B.

Part A

What conclusion can you base on evidence found in **both** sources?

- **A** All animals can use ultrasound and infrasound to communicate.
- **B** Some animals use sounds to tell each other about possible threats.
- **C** Scientists continue to discover new ways that animals communicate.
- **D** Body language is as important to elephant communication as sound is.

Part B

Choose **one** detail from **each** source to support the answer in Part A.

- **A** "Their ears open up wide and appear to hear distinct sounds, and yet the humans observing the scene nearby hear nothing." ("Incredible Animal Ears")
- **B** "These scientists concluded that the low sounds were actually warning sounds from another herd." ("Incredible Animal Ears")
- **C** "So far, they have discovered 70 different sounds that they use for different situations." ("Incredible Animal Ears")
- **D** "Sound travels in waves, and its pitch, or frequency, is measured in a unit that scientists call hertz." ("Animal Sounds")
- **E** "Elephants can communicate with other elephants up to ten miles away using a very low infrasound that the human ear cannot hear." ("Animal Sounds")
- **F** "Rats giggle at the ultrasound levels, and squirrels warn one another of danger by making high-pitched noises." ("Animal Sounds")

2 This question has two parts. Answer Part A. Then answer Part B.

Part A

What main idea do **both** sources share?

- **A** Humans can hear sounds that are between 20 and 20,000 hertz.
- **B** Animals communicate with each other using sounds, many of which people cannot hear.
- **C** Some animals communicate with high-pitched sounds called ultrasound; other animals use low-pitched sounds.
- **D** Elephants use different sounds for different situations, such as signaling their location or a need for help.

Part B

Choose **one** detail from **each** source to support the answer in Part A.

- **A** "Actually, the elephants are hearing a sound, but it has a pitch so low that humans can't detect it." ("Incredible Animal Ears")
- **B** "Scientists continue to study the sounds that elephants make, and it's no easy task." ("Incredible Animal Ears")
- **C** "So far, they have discovered 70 different sounds that they use for different situations." ("Incredible Animal Ears")
- **D** "Bees dance or emit smells to communicate with one another." ("Animal Sounds")
- **E** "Yet, one of the most important ways animals communicate is by sound." ("Animal Sounds")
- **F** "The lowest frequency a person can hear is 20 hertz (20 cycles per second)." ("Animal Sounds")

Talk

3 Look for details in both sources that describe what "hertz" is. Use the chart on page 329 to collect evidence from the sources.

HINT Some sources only briefly describe an idea. Other sources can describe the idea in much more depth.

Write

4 **Short Response** Explain how the description of "hertz" in "Animal Sounds" develops an idea introduced in "Incredible Animal Ears." Include details from each source to support your response. Use the space provided on page 329 to write your answer.

Write Use the space below to write your answer to the question on page 323.

Watch Your Body Language

It's in the Eyes

3 **Short Response** The topic of each source is body language. But what specific idea appears in **both** sources? Use details from both sources to support your response.

Don't forget to check your writing.

Check Your Writing

- ☐ Did you read the prompt carefully?
- ☐ Did you put the prompt in your own words?
- ☐ Did you use the best evidence from the text to support your ideas?
- ☐ Are your ideas clearly organized?
- ☐ Did you write in clear and complete sentences?
- ☐ Did you check your spelling and punctuation?

Incredible Animal Ears

Animal Sounds

3 **Use the chart below to organize your ideas.**

Information About the Concept of "Hertz"

"Incredible Animal Ears"	"Animal Sounds"

Write **Use the space below to write your answer to the question on page 327.**

4 **Short Response** Explain how the description of "hertz" in "Animal Sounds" develops an idea introduced in "Incredible Animal Ears." Include details from each source to support your response.

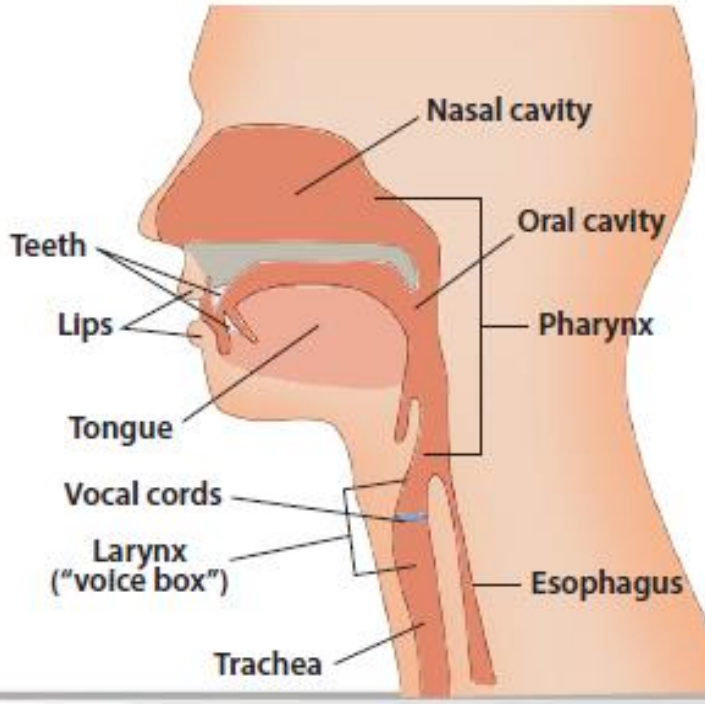
Read

Genre: Science Article

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.
- **release**
- **vibrate**

HOW WE SPEAK

1 Speaking is possible because we have special parts in our bodies: lungs, throat, voice box, tongue, and lips. When we speak, we release air from our lungs. If we are going to speak a long sentence, our brains tell our bodies to push out a long puff of air. If we are speaking only a word or two, the puff will be smaller. This puff of air goes from the lungs through the larynx, which is made up of cartilage and muscle. The larynx, often called the voice box, contains vocal cords that stretch across the opening. When the air passes through the vocal cords, they vibrate, or move back and forth quickly, and make a sound.



Genre: Science Article

What Are Vocal Cords?

by Hong Cao

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.
- **concert**
- **automatically**

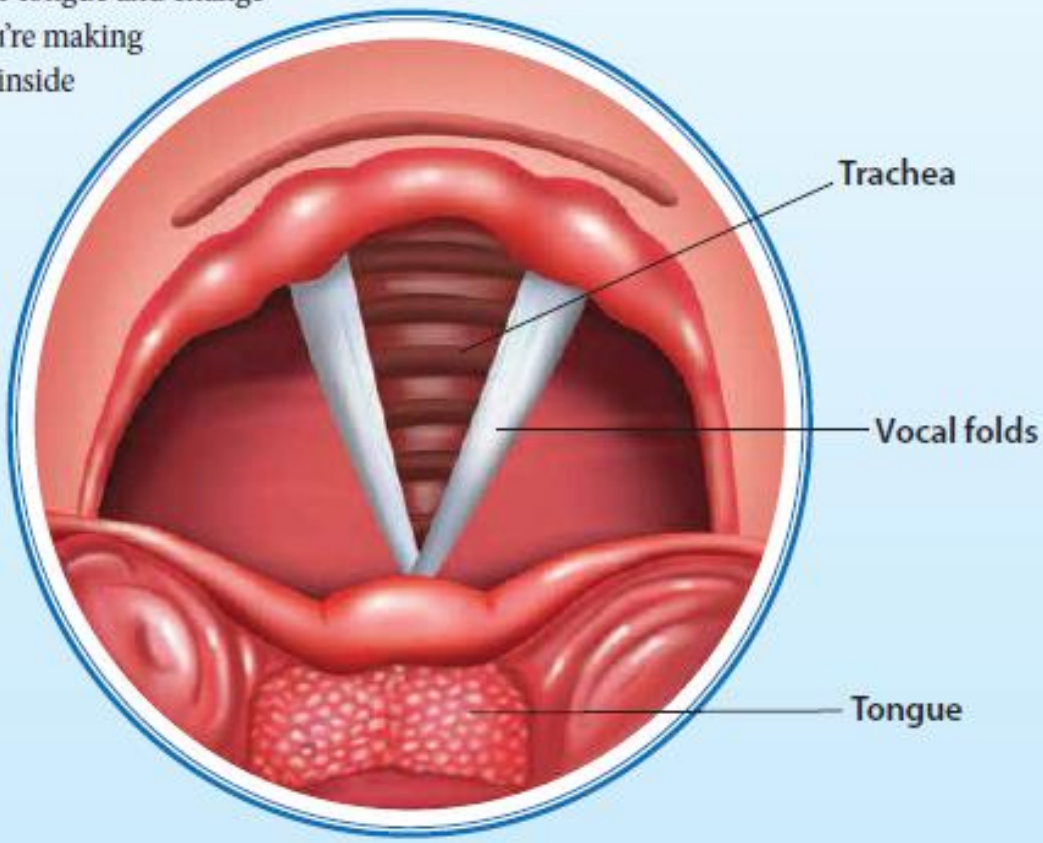
1 If you think that vocal cords are like strings on a guitar, you'd be wrong. Actually, vocal cords are vocal folds, or many layers of tissue that vibrate in your larynx. You can still use the term *vocal cords*, however, as both terms mean the same thing. The vocal cords have a V-shape.

2 How do we use the vocal cords? To make a high sound, we tighten the vocal cords. To make a low sound, we relax the cords. And most people do all this without even thinking!

3 So now the sound is coming through the vocal cords, but the sound isn't a word yet. What happens next is that we use our throat, tongue, mouth, and lips to shape the sound into vowels and consonants.

4 For example, say a word like *football* or *window*. Notice how you open your mouth and move it around when you change vowels and consonants. Notice how you move your tongue and change its shape as you speak. You're making a fancy concert of sounds inside your mouth!

5 Speaking seems like the most natural thing in the world, and when we do speak, we rarely, if ever, think about how we create words and sentences. Even so, we aren't born knowing how to make words automatically.



Genre: Science Article

Dogs and Birds: MAKING NOISE

by Anatoly Kuznets

WORDS TO KNOW

As you read, look inside, around, and beyond these words to figure out what they mean.

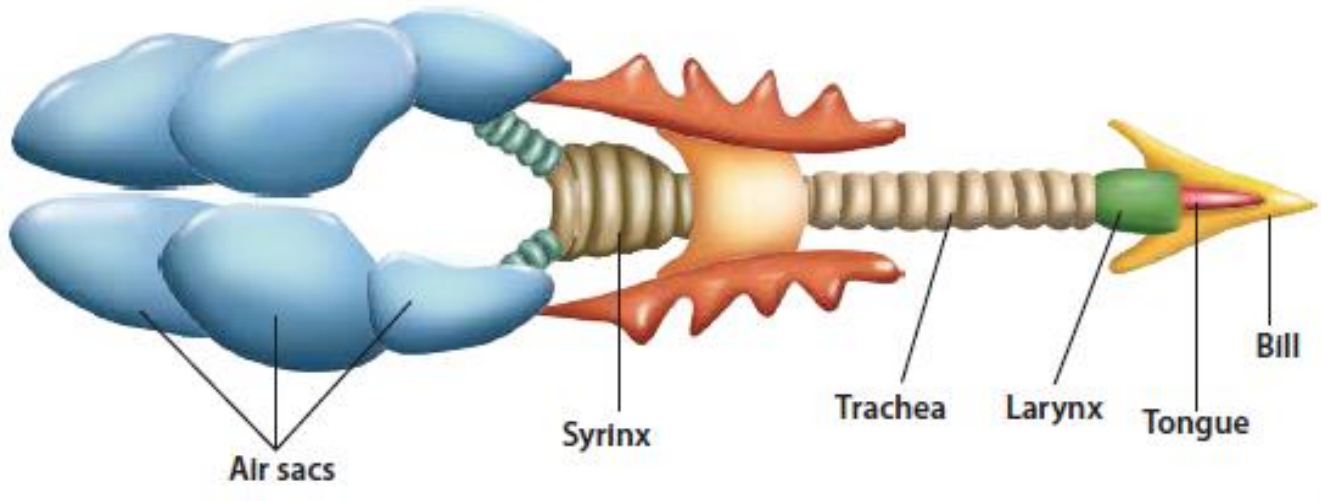
- **variety**
- **anatomy**
- **imitate**

1 Animals can make a variety of sounds—from the loud barking of a dog to the sweet song of a bird. How do animals make these sounds?

2 A dog can make quite a few sounds, from whines to loud barking sounds. Scientists say that the dog has vocal cords much like a human's inside its thorax, or chest. So why can't a dog speak? The big difference is in the dog's anatomy, or the structure of its body. A dog's mouth is not as flexible as a human's. A dog can't move its mouth to make it smaller or roll its tongue in different positions. So after the air passes through the vocal cords, the dog can't change the sound very much.

3 Birds, on the other hand, can make a wide variety of sounds. Some birds, like parrots, can even imitate human speech. Singing birds have a larynx, but they don't have vocal cords. Instead, a singing bird uses its syrinx to make sounds. The syrinx is in the throat and is made up of membranes (like thin pieces of skin) that form the sounds when air passes through them. Birds can vary the sounds by squeezing or loosening the tension of the muscles in the syrinx. They move their esophagus, windpipe, pharynx, and mouth to vary the sounds. Like humans, birds have to learn how to make these sounds. Some birds, like vultures and some storks, don't have a syrinx. So you'll never hear these birds singing a note!

SOME OF A BIRD'S SOUND-MAKING STRUCTURES



Think Use what you learned from reading the sources to answer the following questions.

