6th Grade Packet

Used All Week:

- ELA: Finish this Comic: Complete a Comic a day
- Math: Ratio Unit Focused Lessons & Notes Template
- SS: Life in Egypt
- Science: Instructions for Close Reading

	ELA	Math	Social Studies	Science
Day 1	**Reading Passage:** Predicting the Future	**Concept Review:** Ratio Unit Focused Lesson **Practice & Activities:** Ratio Focus	**Review**: Life in Ancient Egypt Reading Review *This activity is for 5 days	Instructions for Close Reading Close Reading: The Center of our Solar System
Day 2	**Reading Passage:** The Stolen Kitten	**Concept Review:** Ratio Unit Focused Lesson **Practice & Activities:** Ratio Focus	**Review**: Life in Ancient Egypt Reading Review	Instructions for Close Reading Close Reading: Why do volcanoes erupt?
Day 3	**Reading Passage:** White Out	**Concept Review:** Ratio Unit Focused Lesson **Practice & Activities:** Ratio Focus	**Review**: Life in Ancient Egypt Reading Review	Instructions for Close Reading Close Reading: Plate Tectonics
Day 4	**Reading Passage:** The Mountain	**Concept Review:** Ratio Unit Focused Lesson **Practice & Activities:** Ratio Focus	**Review**: Life in Ancient Egypt Reading Review	Instructions for Close Reading Close Reading: Transfer of Thermal Energy
Day 5	**Reading Passage:** The Venus Flytrap	**Concept Review:** Ratio Unit Focused Lesson **Practice & Activities:** Ratio Focus	**Review**: Life in Ancient Egypt Reading Review	Instructions for Close Reading Close Reading: Interaction of Organisms

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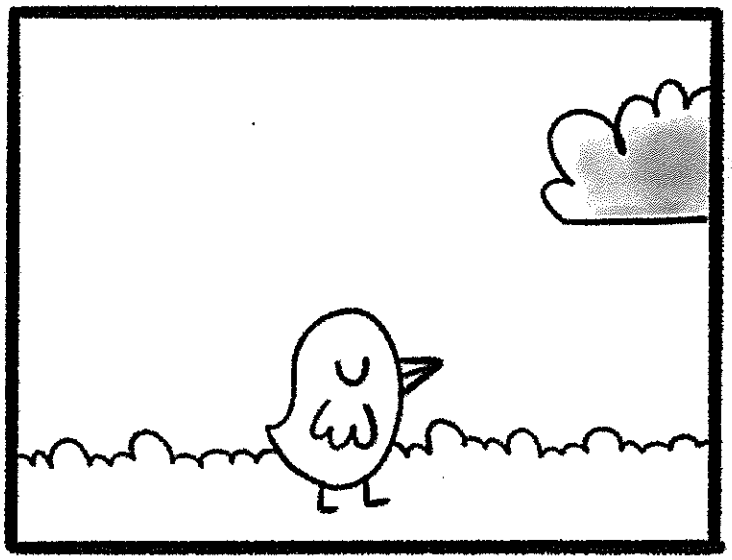