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

Part A

What idea do "How We Speak" and "What Are Vocal Cords?" share?

- **A** Several parts of our bodies work together to let us speak.
- **B** We can make sounds because we have vocal folds.
- **C** Your mouth and tongue help you form vowels.
- **D** Air travels from the lungs to the voice box.

Part B

Choose **one** detail from **each** source to support the answer in Part A.

- **A** "Speaking is possible because we have special parts in our bodies: lungs, throat, voice box, tongue, and lips." ("How We Speak")
- **B** "When we speak, we release air from our lungs." ("How We Speak")
- **C** "The larynx, often called the voice box, contains vocal cords that stretch across the opening." ("How We Speak")
- **D** "Actually, vocal cords are vocal folds, or many layers of tissue that vibrate in your larynx." ("What Are Vocal Cords?")
- **E** "To make a high sound, we tighten the vocal cords." ("What Are Vocal Cords?")
- **F** "What happens next is that we use our throat, tongue, mouth, and lips to shape the sound into vowels and consonants." ("What Are Vocal Cords?")

2 Circle the word in the paragraph below that means "capable of bending easily without breaking."

So why can't a dog speak? The big difference is in the dog's anatomy, or the structure of its body. A dog's mouth is not as flexible as a human's. A dog can't move its mouth to make it smaller or roll its tongue in different positions. So after the air passes through the vocal cords, the dog can't change the sound very much.

3 What information in "What Are Vocal Cords?" helps the reader understand why dogs can't speak, as stated in "Dogs and Birds: Making Noise"?

A People can make higher sounds by tightening the vocal cords and lower sounds by relaxing the cords.

B Even though we don't often think about how we say words and sentences, we don't learn to speak automatically.

C People move their mouths to form words from the sounds made by the vocal cords.

D The vocal cords of humans are not like the strings on a guitar because they have a V-shape.

Write

Using information from all three sources, explain how humans and animals make sounds. What similarities and differences are pointed out in the three sources? Reread each source and underline details that will help you explain how humans and animals make sounds. Then complete numbers 4 and 5.

4 **Plan Your Response** Use a three-column chart to make notes about the specific information in each source. You will use these notes to provide examples for the points in your essay.

5 **Write an Extended Response** Using evidence from the sources and information from your chart, explain how people and animals make sounds.

Learning Target

In this lesson, you used several sources to find information and answer questions. Explain how using multiple print and digital sources will help you find complete and accurate information.

Understand Division with Unit Fractions

5.NF.B.7a
5.NF.B.7b

Think It Through

How is dividing with fractions related to multiplying with fractions?

You know that multiplication and division are related. Dividing 8 by 4, for example, gives the same result as multiplying 8 by $\frac{1}{4}$.

$8 \div 4 = 2$

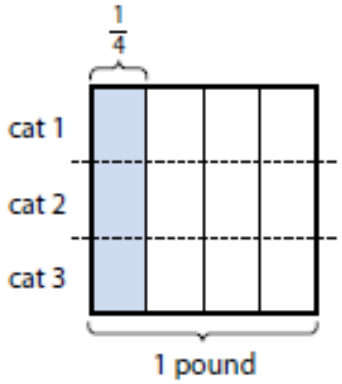
$8 \times \frac{1}{4} = 2$

Dividing with unit fractions works the same way. You can solve a division problem involving fractions by multiplication.

Think **What does dividing a unit fraction by a whole number mean?**

Mrs. Cook wants to share $\frac{1}{4}$ pound of fish equally among 3 cats.

That means she needs to divide $\frac{1}{4}$ into 3 equal parts. You can draw an area model to represent the problem.



$\frac{1}{4} \div 3 = \frac{1}{12}$

If $\frac{1}{4}$ pound of fish is divided into 3 equal parts, each cat will receive $\frac{1}{3}$ of the $\frac{1}{4}$ pound of fish.

$\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$

Circle the multiplication equation that solves the division situation.

Think What does dividing a whole number by a unit fraction mean?

Mr. Putnam wants to cut a 3-foot rope into $\frac{1}{4}$-foot sections.

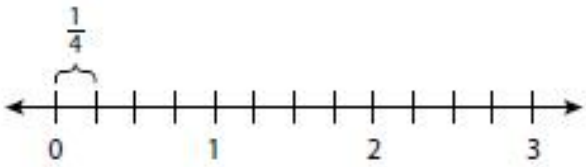
To figure out how many sections he will get, Mr. Putnam thinks, "How many fourths are in 3?"

Look at the answer to this division problem. It is greater than 3, the number I started with!

You can draw a number line to represent the 3 feet of rope. There are three 1-foot sections.

You can mark fourths on the number line to represent $\frac{1}{4}$ foot. You can see there are twelve $\frac{1}{4}$-foot sections in 3 feet.

$3 \div \frac{1}{4} = 12$



You can also write a multiplication equation to show how many fourths are in 3. There are 4 fourths in each whole foot. To find the number of fourths in 3 feet, you can multiply.

$3 \times 4 = 12$

When you divide 3 by $\frac{1}{4}$, you are dividing 3 into parts smaller than 1. So there will be more than 3 of those parts.

Reflect

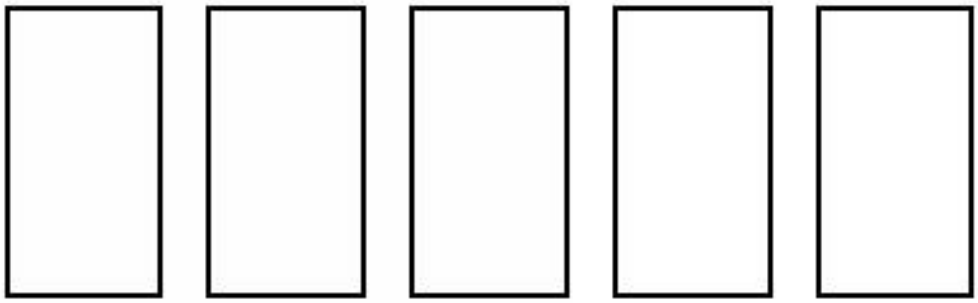
1 Explain what it means to divide 5 by $\frac{1}{4}$.

Think About Using Unit Fractions in Division

Let's Explore the Idea Explore dividing a whole number by a unit fraction with the problem below.

Jemma made 5 cups of pancake batter. She uses a scoop measuring $\frac{1}{3}$ cup to pour batter onto the skillet to make large pancakes. How many pancakes can Jemma make?

The 5 rectangles below represent the 5 cups of pancake batter.



2 You need to find out how many _____ there are in _____.

3 The scoop holds $\frac{1}{3}$ cup of batter. How many scoops are in 1 cup? _____

4 Divide each of the 5 rectangles into sections to show your answer to problem 3.

5 How many scoops are in 5 cups? _____

6 $5 \div \frac{1}{3} =$ _____

7 What multiplication equation will also solve this problem? _____

8 How is 5×3 related to $5 \div \frac{1}{3}$? _____

_____

_____

_____

Let's Talk About It

Solve the problems below as a group.

Suppose Jemma wanted to divide $\frac{1}{3}$ cup of pancake batter to make 4 mini pancakes. What fraction of a cup of batter will each pancake get?

9 The rectangle to the right shows 1 cup divided into 3 equal sections. How much does each section represent?

_____

10 Shade $\frac{1}{3}$ of the rectangle to show $\frac{1}{3}$ cup.

11 You need to divide $\frac{1}{3}$ cup equally to make 4 pancakes. Divide each third of the rectangle vertically into 4 equal parts. Then shade $\frac{1}{4}$ of the rectangle to show 1 of the 4 pancakes.

12 The overlapping section shows the fraction of a cup of batter that each pancake will get. What is this fraction? _____

13 $\frac{1}{3} \div 4 =$ _____

14 What multiplication equation also solves $\frac{1}{4}$ of $\frac{1}{3}$? _____

15 How is $\frac{1}{3} \div 4$ related to $\frac{1}{3} \times \frac{1}{4}$? _____

_____

Try It Another Way

Explore dividing by a unit fraction using a common denominator.

Another way to think about dividing unit fractions is to write equivalent fractions with a common denominator. What is $5 \div \frac{1}{2}$?

16 Write 5 as a fraction with a denominator of 2. _____

17 Divide $\frac{10}{2}$ into equal groups of $\frac{1}{2}$. How many groups can you make? _____

18 $5 \div \frac{1}{2} =$ _____

Connect Ideas About Dividing with Unit Fractions

Talk through these problems as a class. Then write your answers below.

19 Compare Draw a model to represent $\frac{1}{4} \div 4$ and a model to represent $\frac{1}{4} \times \frac{1}{4}$. Explain the relationship between the two expressions.

20 Analyze Helena said that $12 \div \frac{1}{3}$ is 4. Draw a model and use words to explain why Helena's statement is not reasonable.

21 Justify Show that $\frac{1}{2} \div 3 = \frac{1}{6}$ by using a model. Explain why the result is less than the number you started with, $\frac{1}{2}$.

Apply Ideas About Dividing with Unit Fractions

22 Put It Together Use what you have learned to complete this task.

Choose one of the following problems to solve. Circle the problem you choose.

Drew wants to run at least 6 miles this month. He plans to run $\frac{1}{4}$ mile each day. How many days will it take Drew to run 6 miles?

Maya made $\frac{1}{2}$ quart of strawberry jam. She plans to share it equally among 4 friends. How much jam will each friend get?

Part A Draw a model to represent the problem.

Part B Write a division equation and a multiplication equation that represent the problem.

May 11-15

I-Ready Assignments

Lesson 19
Understanding Supporting Evidence

Learning Target

Understanding the reasons and evidence an author uses to support points will help you better understand a text.

Read When reading informational texts, look for the **points** the author presents to convince you an idea is true. To figure out whether an author's points are supported, look for any reasons and evidence he or she supplies for each point. A **reason** is an explanation for why the idea might be true. A piece of **evidence** is a fact that can be proven true.

In the comic strip below, identify the reasons and evidence the girl gives for needing a secret code.

Think What have you learned about points, reasons, and evidence? Complete the chart below for the comic strip on the previous page.

What Does the Girl Think?	Why Does She Think This?	What Evidence Supports Her Thinking?
She needs a code.		

Talk Share your chart with a partner.

- What does the girl think?
- Why does she think what she thinks?
- What evidence supports her thinking?

Academic Talk

Use these words to talk about the text.

- **points**
- **reason**
- **evidence**

Read

Genre: History Article

The Power of Codes

by Alan Kim

1 Secret codes and power go hand-in-hand. Why is this so? Because a code lets one group of people communicate information in a way that keeps it secret from other groups. The group that knows the code has an advantage over the group that doesn't.

2 Take the example of Julius Caesar, an emperor of ancient Rome who conquered much of Europe and northern Africa. Caesar used letters to communicate his military plans to faraway generals. But what if an opposing army obtained copies of his letters? His plans might be foiled. So Caesar developed a code that only he and trusted members of his army understood. If an enemy intercepted Caesar's letters, they would not understand them or be able to prepare for his plans. The code gave Caesar an advantage over his opponents, letting him keep and increase his power.

3 Not all codes were as successful as Caesar's, however. In the 1500s, when Elizabeth I was Queen of England, her cousin Mary plotted to overthrow her. Mary communicated with her allies through coded messages. However, Mary's code was easy to crack, so her plan was discovered. If Mary had used a better code, she might have risen to power as the Queen of England.

4 Codes remain important in modern times. During World War II (1939–1945), German submarines communicated in code so complicated that it was nearly unbreakable. But a brilliant Englishman named Alan Turing cracked the German code. Now that the English knew when and where a British ship would be targeted, they could fight back. When the Germans' code was broken, they lost a powerful advantage.

5 Secret codes aren't just about power, of course. It's fun to develop a code to communicate secrets. But when rulers and armies use codes, they're not doing so for fun. For them, it's serious business.

Close Reader Habits

When you reread the article, **underline** examples that show how secret codes are related both to keeping *and* to losing power.

Explore **What reasons and evidence does the author use to support his idea about codes?**

The author has an idea about the relationship between codes and power. He has to support this idea.

Think

1 The author states, "Secret codes and power go hand-in-hand." Complete the chart to explain why the author thinks this and describe three pieces of evidence supporting his thinking.

What Does the Author Think?	Why Does He Think This?	What Evidence Supports His Thinking?
"Secret codes and power go hand-in-hand."		

Talk

2 How does the author support his idea about secret codes? If necessary, revise the second and third columns of your chart.

Write

3 **Short Response** The author states that a group with a secret code has an advantage over groups that do not. Explain how the author supports this idea. Use details from the passage in your response. Use the space provided on page 342 to write your answer.

HINT Use phrases such as "one example" and "a second example" to organize your response.

THE SLAVE QUILT CODE

Fact or Fiction?

by Ron Fridell

1 Back in the 1990s, an intriguing idea arose. People began claiming that during the American Civil War, 1861–1865, African slaves in the southern states used a secret code to help one another escape north to freedom.

2 This code consisted of patterns sewn into quilt blocks by slave women. For example, a pattern called *wagon wheel* meant to quickly load up a wagon and prepare to head north. And a pattern called *shoo-fly* signaled that a friendly guide waited nearby to help. Such quilts helped runaway slaves make their way along a network of routes known as the Underground Railroad to freedom.

3 Films and books sprang up about how these bedcovers with their secret messages sewn by slave women saved lives and led enslaved people to freedom. The popular Oprah Winfrey TV show even featured these claims and stories. The public loved these thrilling accounts of adventures from America's past.

4 But wait. How true were they? These quilt code accounts were exciting, yes, and people wanted them to be historically accurate. But were they?

5 Many historians have studied slavery and the Underground Railroad. These historians reviewed the evidence. None of it appeared to come directly from the slaves, they concluded. There were no letters and no news articles quoting the slaves themselves. It all came from stories passed along by word of mouth. And none of the quilts used to help runaway slaves could be found.

6 Still, many books were written concerning these oral accounts, exciting stories of secret hiding places, life-threatening encounters, and midnight escapes. But there were no documents to back up these quilt code claims. Based on the lack of strong evidence, we must conclude that quilts played no special role in the Underground Railroad.

Close Reader Habits

How does the author support the idea that quilts played no special role in the Underground Railroad? **Underline** any information supporting this idea.

Think

Use what you learned from reading the article to answer the following questions.

History articles can state ideas that readers find surprising. The author must give good reasons and evidence to support such ideas.

1 This question has two parts. Answer Part A. Then answer Part B.

Part A

How does the author support the idea that people wanted to believe African slaves in the South used a secret code?

- **A** by showing that the history of the quilt code wasn't known before the 1990s, and then it became a popular topic
- **B** by showing that experts believe the quilts' patterns had different meanings and gave signals to escaping slaves
- **C** by showing that the slave quilt codes were related to the Underground Railroad, which is an interesting topic
- **D** by showing that the stories about the quilt codes were the subjects of popular books, films, and shows

Part B

Which detail from the article supports the answer in Part A?

- **A** "The popular Oprah Winfrey TV show even featured these claims. . . ."
- **B** "Many historians have studied slavery and the Underground Railroad."
- **C** "It all came from stories passed along by word of mouth. . . ."
- **D** ". . . there were no documents to back up these quilt code claims."

Talk

2 The author states that quilts with secret messages played no part in helping enslaved people escape to the North. How does the author support this idea? Use the chart on page 343 to record your ideas and the evidence.

Write

3 **Short Response** How does the author support the idea about quilts not having secret messages? Provide **two** examples of the evidence the author uses to support the idea. Use the space provided on page 343 to write your answer.

HINT Start by restating the author's conclusion. Then tell how he supports it.

Write Use the space below to write your answer to the question on page 339.

The Power of Codes

3 **Short Response** The author states that a group with a secret code has an advantage over groups that do not. Explain how the author supports this idea. Use details from the passage in your response.

HINT Use phrases such as "one example" and "a second example" to organize your response.

Don't forget to check your writing.

Check Your Writing

- ☐ Did you read the prompt carefully?
- ☐ Did you put the prompt in your own words?
- ☐ Did you use the best evidence from the text to support your ideas?
- ☐ Are your ideas clearly organized?
- ☐ Did you write in clear and complete sentences?
- ☐ Did you check your spelling and punctuation?

THE SLAVE QUILT CODE

Fact or Fiction?

2 **Use the chart below to organize your ideas and evidence.**

What Does the Author Think?	Why Does He Think This?	What Evidence Supports His Thinking?

Write **Use the space below to write your answer to the question on page 341.**

3 **Short Response** How does the author support the idea about quilts not having secret messages? Provide **two** examples of the evidence the author uses to support the idea.

HINT Start by restating the author's conclusion. Then tell how he supports it.

Read

Genre: History Article

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.
- **intercepting**
- **dialects**
- **barren**

FROM

HUMAN CODE MACHINES

by Bruce Watson, *Odyssey*

1 On the sands of Iwo Jima island, any other World War II code machine would have been too slow to use in the heat of battle. But the Marines had highly mobile crytographs[1], each with two arms, two legs, and an unbreakable code. . . .

2 *Naastosi Thanzie Dibeh Shida Dahnestsa Tkin Shush Wollachee Moasi Lin Achi.*

3 Ordinary Marines listening to this babble were as baffled as Japanese soldiers intercepting the messages. Had they spoken Navajo, they would have recognized the words —"Mouse Turkey Sheep Uncle Ram Ice Bear Ant Cat Horse Intestines."

4 But what could such nonsense mean? To the Navajo Code Talkers, the first letter of each word spelled out Mt. Suribachi. Other code filled in the announcement: Iwo Jima was under American control.

5 The Navajo Code Talkers were unique in cryptographic history. From 1942 to 1945, more than 400 Code Talkers stormed the beaches of Pacific islands. Instantly encoding and decoding messages, they helped Marines win the war in the Pacific. Even today, their code remains one of the few in history that was never broken.

The Navajo Code Talkers played an important role during World War II. Shown below are two Code Talkers in a jungle close to the front lines.

[1] **cryptographs:** code-makers

When World War II broke out, hundreds of Navajo men volunteered to fight for the United States. This photo shows two Navajo Code Talkers being trained at an army base in Australia.

6 When World War II began, hundreds of Navajo men volunteered to fight. Most had never been off their reservation, a high, barren plain stretching across Arizona, Utah, and New Mexico. There they lived as a separate nation, as many still do today. The reservation had no electricity or indoor plumbing, and only a few schools. Most Navaho herded sheep and bought from government trading posts what little they needed and could not make. They spoke some English, but the business of their daily lives was conducted in their own language.

7 Among languages that were spoken by only tens of thousands of Americans, Navajo was the language least likely to be known to foreigners. The language was entirely oral. Not a single book had ever been written in Navajo. . . .

8 The Navajo code was proposed by a non-Navajo, Philip Johnston, the son of missionaries on the reservation. Marine officers were skeptical at first. American armies had used other Indian languages to send messages during World War I. Yet because the ancient dialects had no words for machine gun or tank, the experiment failed. Johnston had a better idea—a language combined with a code. . . .

Making a Code

9 The Navajo language contained no words for the horrors of war. Bomber, battleship, grenade—all were terms foreign to the Navajo. But in making their code, the Navajo soldiers rooted it, like their lives, in nature. They named military planes after birds. *Gini*, Navajo for "chicken hawk," became "dive bomber." *Neasjah*, meaning "owl," meant "observation plane." They named ships after fish. *Lotso*, meaning "whale," was the code word for "battleship," and *beshlo*—"iron fish"—meant "submarine."

10 To spell out proper names, the Code Talkers encoded a Navajo zoo. Marines spell out abbreviations with their own alphabet, which begins Able, Baker, Charlie . . . The Navajo version began *Wollachee, Shush, Moasi,* meaning Ant, Bear, Cat.

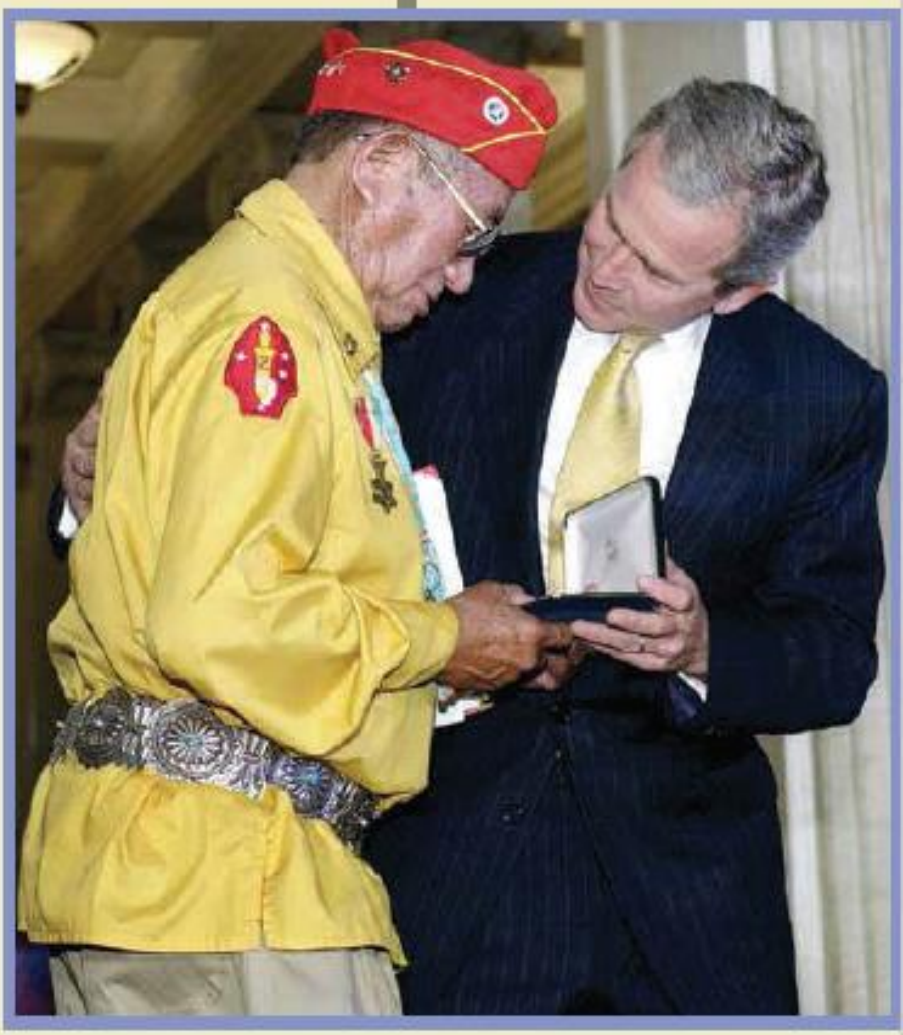
11 Finally, Code Talkers created clever terms for friends and enemies. Lieutenant was translated as "One Silver Bar." Mussolini, Italy's fascist dictator, was *Adee-yaats-iin-Tsoh*—"Big Gourd Chin." Hitler became *Daghailchiih*—"Moustache Smeller."

Test Time

12 With just 400 words encoded, the Navajo put their cryptology to the acid test. They handed a message to Navy intelligence officers, who spent three weeks trying and failing to decipher it. Then, armed with a code and M-1 rifles, a few dozen Code Talkers shipped out to the Pacific. Two more remained behind to teach the code to other Navajo recruits. . . .

13 Between invasions, the Code Talkers convened[2] to encode new battle terms. Before the war ended, several were killed in action. Yet they transmitted thousands of messages without error. In a language that needs no decoding, Marine major Howard Conner assessed their contribution. "Without the Navajos," Conner said, "the Marines would never have taken Iwo Jima."

In 2001, the United States awarded four Navajo Code Talkers the Congressional Medal of Honor—the highest award a soldier who has been in battle can receive.



[2] **convened:** gathered

Think Use what you learned from reading the history article to answer the following questions.

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

Part A

How does the author support the idea that the Navajo men who volunteered to fight in World War II had been living isolated lives?

- **A** by stating that their messages were impossible to understand
- **B** by stating that most had never been off their reservation
- **C** by stating that they communicated orally and not in writing
- **D** by stating that they named planes and boats after animals

Part B

Which paragraph in the text **best** supports the answer to Part A?

- **A** paragraph 3
- **B** paragraph 5
- **C** paragraph 6
- **D** paragraph 9

2 The author uses a word that means "doubtful" in the text. Circle a word in the paragraph that **best** represents that idea.

> The Navajo code was proposed by a non-Navajo, Philip Johnston, the son of missionaries on the reservation. Marine officers were skeptical at first. American armies had used other Indian languages to send messages during World War I. Yet because the ancient dialects had no words for machine gun or tank, the experiment failed. Johnston had a better idea—a language combined with a code. . . .

3 This question has two parts. First, answer Part A. Then answer Part B.

Part A

How does the author support the idea that the Navajo soldiers were able to make a code related to war even though their language lacked words for it?

- **A** by showing how they mixed language and culture in the code
- **B** by showing that they started by encoding 400 words
- **C** by showing how they proved the Navy couldn't break the code
- **D** by showing that they met several times to encode new terms

Part B

Which **two** details from the article support the answer in Part A?

- **A** "... the business of their daily lives was conducted in their own language."
- **B** "... Navajo was the language least likely to be known to foreigners."
- **C** "... the Navajo soldiers rooted it, like their lives, in nature."
- **D** "*Lotso*, meaning 'whale,' was the code word for "battleship'. ..."
- **E** "Marines spell out abbreviations with their own alphabet. ..."
- **F** "... remained behind to teach the code. ..."

4 Which of the following **best** supports the idea that the Navajo code was hard to crack?

- **A** "... the first letter of each word spelled out Mt. Suribachi."
- **B** "The Navajo Code Talkers were unique in cryptographic history."
- **C** "Even today, their code remains one of the few in history that was never broken."
- **D** "The Navajo language contained no words for the horrors of war."

Write

5 **Short Response** The author states that the Navajo Code Talkers helped win the war in the Pacific. Explain how the author supports this idea. Use at least **two** details in your answer.

Learning Target

In this lesson, you explained how an author uses reasons and evidence to support points. Explain how this work will help you better understand other informational texts that you read.

Divide Unit Fractions in Word Problems

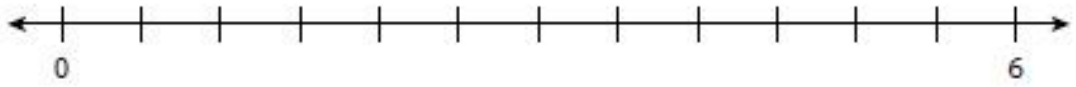
Use What You Know

Now that you understand what it means to divide with unit fractions, take a look at this problem.