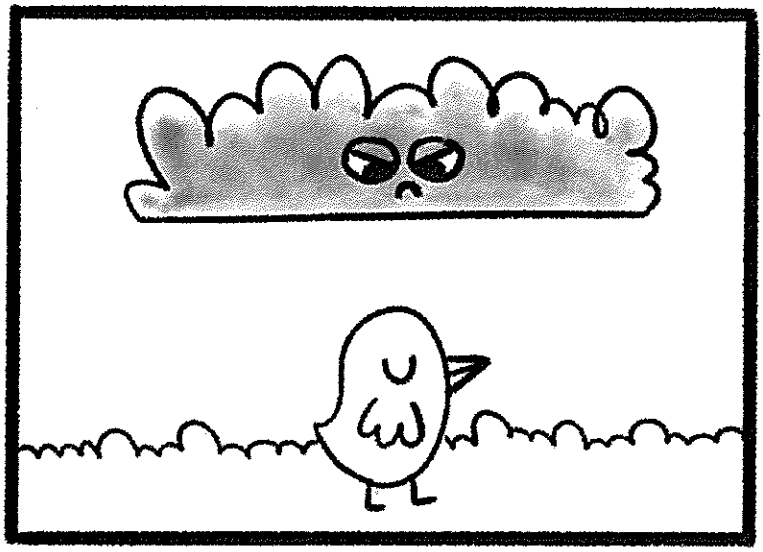

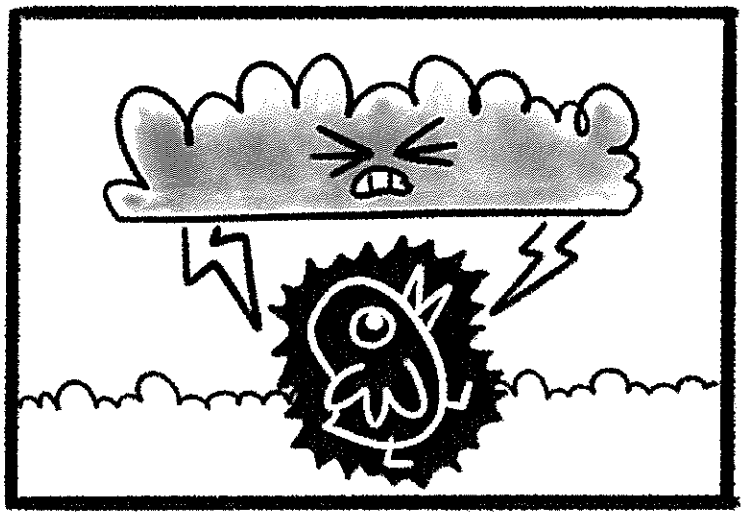

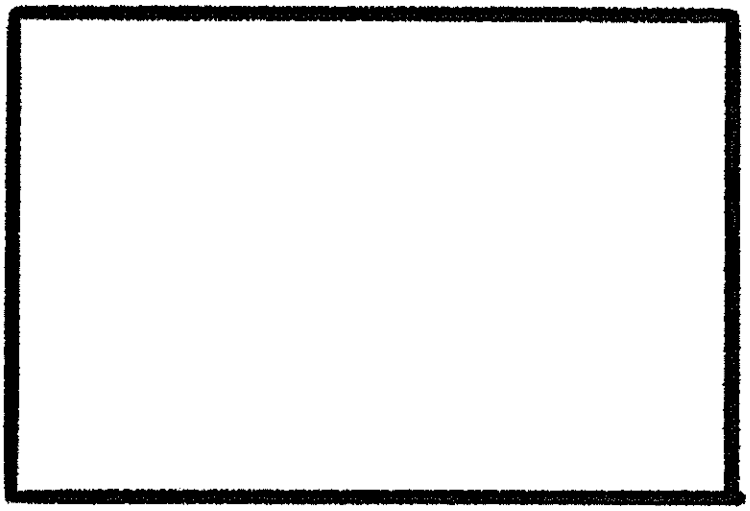

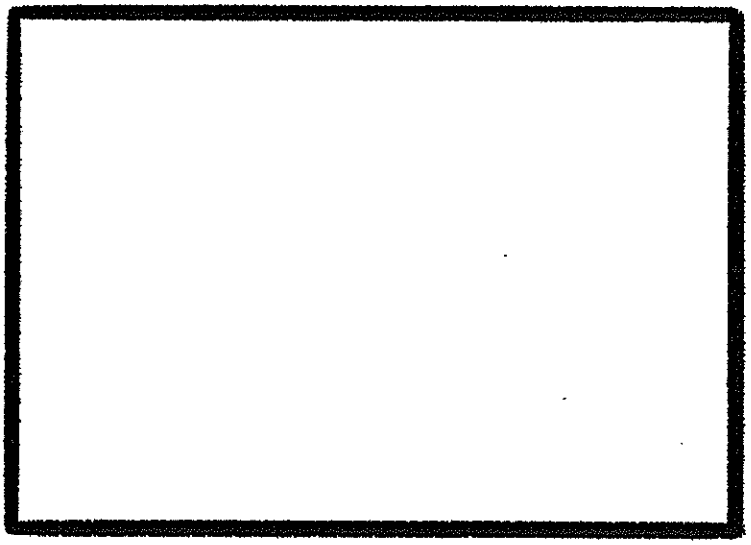

JARRETT

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