Micah is running a 6-mile race. There are water stops every $\frac{1}{2}$ mile, including at the 6-mile finish line. How many water stops are there?

a. You want to find how many groups of $\frac{1}{2}$ there are in 6. Write a division expression that represents the problem. _____

b. You can use a number line to help you solve the problem. Finish labeling the number line below from 0 to 6.



c. Draw points on the number line to show the location of all the water stops.

d. How many $\frac{1}{2}$s are in 1? _____

e. How many $\frac{1}{2}$s are in 6? _____

f. Explain how you can use the number line to find the number of water stops there are. _____

_____

_____

_____

Find Out More

You can find how many half miles are in 6 miles in different ways.

- You can find $6 \div \frac{1}{2}$ by drawing a model.

  You can start by drawing 6 rectangles to represent the 6 miles.

  Then show the halves and count.

  There are 12 halves, so there are 12 water stops.

- You can also find $6 \div \frac{1}{2}$ by writing a related multiplication equation.

$$6 \div \frac{1}{2} = ?$$
$$? \times \frac{1}{2} = 6$$
$$12 \times \frac{1}{2} = 6$$

So, $6 \div \frac{1}{2} = 12$.

Reflect

1 Suppose the problem is changed so that there are water stops every $\frac{1}{4}$ mile, including the finish line. Explain why you would model this by dividing each rectangle into fourths instead of halves.

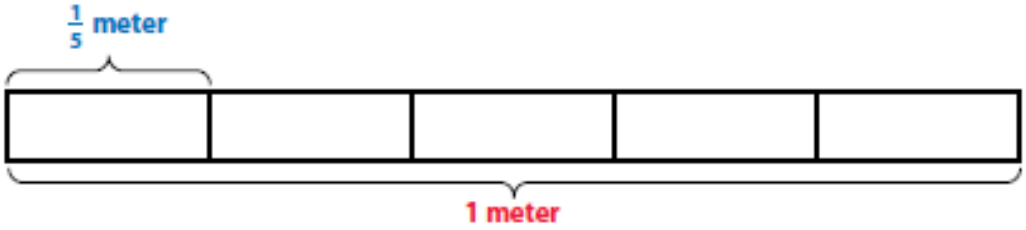
Learn About Dividing a Fraction by a Whole Number

Read the problem below. Then explore different ways to understand dividing a unit fraction to solve word problems.

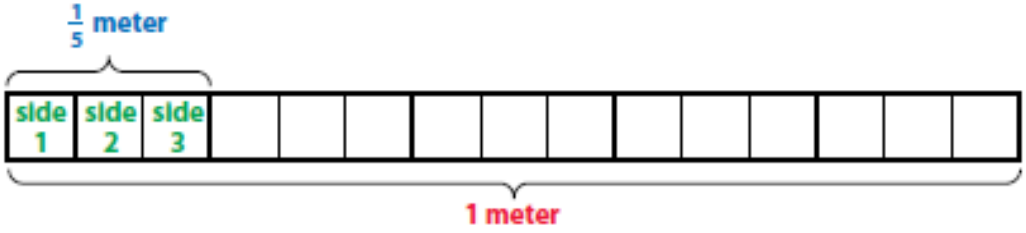
Piper used $\frac{1}{5}$ meter of ribbon to create a border around a triangle. If each side of the triangle is the same length, how much ribbon did Piper use for each side?

Picture It You can draw a picture to help understand the problem.

Draw a 1-meter length of ribbon, then draw and label a $\frac{1}{5}$-meter length.

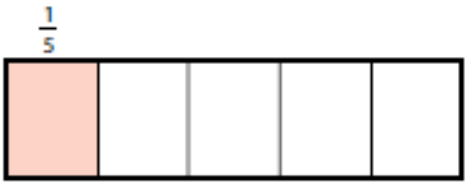


Divide the $\frac{1}{5}$-meter length into 3 equal parts that represent the 3 sides of the triangle.

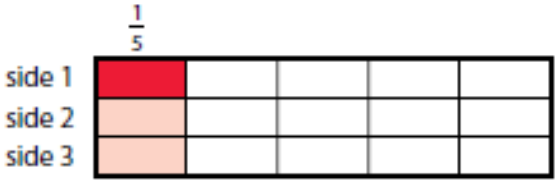


Model It You can use a model to help understand the problem.

Draw and shade $\frac{1}{5}$ of a rectangle.



Divide the rectangle into 3 equal parts. Then shade one of the thirds of the shaded $\frac{1}{5}$.



Connect It

Now you will solve the problem from the previous page using your understanding of unit fractions and the models.

2 Look at *Picture It* on the previous page. What information in the problem does the first diagram show?

3 Why does the second diagram show each bar divided into 3 equal parts?

4 When you divide $\frac{1}{5}$ meter into 3 equal parts, how long is each part? _____ meter
How do you know? _____

5 How much ribbon did Piper use for each side of the triangle? _____

6 What division expression represents this problem? _____

7 What is $\frac{1}{5} \div 3$? _____

8 Describe how *Model It* on the previous page shows dividing a unit fraction by a whole number. _____

Try It

Use what you just learned about dividing unit fractions to solve this problem. Show your work on a separate sheet of paper.

9 Tate has $\frac{1}{4}$ of a pizza. He wants to share the pizza equally with a friend. How much of the original whole pizza will each of them get? Draw a model and write an equation to represent and solve the problem.

Learn About

Dividing a Whole Number by a Fraction

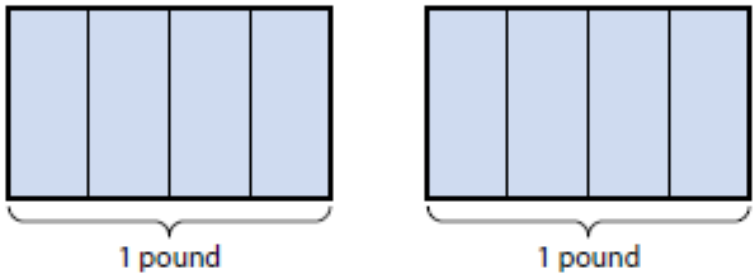
Read the problem below. Then explore different ways to understand dividing a whole number by a unit fraction.

Alex makes 2 pounds of bread dough. He separates the dough into $\frac{1}{4}$-pound loaves before baking them in the oven. How many loaves does he make?

Picture It **You can draw a model to help understand the problem.**

Draw 2 rectangles to represent the 2 pounds of bread dough.

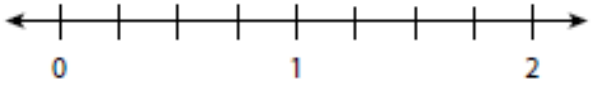
Show each pound divided into fourths.



Model It **You can use a number line to help understand the problem.**

Draw a number line and label it to show the 2 pounds of bread dough.

Mark the number line to divide each whole into fourths.



Connect It

Now you will solve the problem from the previous page using the models.

10 Write a division expression that represents the problem. _____

11 How many fourths are in one whole? _____

How many fourths are in two wholes? _____

12 Use the information in problem 11 to solve the problem from the previous page.

Using words: There are _____ fourths in 2.

Using numbers: $2 \div \frac{1}{4} =$ _____

Alex makes _____ loaves of bread.

13 What multiplication equation could you write to check your answer? _____

14 Describe a model you can use to divide a whole number by a unit fraction.

_____

_____

_____

Try It

Use what you just learned about dividing whole numbers by unit fractions to solve this problem. Show your work on a separate sheet of paper.

15 Stacy has 4 sheets of paper to make cards. Each card requires $\frac{1}{2}$ sheet of paper. How many cards can Stacy make? Choose a model to solve the problem. Then explain why you chose that model.

_____

_____

Practice Dividing Unit Fractions in Word Problems

Study the example below. Then solve problems 16–18.

Example

Sierra has a photo album with 3 empty pages. Each photo uses $\frac{1}{6}$ of an album page. How many photos can Sierra put on the empty pages?

Look at how you could show your work using rectangles.

6 photos will fit on one page, so 18 photos will fit on 3 pages.

Solution 18 photos

The student used a model to visualize the problem.

Pair/Share

What related equations can you write to represent the problem?

16 Corrine picked $\frac{1}{4}$ gallon of blackberries. She poured the berries equally into 4 containers. What fraction of a gallon is in each container?

Show your work.

Solution _____

Can I draw a model to help understand the problem?

Pair/Share

How will the answer compare to $\frac{1}{4}$ gallon?

17 Cooper's USB drive is $\frac{1}{2}$ full with 5 video files. Each video file is the same size. What fraction of the USB drive does 1 video file use?

Show your work.

How could I represent this problem using an equation?

Pair/Share
How can you check your answer?

Solution _____

18 Devonte is studying for a history test. He uses $\frac{1}{8}$ of a side of one sheet of paper to write notes for each history event. He fills 2 full sides of one sheet of paper. Which expression could be used to find how many events Devonte makes notes for? Circle the letter of the correct answer.

Is this problem like any problem I've seen before?

A $2 \times \frac{1}{8}$

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

C $\frac{1}{8} \times 2$

D $\frac{1}{8} \div 2$

Barry chose **D** as the correct answer. How did he get that answer?

_____

_____

_____

_____

_____

Pair/Share
Does Barry's answer make sense?

Practice Dividing Unit Fractions in Word Problems

Solve the problems.

1 Elise picks 6 pounds of apples. She uses $\frac{1}{2}$ pound of apples to make 1 container of applesauce. How many containers of applesauce can Elise make with all the apples?

A 12 containers

B $6\frac{1}{2}$ containers

C $5\frac{1}{2}$ containers

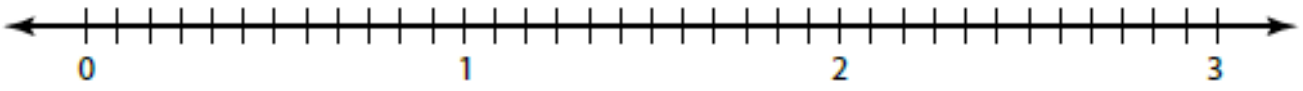
D 3 containers

2 Students are running in a relay race. Each team will run a total of 3 miles. Each member of a team will run $\frac{1}{3}$ mile.

How many students will a team need to complete the race? Circle the correct number below.

$\frac{1}{9}$ 3 9 12 36

You may use the number line to help find your answer.



3 Mr. Bernstein will cut 8 pies into pieces that are each $\frac{1}{6}$ of the whole. After he cuts the 8 pies, how many pieces will Mr. Bernstein have? _____ pieces

4 Marina has a pattern to make bows that requires $\frac{1}{4}$ yard of ribbon for each bow.

Part A Fill in the table to show how many bows she can make from a given length of ribbon.

Ribbon Length (yards)	Number of Bows
1	
2	
3	
4	

Part B Use words or an equation to describe a rule to find the number of bows Marina can make if you know how many yards of ribbon she has.

_____

_____

Part C Use your rule to find how many bows Marina can make if she has 18 yards of ribbon.

Answer _____ bows

Self Check **Go back and see what you can check off on the Self Check on page 97.**

May 18-22

I-Ready Assignments

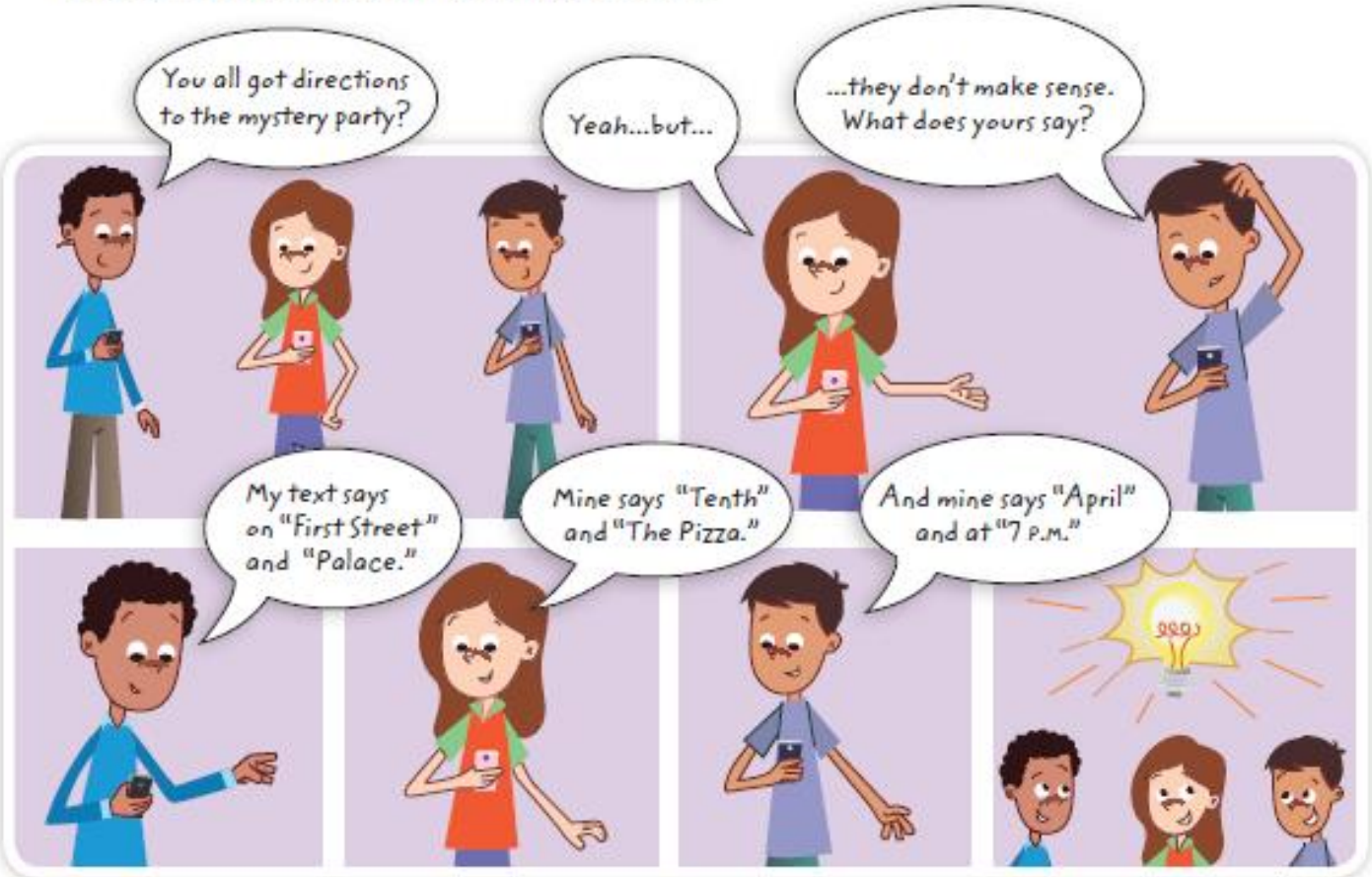
Lesson 20
Using Multiple Sources for Writing and Speaking

Learning Target

Putting together information from several texts on one topic will make you knowledgeable about that topic.