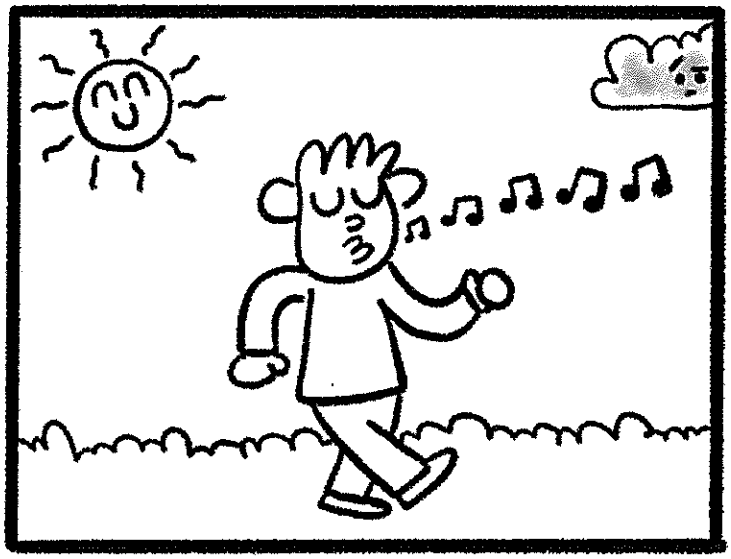
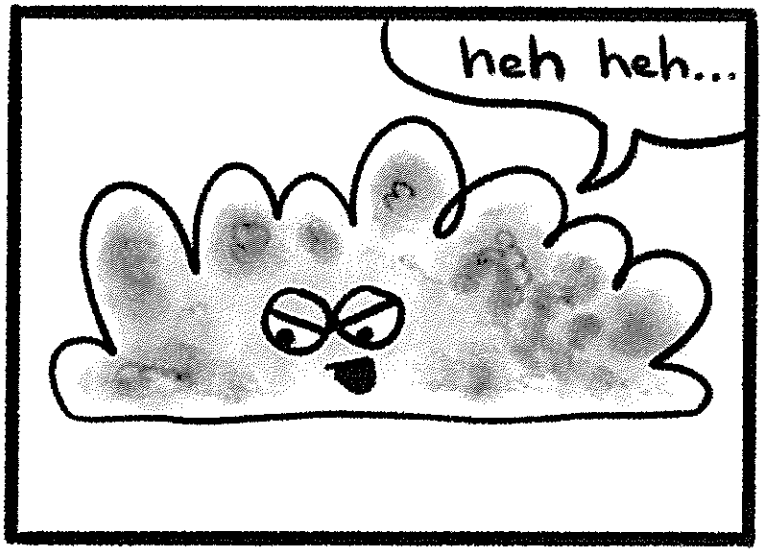
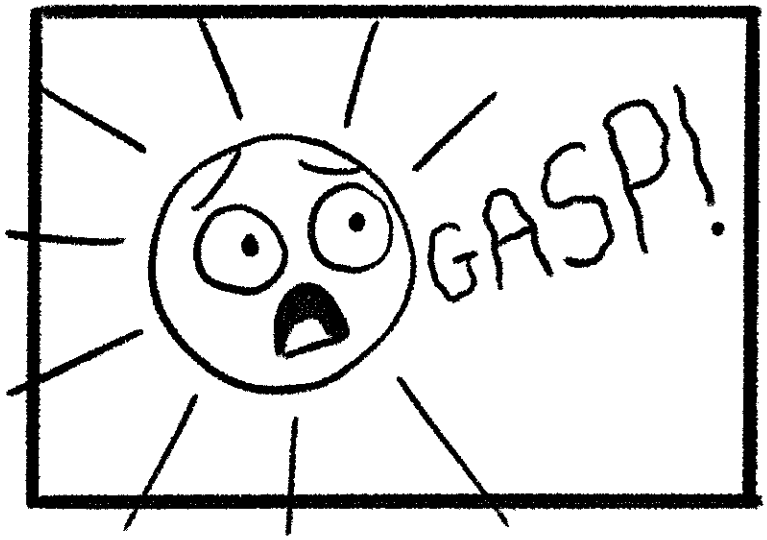
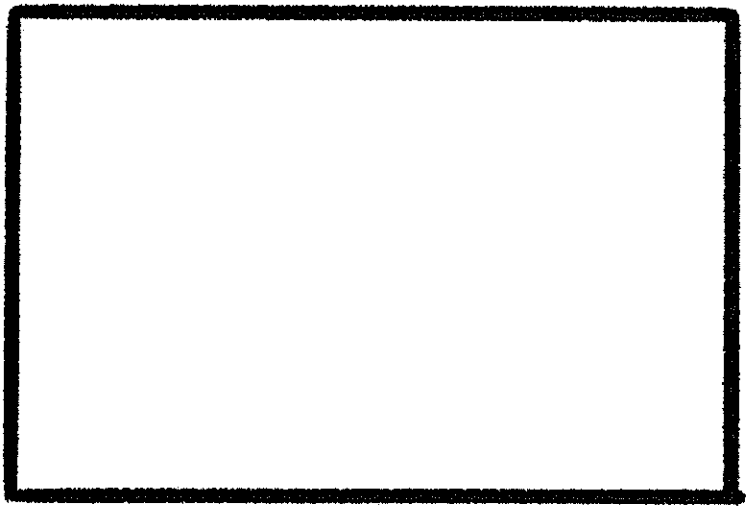
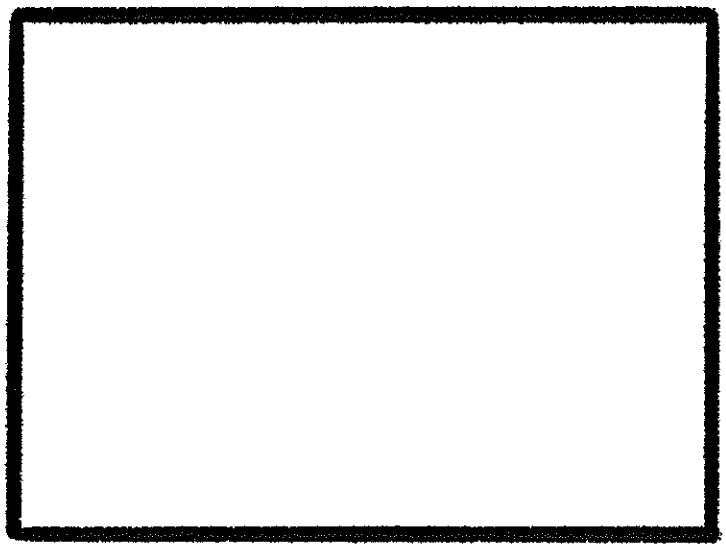
FINISH THIS COMIC!