Read When you read, you learn information about a **topic**, or what a text is about. You can **integrate**, or put together, information on a topic from more than one **source**. As a result, you will be able to speak and write more knowledgeably about the topic.

Read this comic strip. Think about why the characters must put together information from multiple sources.



Think Consider what you've learned so far about putting together information from different sources to get a complete picture of a topic. In the comic strip, what information about the party does each character get? Complete the chart to identify each piece of information.

Question	Answers		
	First Message	Second Message	Third Message
Where and when is the mystery party?	First Street, Palace		

On the lines below, describe everything you know about the party after combining the information in the three messages. Use any details you can see in the comic strip as well as the information in your chart.

Talk Share your chart and description with a partner.

- Did you include the same information about the second and third messages?
- How were your descriptions of the party similar and different?
- What did this activity teach you about the importance of getting information from more than one source?

Academic Talk

Use these words to talk about the text.

- **integrate**
- **topic**
- **source**

Read

Genre: History Texts

BELL AND THE TELEPHONE

by Melanie Cartwright

1 On March 10, 1876, Alexander Graham Bell's hard work paid off. Thomas Watson, friend and fellow inventor, heard Bell speaking clearly from the receiving end of the very first working telephone.

2 Bell was an inventor through and through. He had a deep fascination with sound and wanted to invent a way to transmit it over long distances. He started small. He developed techniques and devices to communicate with his mother and other members of the deaf community. He performed sound experiments with whatever he could, from tuning forks to the family dog!

3 Eventually Bell figured out that electricity would be the key to transmitting sound but didn't know enough about it. That didn't stop him. In 1875, when he met Watson, a skilled electrical engineer, Bell asked for his help. That year Bell wrote his first patent for technology to transmit voices over a wire line. One year later, he introduced the telephone to the United States. He patented his "electronic speech machine" in 1876.

Did Gray or Bell Invent the Telephone?

by Tom Xiao

1 Elisha Gray was a gifted electrical engineer. He was one of the most important inventors of his time. In 1876, he was ready to patent an amazing device. He had invented one of the very first telephones, yet Gray is unknown to most people today. Why?

2 The telegraph, invented in the 1870s, allowed written messages to be transmitted along a wire. It was popular, but many people wanted more. Inventors raced to develop a way to transmit a person's voice along a wire. By 1876, Elisha Gray had found a way. But on the very same day the patent office in Washington received word of his invention, they received a patent application for the same technology from someone else. That person's name was Alexander Graham Bell.

3 Bell was awarded the first U.S. patent for the telephone later that year. While the patent office said they had received Bell's application first, the true inventor of the telephone has been debated since.

Close Reader Habits

When you reread the passages, **underline** details about both inventors, such as who they were, the main thing they did, and why they did it.

Explore **How does integrating information from both passages help you understand Alexander Graham Bell's and Elisha Gray's work?**

Figure out the topic of the texts. What does each text add to your knowledge of it?

Think

1 Complete the chart below by using information from both passages.

Questions	Answers	
	"Bell and the Telephone"	"Did Gray or Bell Invent the Telephone?"
Who were Bell and Gray?		
What work did they do?		
Why did they do it?		

Talk

2 Compare the details you used to fill out the charts. Do the details you chose truly answer those questions? Are there more details you should add? Revise your chart if you need to.

Write

3 **Short Response** Explain who Bell and Gray were, the main thing each man did, and why they did it. Use details from both passages in your response. Use the space provided on page 358 to write your answer.

HINT The prompt shows a way to organize your response.

SATELLITE

by Roger Spandel

1 A satellite is a small body or object that revolves around a larger object in space. The Moon is Earth's satellite, and all the planets are satellites of the Sun. Moons and planets are called natural satellites.

2 Artificial satellites are human-made objects that revolve around larger, natural satellites. The first artificial satellite was *Sputnik 1*, a 185-pound capsule sent into orbit by the Soviet Union in 1957. Since that time, many satellites have been sent into space. Today there are hundreds of satellites circling Earth. They are used for research, weather study, navigation, and communication. Among these is the largest—the *International Space Station*, where astronauts work and research in space.

Communication Satellites

by Dirk Costa

1 How do communication satellites work?

2 A cell phone uses cell towers to send and receive signals. However, in rural areas and over the oceans, it is not possible to erect cell phone towers. The solution is simple: use a satellite phone, which can cover vast distances.

3 So how does it work? A satellite phone sends a signal up to a satellite, and the signal is then sent down to a ground station. This station sends the call to the cell phone or landline. If someone wants to call a satellite phone, the reverse works, too. The call from the landline or cell phone first goes to the ground station. Then it travels up to the satellite, and then down to the satellite phone.

Close Reader Habits

What do satellites do? Reread each text, and **underline** details that tell what satellites do.

Genre: Science Article

How Satellites Track Cell Phones

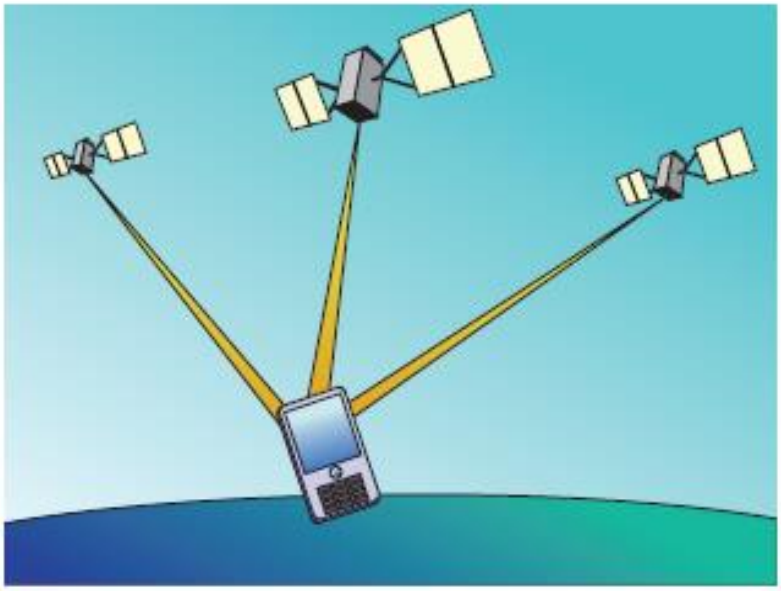
by Jane Woo

1 You might have seen television shows where the police located a missing person by locating his or her cell phone. Communication satellites make this possible if the phone has a Global Positioning System (GPS) chip inside the phone.

2 Some 22,000 miles high above us, the United States operates twenty-four communication satellites that orbit Earth. The satellites circle Earth every twelve hours. They are positioned so that five satellites can be seen from any point on Earth at any time of the day.

3 These satellites transmit radio signals down to Earth. Each satellite measures the time it takes for a signal from a chip to reach the satellite (less than one-tenth of a second). Then it multiplies the time by how fast a radio wave moves—some 186,000 miles (300,000 kilometers) a second. The result is the distance between the GPS chip and the satellite.

4 To determine an accurate location of a cell phone, the GPS must use at least three satellites. Four satellites make the data even more accurate. If all this sounds unbelievable, imagine this: GPS can pinpoint a location within 35 feet!



Close Reader Habits

How do satellites help us? Reread all three texts, and **circle** information that tells how satellites help people.

Think Use what you learned from reading the passages to answer the following questions.

1 This question has two parts. Answer Part A. Then answer Part B.

Part A

Which idea is in both "Communication Satellites" and "How Satellites Track Cell Phones"?

- **A** Satellites orbit the Earth every 12 hours.
- **B** In rural areas, it is not always possible to build cell towers.
- **C** Some cell phones have a Global Positioning System.
- **D** Phones can use satellites to send and receive data.

Part B

Choose **one** sentence from "Communication Satellites" and **one** sentence from "How Satellites Track Cell Phones" that support the answer to Part A. Write each sentence in the appropriate "Supporting Detail" box below.

Supporting Detail from "Communication Satellites"	Supporting Detail from "How Satellites Track Cell Phones"

2 Based on information found in both "Satellite" and "Communication Satellites," which idea is **true**?

- **A** The first satellite was put in orbit around Earth in 1957.
- **B** A cell phone relies on cell towers.
- **C** There are special satellites that are used for communication.
- **D** Satellite phones allow communication over long distances.

3 Satellites help us to communicate with each other. Choose **one** detail from "Satellite" and **one** detail from "How Satellites Track Cell Phones" that **best** support this idea.

- **A** ". . . object that revolves around a larger object. . . . " ("Satellite")
- **B** ". . . used for research, weather, study, navigation, and communication." ("Satellite")
- **C** ". . . astronauts work and research in space." ("Satellite")
- **D** ". . . satellites transmit radio signals down to Earth." ("How Satellites Track Cell Phones")
- **E** ". . . less than one-tenth of a second. . . ." ("How Satellites Track Cell Phones")
- **F** ". . . GPS can pinpoint a location within 35 feet." ("How Satellites Track Cell Phones")

Science texts often cover topics that are very broad. Authors can choose to focus on one part of the topic to make the text more useful to the reader.

Talk

4 How do satellites help us? Consider the information you read in all three sources. Use the chart on page 359 to organize information from each source to answer the question.

HINT Think about what satellites do, then think about how that can help us.

Write

5 **Short Response** Using information from all three sources, explain how satellites help us. Use the space provided on page 359 to write your answer.

Write Use the space below to write your answer to the question on page 353.

BELL AND THE TELEPHONE

Did Gray or Bell Invent the Telephone?

3 **Short Response** Explain who Bell and Gray were, the main thing each man did, and why they did it. Use details from both passages in your response.

HINT The prompt shows a way to organize your response.

Don't forget to check your writing.

Check Your Writing

- ☐ Did you read the prompt carefully?
- ☐ Did you put the prompt in your own words?
- ☐ Did you use the best evidence from the text to support your ideas?
- ☐ Are your ideas clearly organized?
- ☐ Did you write in clear and complete sentences?
- ☐ Did you check your spelling and punctuation?

SATELLITE

Communication Satellites

How Satellites Track Cell Phones

4 **Use the chart below to organize your ideas.**

Question	Answers		
	"Satellite"	"Communication Satellites"	"How Satellites Track Cell Phones"
How do satellites help us?			

Write **Use the space below to write your answer to the question on page 357.**

5 **Short Response** Using information from all three sources, explain how satellites help us.

Read

Genre: History Article

WORDS TO KNOW
As you read, look inside, around, and beyond this word to figure out what it means.
• **access**

A Brief History of the Internet

by Amanda Eggers

1 The Internet is something we take for granted. For many people, surfing the net is as much a part of everyday life as eating breakfast or going shopping. But what is the Internet, exactly, and how long has it been around? The answers may surprise you.

2 During the 1960s, the United States military wanted a new way to share information. They wanted a network that would keep working even if other systems failed. Computers had been around for a number of years, but they were not linked together in any way, so researchers began to try out different ways to get computers to "talk" to each other. In October 1969, a system called ARPANET was launched. Only a few people had access to ARPANET because the network included only four universities. This network would not have a big impact on the lives of most people for many years.

3 Throughout the next two decades, computer technology became more and more advanced. By the 1990s the Internet was no longer limited to just a few universities. It quickly expanded for use by businesses and individuals, helped by the invention of the World Wide Web. The World Wide Web (www), invented in the 1990s, provides a way for people to find information on the Internet. For the first time, information on the Web had an "address" that made it easy to find.

4 Today, the Internet contains all kinds of information, used by ordinary people every day. Email, music, photos, games, videos—all are readily available on our computers. Even though we take it for granted, the Internet has transformed the world.

Genre: Magazine Article

Get Wiki Wise

by Laura Modigliani, *Scholastic News*

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.
- **reliable**
- **trustworthy**

1 If you've ever searched for information online, you've probably come across Wikipedia. The online encyclopedia was launched in January 2001. Today, the site includes 3.5 million articles in English alone. Wikipedia is the biggest online encyclopedia.

2 It's easy to see why people like it. The site has detailed articles on just about any topic you can think of—from Iraq and the human eye to *iCarly*.

3 But even though it's popular, does that mean you can trust it?

A Group Effort

4 Wikipedia is not like other encyclopedias. The *wiki* in its name means that anyone—even you—can write or change an entry. Because experts don't check it, the information may not always be correct.

5 Wikipedia can, however, be a helpful research tool—if you know how to use it. "It's been attacked because kids often go to Wikipedia and cite that as their only source," says Tessa Jolls. She's the president of the Center for Media Literacy in Malibu, California.

6 Jolls says Wikipedia can be a great starting point for finding more reliable sources of information. Wikipedia articles often have links to other sources.

What's Reliable?

7 The trouble is that a lot of people think any site is completely trustworthy. According to a recent Scholastic poll, 47 percent of kids ages 9 to 11 believe the information they find online is always correct. Many kids don't realize that lots of sites are only trying to sell something or contain only people's opinions. In fact, many sites aren't even written by experts.

8 The Internet is like a huge library. Type "Haiti" into Google or another search engine, and you'll get millions of results. The Wikipedia page often pops up first, but that just means it's popular, not that it's the most reliable site. Scroll down the results page and you'll find a link to the CIA World Factbook. That site is more trustworthy because it's run by a U.S. government agency. Also, look for websites that end in *.edu* or *.gov*. These sites are written by experts and usually contain reliable information.

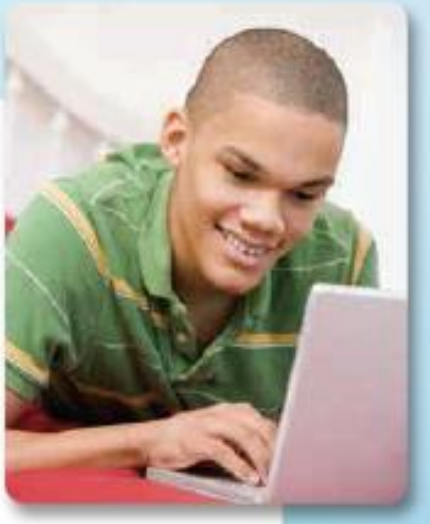
9 "You have to learn how to make judgments about the information," says Jolls. "Learn to be a questioner."

Genre: Magazine Article

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.
- **media**
- **virtual**
- **network**

Staying in Touch—All the Time

by Laurie Shinbaum, *Appleseeds*



1 Do you like being poked?

2 Most people don't—unless it's on Facebook, a popular Internet site. Facebook members can poke a friend, which is a message that loosely means, "Hey, I'm still here!"

3 Not that long ago, Facebook did not exist. Today, social networking sites like Facebook make staying in touch easier than ever.

4 You know what a network is—a set of links or ties between one place, person, or thing and another. What about social? Social means having to do with groups of people, or society. So a social network is a set of links among people. Sometimes these sites are also called "social media."

5 Social networking sites like Facebook, Twitter, Ning, and MySpace are websites that connect people on the Internet. Through them, people are able to meet, speak, and share information with each other. These sites create virtual communities for adults—and sometimes teenagers. Today, we use the word *virtual* to mean something that exists but not in actual form. For example, Facebook creates a real community, but it is not a physical community like your town.

6 Facebook is one of the most popular social networking sites. It was created on a college campus in 2004. At first, it was open only to college students. Now you can join Facebook if you are over 13. (Between 13 and 18, you must be a high school or college student.) More than 500 million people around the world have joined.

7 Twitter is another hugely successful network. On Twitter people send short messages called "tweets" to and from cell phones and computers. A tweet can be no longer than 140 characters.

8 Schools use social networking, too. In some schools, teachers use special online networks to communicate with their students. They can give quizzes, assign homework, and send reminders about upcoming classwork. The social networks are improving every day. Who knows what social networks will exist for you in the future? You might even invent one of your own.

Social Media Update

Since this article was first published in 2011, the social media landscape has shifted. Some teens have found new virtual hangouts, including the following:

Instagram Users post photos or short videos with captions, which their followers may "like" or comment on. A single post can get hundreds of responses.

Snapchat This app lets friends exchange photos or videos, and then the post disappears. But anyone can take a screenshot, so it's not really gone forever!

Tumblr On this site, users combine short messages with photos and videos to make super-short blogs.

Google+ Users can watch their circles of friends grow on this networking site. A bonus is the chance to video-chat in Google Hangouts.

Kik This app is like texting, but it allows users to socialize as they send messages to each other.

Think Use what you learned from reading the articles to answer the following questions.

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

Part A

Which idea is found in **both** "A Brief History of the Internet" and "Get Wiki Wise"?

- **A** The Internet expanded quickly in the 1990s.
- **B** The Internet has information that people can find.
- **C** Not all information on the Internet is accurate.
- **D** It is important to use Internet sites written by experts.

Part B

Choose **one** sentence from "A Brief History of the Internet" and **one** sentence from "Get Wiki Wise" that support the answer to Part A. Write **each** sentence in the appropriate "Supporting Details" box below.

Supporting Details from "A Brief History of the Internet"	Supporting Details from "Get Wiki Wise"

2 Read the following sentence from "A Brief History of the Internet."

> Even though we take it for granted, the Internet has <u>transformed</u> the world.

What does the root *form* mean in the word <u>transformed</u>?

- **A** rule
- **B** know
- **C** shape
- **D** organize

3 This question has two parts. First, answer Part A. Then answer Part B.

Part A

How does the information in "A Brief History of the Internet" help the reader understand the topic of "Staying in Touch—All the Time"?

- **A** "A Brief History of the Internet" explains how computers were eventually taught to talk to each other, which is how the social networks discussed in "Staying in Touch—All the Time" work.
- **B** "A Brief History of the Internet" explains how the Internet got started in the 1960s, and the Internet is a main topic discussed in "Staying in Touch—All the Time."
- **C** "A Brief History of the Internet" explains how videos and images are sent using the Internet, and those are popular in social networking, which is the topic of "Staying in Touch—All the Time."
- **D** "A Brief History of the Internet" explains how each website has an address that makes it easy to find, which also helps people create a social network, as described in "Staying in Touch—All the Time."

Part B

Choose **two** pieces of evidence, one from **each** article, that support the answer to Part A.

- **A** "Computers had been around for a number of years, but they were not linked together in any way, so researchers began to try out different ways to get computers to 'talk' to each other." ("A Brief History of the Internet")
- **B** "In October 1969, a system called ARPANET was launched." ("A Brief History of the Internet")
- **C** "Email, music, photos, games, videos—all are readily available on our computers." ("A Brief History of the Internet")
- **D** "Today, social networking sites like Facebook make staying in touch easier than ever." ("Staying in Touch—All the Time")
- **E** "You know what a network is—a set of links or ties between one place, person, or thing and another." ("Staying in Touch—All the Time")
- **F** "Who knows what social networks will exist for you in the future?" ("Staying in Touch—All the Time")

Write

What is the Internet, and how do people use it to find information and connect with each other? Reread all three articles. Underline key ideas about the Internet. Then complete numbers 4 and 5.

4 **Plan Your Response** What important ideas did you learn from each article? How can you put together that information to explain what the Internet is and how it can be used? Use a chart to organize your thoughts and evidence from the articles before you write.

5 **Write an Extended Response** Explain what the Internet is and how people use it to find information and connect with each other. Use evidence from each article and your chart in your response.

Learning Target

In this lesson, you practiced integrating information from several texts on the same topic. Explain how this skill will help you when you have to do research on other topics.

MP1 Make sense of problems and persevere in solving them.

Study an Example Problem and Solution

In this lesson, you will use what you know about fractions to solve real-world problems. Look at this problem and one solution.

Solar Lights

G.O. and his neighbors are taking steps to save energy and water. G.O.'s street is $1\frac{1}{2}$ miles long. They plan to install solar lights along the sidewalk. Read G.O.'s plan.

Solar Light Plan

- Install the lights at equal intervals.
- Use a fraction of the whole length to choose the interval length.
- Use a fraction greater than $\frac{1}{8}$ but less than $\frac{1}{2}$.

Choose an appropriate fraction. Find the length of the interval. Tell how many solar lights are needed and where along the street the lights should be located.

Read the sample solution on the next page. Then look at the checklist below. Find and mark parts of the solution that match the checklist.

Problem-Solving Checklist

- ☐ Tell what is known.
- ☐ Tell what the problem is asking.
- ☐ Show all your work.
- ☐ Show that the solution works.

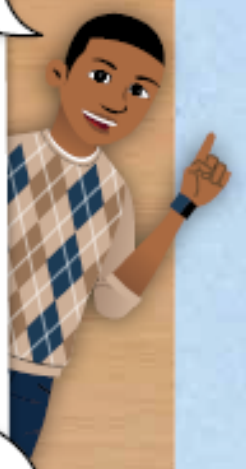
a. **Circle** something that is known.

b. **Underline** something that you need to find.

c. **Draw a box around** what you do to solve the problem.

d. **Put a checkmark** next to the part that shows the solution works.

Hi, I'm G.O. Here's how I solved this problem.



G.O.'s Solution

- **I know the length of the street.** I have to use the length and a fraction between $\frac{1}{8}$ and $\frac{1}{2}$ to find the distance between the lights.

- **I can use $\frac{1}{4}$.** The fractions $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{1}{2}$ all have the same numerator, so I can look at the denominators to compare.

  Since 4 is < 8, $\frac{1}{4} > \frac{1}{8}$.

  Since 4 is > 2, $\frac{1}{4} < \frac{1}{2}$.

"Fraction of" means multiply by a fraction.

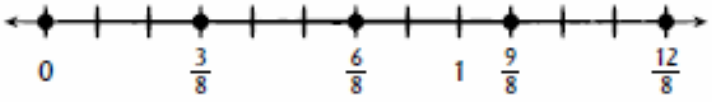
- **I know that** the distance is a fraction of the whole length, so I multiply $\frac{1}{4}$ by $1\frac{1}{2}$.

  $1\frac{1}{2} = \frac{3}{2}$ and $\frac{1}{4} \times \frac{3}{2} = \frac{3}{8}$

  The interval length is $\frac{3}{8}$ mile.

- **Now I can** make a number line to find where the lights will go and how many are needed. It represents the street, so it goes to $1\frac{1}{2}$.

I divided the number line into eighths so I can count by $\frac{3}{8}$.



- **I put a light at 0**, which is one end of the street. Then I marked each $\frac{3}{8}$ mile along the number line.

- **The number line shows** that there will be 5 lights installed at intervals of $\frac{3}{8}$ mile. The locations are at:

  0 miles, $\frac{3}{8}$ mile, $\frac{6}{8}$ mile, $\frac{9}{8}$ ($1\frac{1}{8}$ miles), and $\frac{12}{8}$ ($1\frac{1}{2}$ miles).

- There are 5 lights but only 4 intervals. Each interval is $\frac{3}{8}$ mile long and $4 \times \frac{3}{8} = \frac{12}{8}$. That's the same as $1\frac{1}{2}$ miles.

My answer makes sense because it fits the information in the problem.

Try Another Approach

There are many ways to solve problems. Think about how you might solve the Solar Lights problem in a different way.

Solar Lights

G.O. and his neighbors are taking steps to save energy and water. G.O.'s street is $1\frac{1}{2}$ miles long. They plan to install solar lights along the sidewalk. Read G.O.'s plan.

Solar Light Plan

- Install the lights at equal intervals.
- Use a fraction of the whole length to choose the interval length.
- Use a fraction greater than $\frac{1}{8}$ but less than $\frac{1}{2}$.

Choose an appropriate fraction. Find the length of the interval. Tell how many solar lights are needed and where along the street the lights should be located.

Plan It **Answer these questions to help you start thinking about a plan.**

A. What are some other fractions that you can use?

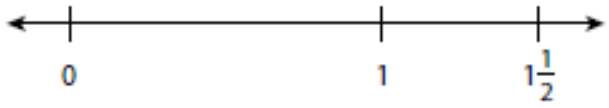
B. What can you do if you want to use more lights? Fewer lights?

Solve It Find a different solution for the Solar Lights problem. Show all your work on a separate sheet of paper.

You may want to use the problem-solving tips to get started.

Problem-Solving Tips

- **Models**



- **Word Bank**

fraction	numerator	multiply
interval	denominator	product

- **Sentence Starters**
  - I can multiply _____
  - Each interval _____

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Persevere** What is your first step? What will you do next?
- **Repeated Reasoning** How can you use what you know about the denominators of unit fractions to find an appropriate fraction?

Discuss

Models and Strategies

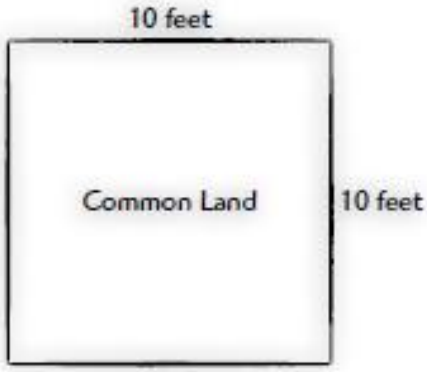
Read the problem. Write a solution on a separate sheet of paper. Remember, there can be lots of ways to solve a problem!

Plant Shrubs

The neighborhood has a small piece of common land that is now covered with grass. To save water, the neighbors will plant shrubs on part of the common area. Read G.O.'s notes.

Planting Notes

- Plant shrubs on a rectangular area a little more than half of the common land area.
- One side of the shrub section has a length greater than 8 feet and less than 9 feet.



What is the area of the part where G.O. and his neighbors will plant shrubs?

Plan It and Solve It **Find a solution to the Plant Shrubs problem.**

Find the length, width, and area of the part of the common land that will be used to plant shrubs.

- Find the area of the common land.
- Find a length and width of a rectangle that will create an area that is a little more than half the area of the common land.

Problem-Solving Tips

Questions

- What are some fractions equivalent to $\frac{1}{2}$?
- What are some fractions that are a little more than $\frac{1}{2}$?

Word Bank

area	multiply	numerator
fraction	product	denominator

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Reason Mathematically** How can you compare fractions to find a fraction a little more than $\frac{1}{2}$?
- **Use Models** What models can you use to help you visualize the problem?

Persevere

On Your Own

Read the problems. Write a solution on a separate sheet of paper. Remember, there are many different ways to solve a problem.

Water Shrubs

G.O. and his neighbors clear an area $8\frac{1}{2}$ feet by $6\frac{1}{4}$ feet to plant the shrubs. Now they have to decide how many shrubs to plant and how much water to use on the shrubs. Read G.O.'s planting instructions.

Shrub Planting Instructions

- Each shrub needs an area of about 2 square feet.
- Each shrub will need about $1\frac{1}{4}$ gallons of water a week.

How many shrubs should G.O. plant?

How much water will the shrubs need?

Solve It Help G.O. make a plan for planting shrubs.

- Tell how many shrubs G.O. should plant and why you chose this number.
- Find the amount of water this number of shrubs will need in a week.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Reason Mathematically** How did you decide the number of shrubs that G.O. should plant?
- **Make an Argument** How could you justify the number of shrubs that you suggested?

Use Compost

A local nursery hears about the shrub planting project that G.O. and his neighbors are planning. The nursery gives them 50 pounds of compost to use. G.O. reads about using compost on a website.

About how many shrubs can G.O. plant with the compost that the nursery gave him?

Solve It

Help G.O. estimate how many shrubs he can plant with the compost.

- Decide on a fraction of a pound to use as the weight of an average scoop.
- Show how to use this fraction to find the number of shrubs that can be planted. Explain.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Make Sense of Problems** How did you use each of the numbers given in the problem?
- **Persevere** Why might you try using different fractions before giving your final answer? Explain.

Extra Week

I-Ready Assignments

Read

Genre: Science Article

Read the science article. Then answer the questions that follow.

The Rain Forest —Worth Saving

by Julia Webster

1 Picture a forest with amazingly tall trees, brilliantly colored flowers, and twisting vines. Then add unusual butterflies, birds, and animals to the picture. The forest you imagine is a tropical rain forest. Tropical rain forests are the places that have the greatest biodiversity[1] in the world. They cover less than 6 percent of the world's land area, yet they contain more than half of the world's plant and animal species.

2 Today, rain forests are in danger of disappearing. Loggers and ranchers cut down valuable trees, and large companies cut down forests to make space for coffee and banana plantations. Poachers[2] capture rare rain forest animals and sell the animals for great profits. And miners clear large, open pits to dig for gold, oil, and iron. The mining process causes pollution of rivers and other water supplies.

3 It is critical that we save the rain forests. Trees and plants of the rain forests release gases that provide much of the world's oxygen supply. Also, the world's climate is affected by rain forests. When trees are cut down, the remaining parts release carbon dioxide into the air, causing global warming.

[1] **Biodiversity:** many different kinds of plants and animals in an environment

[2] **Poachers:** people who kill or steal wild animals

4 Many products come from the rain forest. Various medicines used worldwide have been developed from rain forest plants. Rubber, bamboo, and many spices come from rain forest plants. Are you a chocolate or vanilla fan? Both of these flavors come from the rain forest.

5 Efforts are being made to preserve our rain forests. Some have been selected to be national parks where logging and mining aren't allowed. Farmers and ranchers are learning methods that don't harm the soil and cause pollution. Tourists are encouraged to visit and learn about rain forests. Once they experience the beauty and value of the rain forest, many tourists volunteer to help. We all depend on rain forests, so they are certainly worth saving.

Think

1 This question has two parts. First, answer Part A, then answer Part B.

Part A

Why does the author make the point that "It is critical that we save the rain forests"?

- **A** Rain forests are filled with tall trees, beautiful flowers, and rare animals.
- **B** Companies are destroying rain forests for logging, farming, and mining.
- **C** Destroying rain forests would be harmful for the rest of the world.
- **D** Many kinds of plants and animals can be found only in the rain forest.

Part B

Which detail from the article provides evidence for the answer in Part A?

- **A** "Tropical rain forests are the places that have the greatest biodiversity in the world."
- **B** "The mining process causes pollution of rivers and other water supplies."
- **C** "Poachers capture rare rain forest animals and sell the animals for great profits."
- **D** "When trees are cut down, the remaining parts release carbon dioxide into the air, causing global warming."

2 Explain how the author of "The Rain Forest—Worth Saving" supports the following point: "Today, rain forests are in danger of disappearing." Include at least **one** sentence from the text that provides a reason the author holds this point of view.

3 This question has two parts. First, answer Part A. Then answer Part B.

Part A

Choose the statement that best describes a conclusion that can be drawn about the author's line of reasoning in paragraph 5.

- **A** When people learn about the rain forest, they often decide to protect it.
- **B** People are working to protect rain forests, but it is too late to save them.
- **C** Only people who do not profit from harming rain forests want to save them.
- **D** The best way to save the rain forests is to turn them into national parks.

Part B

Underline the sentence from the text that **best** supports your answer in Part A.

Efforts are being made to preserve our rain forests. Some have been selected to be national parks where logging and mining aren't allowed. Farmers and ranchers are learning methods that don't harm the soil and cause pollution. Tourists are encouraged to visit and learn about rain forests. Once they experience the beauty and value of the rain forest, many tourists volunteer to help. We all depend on rain forests, so they are certainly worth saving.

Read

Genre: Science Article

Read the science article. Then answer the questions that follow.

Animals of the Rain Forest

by Shawn Parcell

1 Most animals that live in the emergent layer of the rain forest can jump, fly, or glide. One example is the pygmy glider. This squirrel-like animal has a flap of skin that extends between its front and back legs. When its legs are stretched out, the pygmy glider can swoop from treetop to treetop in search of insects to eat.

2 About half of the world's species of animals inhabit the canopy layer. One species includes the extremely slow-moving sloth. Sloths hang upside down in trees and rarely leave the canopy layer. Some don't come down for decades! Although scientists estimate that fifty percent of the world's species of animals currently live in this layer, they also suspect that as rain forests have been cleared for farming and development, some species may have become extinct before they were even discovered.

3 The poison dart frog is a surprising inhabitant of the understory layer. Unlike most understory inhabitants, this thumbnail-size frog doesn't depend on camouflage for protection. Its brilliant colors warn predators to stay away. These tiny frogs possess a powerful poison. An amount smaller than a grain of salt can kill a person!

4 The largest and the smallest animals of the rain forest live on the forest floor. Elephants, tigers, and jaguars live there along with millions of tiny insects. Some insects, such as beetles, keep the forest floor clean by eating decayed matter. Army ants also live on the floor. Colonies of up to 700,000 army ants roam the forest floor in search of food. They will attack and kill anything that moves. Army ants can eat a horse in only a few hours!

Emergent Layer
- Few trees, some as tall as 200 feet
- Most trees are hardwood broadleaved evergreens
- Trees get much sunlight; also high heat and strong winds

Canopy Layer
- Trees can be between 50 and 130 feet tall
- Branches spread out and form a canopy, or roof, over the lower layers
- Gets much sunlight and rainfall
- About 90% of the plants and animals live in this layer

Understory Layer
- Up to 60-foot trees, vines, and shrubs packed in tightly
- Receives little sunlight
- Tangle of plants provides great camouflage for animals living there

Forest Floor
- Moss, ferns, and a few types of plants live here
- Little to no sunlight gets through; shaded, unless a large tree falls and opens a gap in the canopy
- Branches, leaves, seeds, and fruits decay on the forest floor

Think

4 This question has two parts. First, answer Part A. Then answer Part B.

Part A

Which of the following topics could you write a report about based on information in both "The Rain Forest—Worth Saving" and "Animals of the Rain Forest"?

- **A** common products that come from rain forests
- **B** dangerous animals that live in the rain forest
- **C** how tall some trees grow in the rain forest
- **D** harmful effects of disappearing rain forests

Part B

What information would **best** help you develop the topic you chose in Part A? Identify **one** section from "The Rain Forest—Worth Saving" and **one** section from "Animals of the Rain Forest."

- **A** paragraph 3 of "The Rain Forest—Worth Saving"
- **B** paragraph 4 of "The Rain Forest—Worth Saving"
- **C** paragraph 2 of "Animals of the Rain Forest"
- **D** paragraph 3 of "Animals of the Rain Forest"
- **E** the diagram from "Animals of the Rain Forest"

5 This question has two parts. First, answer Part A. Then answer Part B.

Part A

Which idea is found in both the article "Animals of the Rain Forest" and the diagram?

A More animals and plants of the rain forest live in the canopy than in any other layer.

B The forest floor is mostly shaded unless a large tree falls and opens a gap in the canopy.

C Species of the canopy layer may have already become extinct before they were discovered.

D The largest and the smallest of the rain forest animals live on the forest floor.

Part B

Choose **one** detail from the article and **one** detail from the sidebar that support the answer to Part A. Write each of the details into the box labeled "Supporting Details."

Details from Article	Details from Diagram
Most animals that live in the emergent layer of the rain forest can jump, fly, or glide. About half of the world's species of animals inhabit the canopy layer. As rain forests have been cleared for farming and development, some species may have become extinct before they were even discovered. The largest and the smallest animals of the rain forest live on the forest floor.	Emergent Layer: Most trees are hardwood broadleaved evergreens Canopy Layer: About 90% of the plants and animals live in this layer Understory Layer: Tangle of plants provides great camouflage for animals living there Forest Floor: Moss, ferns, and a few types of plants live here

Supporting Detail from Article	Supporting Detail from Diagram

Read

Genre: Science Article

Read the science article. Then answer the questions that follow.

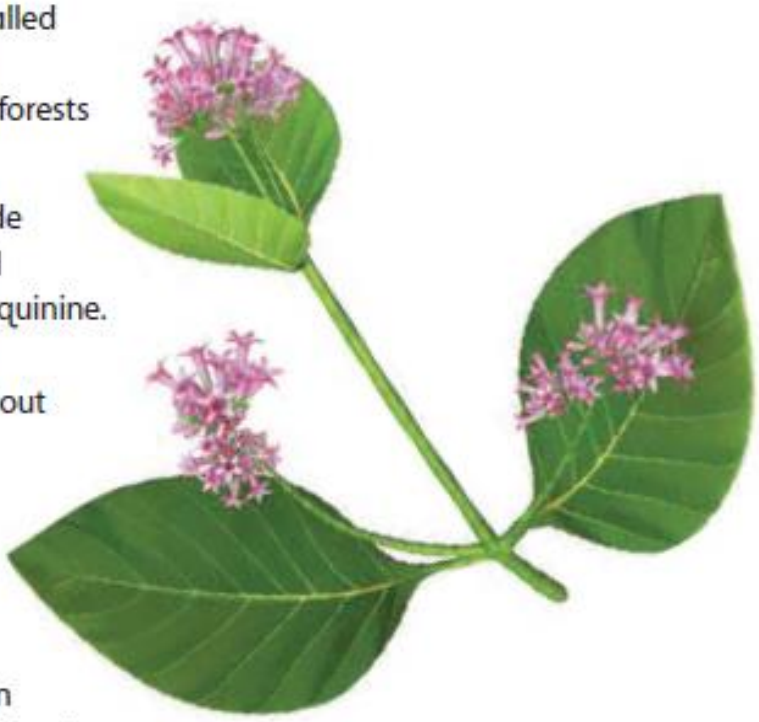
Medicinal Plants of the Rain Forest

by Lea Rossi

1 People who live in rain forests have used their trees and plants to treat illnesses for thousands of years. Yet, modern-day scientists have only recently begun to discover the benefits of these plants. The rain forest has been called "Nature's Medicine Cabinet." About 7,000 medicines come from plants found in rain forests around the world.

2 These medicines are used to treat a wide variety of conditions, from toothaches and colds to cancer and AIDS. One example is quinine. This chemical comes from the bark of the cinchona tree that grows to a height of about 65 feet. Quinine is used to treat malaria.

3 Another example is a fast-acting poison called curare [kyoo RAHR ee]. It comes from a vine that climbs trees from the floor of the rain forest to the canopy. Native people use curare to poison the tips of darts and arrows. Surprisingly, scientists discovered that curare could also be used to save lives. They discovered that it could be used to relax patients' muscles during surgery.



Cinchona blossoms

Cocoa tree

4 About 150 different chemicals come from the cocoa tree. These trees thrive in the understory layer of the rain forest. Chemicals from this tree are used in medicines that treat fevers, coughs, and cuts.

5 More than two-thirds of all cancer-fighting medicines come from rain forests. Cat's claw is one example of a cancer-fighting plant. It is a vine that grows in the canopy layer of the rain forest.

6 Scientists have only just begun to tap the resources of rain forest plants. Today, less than one percent of plants found in rain forests have been tested to discover medicinal benefits. As rain forests are cleared for farming, ranching, and logging, scientists estimate that about 137 plants and animals become extinct every day. As rain forests disappear, so do the possibilities of finding cures and life-saving drugs.

Think

6 How does the diagram on page 373 help the reader better understand "Medicinal Plants of the Rain Forest"?

- **A** It helps the reader visualize how plants and animals could be destroyed in the rain forest.
- **B** It helps the reader visualize how and why different plants can help people.
- **C** It helps the reader understand where different plants grow and thrive.
- **D** It helps the reader understand why different plants can sometimes help people.

7 **Short Response** Write a paragraph about poisons based on what you read in "Medicinal Plants of the Rain Forest" and "Animals of the Rain Forest." Use at least **one** detail from **each** passage in your response.

8 This question has two parts. First, answer Part A. Then answer Part B.

Part A

Which main idea in "Medicinal Plants of the Rain Forest" is **best** supported by information in "The Rain Forest—Worth Saving"?

- **A** Native people made poison arrows from rain forest plants.
- **B** Rain forest plants can provide treatments for AIDS and cancer.
- **C** Medicines we use today come from rain forest plants.
- **D** Scientists have already tested most rain forest plants.

Part B

Complete the chart below by writing **one** sentence from "Medicinal Plants of the Rain Forest" that states the main idea in Part A, and **one** sentence from "The Rain Forest—Worth Saving" that supports that main idea.

Main idea statement from "Medicinal Plants of the Rain Forest"	Supporting Detail from "The Rain Forest—Worth Saving"

Write

9 **Extended Response** Imagine you are a tour guide in a protected rain forest. Write a presentation for visitors in which you explain why it is important to save the rain forests. Use details from all three passages and the diagram to tell about the value of the rain forests.

In your answer, be sure to

- explain the reasons rain forests are unique and important
- describe what kinds of plants and animals are found in the rain forests
- tell how rain forests contribute to the field of medicine
- use details from all three passages and the diagram in your answer

Check your writing for correct spelling, grammar, capitalization, and punctuation.

Evaluate and Write Expressions

Use What You Know

You know about the order of operations. Now you will see how using parentheses in an expression can change the value of the expression. Take a look at this problem.

Maria and her friend go to a movie. At the snack stand, they each get a drink that costs $5 and a popcorn that costs $8. Maria pays for her friend. How much does Maria pay altogether?

a. What operation do you use to find the cost of a drink and a popcorn for one person?

_____

b. Write an expression for the cost of a drink and popcorn for one person. _____

c. How does the cost for two people compare to the cost for one person?

_____

d. Explain how you can find the cost for two people. What do you need to do first?

_____

_____

e. How much does Maria pay for a drink and popcorn for two people? _____

f. Maria thought she could use the equation $2 \times 5 + 8 = 18$ to find the cost. Explain why she is not correct.

_____

_____

Find Out More

To **evaluate** an expression means to find its value. To evaluate the expression $2 \times 5 + 8$, you first multiply 2×5, then add 8. But what if you wanted to add 5 and 8 and then multiply by 2? You could use **parentheses** in the expression to tell which operation to do first.

Parentheses are a type of grouping symbol. Grouping symbols tell which operation to do first. Fraction bars are another type of grouping symbol.

Parentheses	$2 \times (5 + 8)$	First, add $5 + 8$ because it is inside the parentheses. Then multiply by 2.
Fraction Bar	$\frac{2 + 8}{11 - 6}$	The fraction bar groups the numerator separately from the denominator. First evaluate the numerator and the denominator. Then divide.

Look at the problem on the previous page. Maria wants to first find the cost of a drink and popcorn for 1 person, then double it to find the cost for 2 people. Maria could write the expression $2 \times (5 + 8)$ or $(5 + 8) \times 2$.

One way to read $2 \times (5 + 8)$ is "2 times the sum of 5 and 8." Another way is "twice the sum of 5 and 8." You can also think of $2 \times (5 + 8)$ as "adding 5 and 8, then multiplying by 2."

Adding parentheses into an expression can change its value. The expressions $2 \times 5 + 8$ and $2 \times (5 + 8)$ do not have the same value.

$2 \times 5 + 8$
$10 + 8$
18

$2 \times (5 + 8)$
2×13
26

Reflect

1 What should you look for to indicate a group? How do you evaluate an expression if you see a grouping symbol?

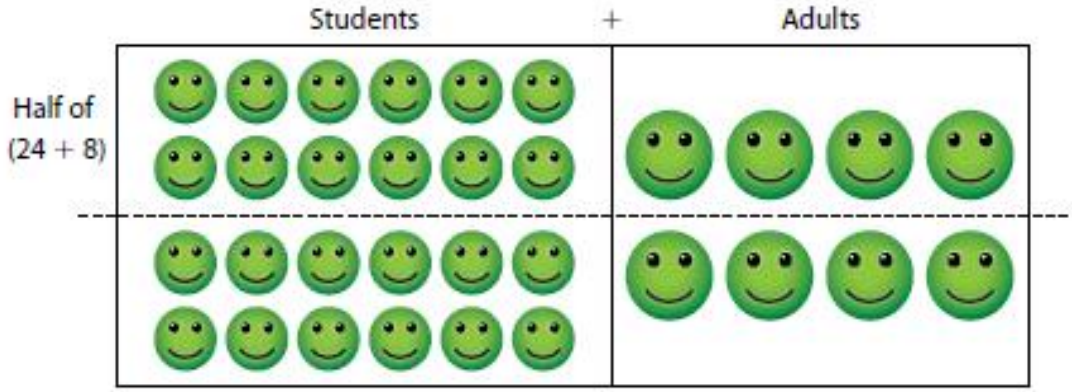
Learn About

Evaluating Expressions

Read the problem below. Then explore how to evaluate expressions that use grouping symbols.

There were 24 students on a field trip to the aquarium. There were also 8 adults on the trip. The expression $0.50 \times (24 + 8)$ represents the cost in dollars to buy everyone a 50-cent souvenir eraser. What is the total cost of the erasers?

Picture It You can use a picture to help understand the problem.



Model It You can use words to help understand the problem.

0.50	$\times$	$(24 + 8)$
↑	↑	↑
Half	of	the sum of the number of students and the number of adults

Connect It Now you will solve the problem from the previous page using the picture and words.

2 Describe one way you could read the expression $0.50 \times (24 + 8)$.

3 How could you use *Picture It* on the previous page to evaluate $0.50 \times (24 + 8)$?

4 Evaluate $0.50 \times (24 + 8)$ to find the cost in dollars of the erasers. _____

5 Morgan sees a different way to evaluate $0.50 \times (24 + 8)$. She finds half of 24 and half of 8, and then adds those numbers together. Why does her method work?

6 The expression $3 \times$ (number of students + number of adults) represents the cost in dollars for another group to go to the dolphin show at the aquarium. Describe how the cost compares to the total number of students and adults.

Try It Use what you just learned about evaluating expressions to solve these problems. Show your work on a separate sheet of paper.

7 Describe what happens when you multiply a sum by 2.

8 Sara buys a shirt that regularly costs $12 and a pair of pants that regularly costs $26. They are on sale, so she only needs to pay half the regular cost. Evaluate the expression $\frac{1}{2} \times (12 + 26)$ to find Sara's cost in dollars. _____

Learn About

Writing Expressions

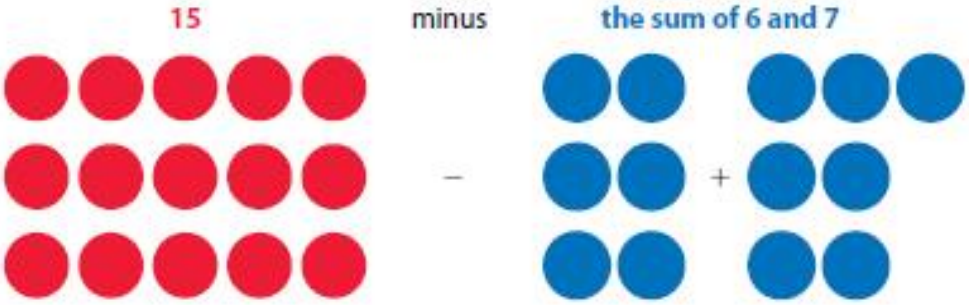
Read the problem below. Then explore how to write numerical expressions.

Write a numerical expression to represent the following phrase.

15 minus the sum of 6 and 7

Picture It

You can use a picture to help understand the problem.



Model It

You can think about what the words mean to help understand the problem.

15 — minus (↓ Minus means to subtract.) — the sum of 6 and 7 (↓ A sum is the result of addition. So add 6 and 7.)

Connect It Now you will solve the problem from the previous page using the picture and words.

9 In the expression "15 minus the sum of 6 and 7," do you add or subtract first? Why?

10 When you write a numerical expression, how can you show what operation to do first?

11 Write a numerical expression for "15 minus the sum of 6 and 7."

12 Harper wrote the expression $15 - 6 + 7$ to represent "15 minus the sum of 6 and 7." Evaluate $15 - 6 + 7$ and then explain why Harper's expression is incorrect.

13 Omar wrote $3 + (4 \times 6)$ to represent the phrase "3 more than the product of 4 and 6." Did Omar need to use a grouping symbol? Explain.

Try It Use what you just learned about writing numerical expressions to solve these problems. Show your work on a separate sheet of paper.

14 Write a numerical expression to represent "2 times the difference of 8 and 1." Then evaluate your expression.

15 Write a numerical expression to represent "15 divided by the sum of 1 and 4." Then evaluate your expression.

Practice Writing and Evaluating Expressions

Study the example below. Then solve problems 16–18.

Example

Insert parentheses to make the following equation true.

$15 - 7 - 2 = 10$

Look at how you could show your work.

$(15 - 7) - 2 = 8 - 2 = 6$

$6 \neq 10$

$15 - (7 - 2) = 15 - 5 = 10$

$10 = 10$

Solution $15 - (7 - 2) = 10$

The student used trial and error to answer the question.

Pair/Share

How many different ways can you group the numbers?

16 Carol sells bracelets and pairs of earrings at a craft fair. Each item sells for $8. Write and evaluate an expression to show how much money Carol will make if she sells 23 bracelets and 17 pairs of earrings.

Show your work.

How many items will Carol sell altogether?

Pair/Share

What other ways could you solve the problem?

Solution _____

17 Write numerical expressions for "the product of 3 and 2, plus 5" and "3 times the sum of 2 and 5." Which expression has a greater value?

Show your work.

The comma is a clue to where to put the grouping symbol. In this case, group the math that comes before the comma.

Pair/Share
When do you use parentheses in an expression?

Solution _____

18 Which expression represents "the quotient of 10 and 2, plus 3"? Circle the letter of the correct answer.

What does the word "quotient" mean?

A $10 \div (2 + 3)$

B $\frac{10}{2 + 3}$

C $(10 \times 2) + 3$

D $\frac{10}{2} + 3$

Jason chose **A** as the correct answer. How did he get that answer?

_____

_____

_____

_____

_____

_____

Pair/Share
Is Jason's answer reasonable?

Practice Writing and Evaluating Expressions

Solve the problems.

1 Kris ran 3 miles each day for 7 days in a row. One day, she ran an extra $\frac{1}{2}$ mile. Which expression represents how many miles Kris ran altogether?

A $3 + 7 + \frac{1}{2}$

B $3 \times 7 + \frac{1}{2}$

C $3 \times 7 + 3\frac{1}{2}$

D $\left(3 + \frac{1}{2}\right) \times 7$

2 Which expression does NOT represent the statement "divide the difference of 20 and 8 by the sum of 1 and 3"?

A $\frac{20 - 8}{1 + 3}$

B $(20 - 8) \div (1 + 3)$

C $\frac{20}{1 + 3} - \frac{8}{1 + 3}$

D $(20 - 8) \div 1 + 3$

3 Which expression has a value of 8? Circle the letter for all that apply.

A $3 \times 8 \div 4 + 2$

B $3 \times (8 \div 4) + 2$

C $(3 \times 8) \div (4 + 2)$

D $(3 \times 8) \div 4 + 2$

E $3 \times 8 \div (4 + 2)$

4 Adam is 2 years old. His sister Lina is 1 year less than three times his age. Write a numerical expression for Lina's age. _____

5 Several expressions are shown below. Decide if the value of the expression is less than, equal to, or greater than 18. Write each expression in the correct category in the chart.

$\frac{1}{5} \times (9 \times 2)$ $(9 \times 2) \times (4 - 3)$ $(9 \times 2) \div 3$ $22 - (9 \times 2)$

$(9 \times 2) + 7$ $4 \times \frac{1}{4} \times (9 \times 2)$ $1 \times (9 \times 2)$ $3 \times (9 \times 2)$

Less than 18	Equal to 18	Greater than 18

6 Compare the expressions $8 \times 3 + 4$ and $8 \times (3 + 4)$. Explain how to evaluate each expression. Then tell which expression has the greater value.

Show your work.

Self Check **Go back and see what you can check off on the Self Check on page 183.**