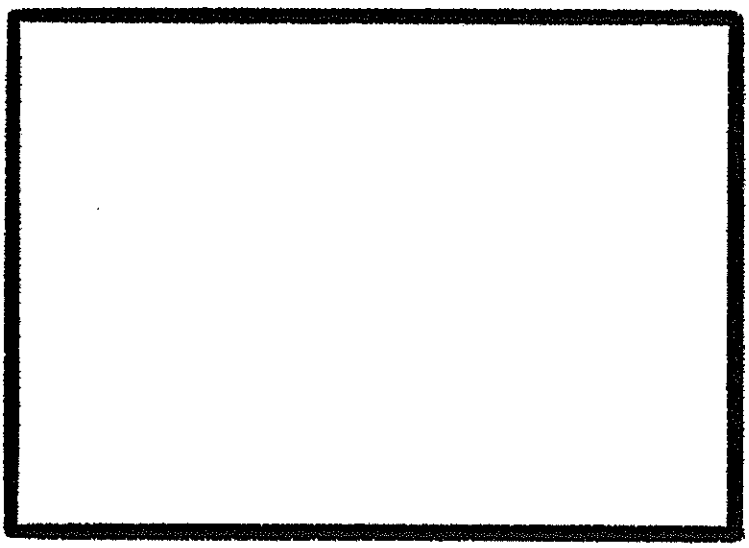












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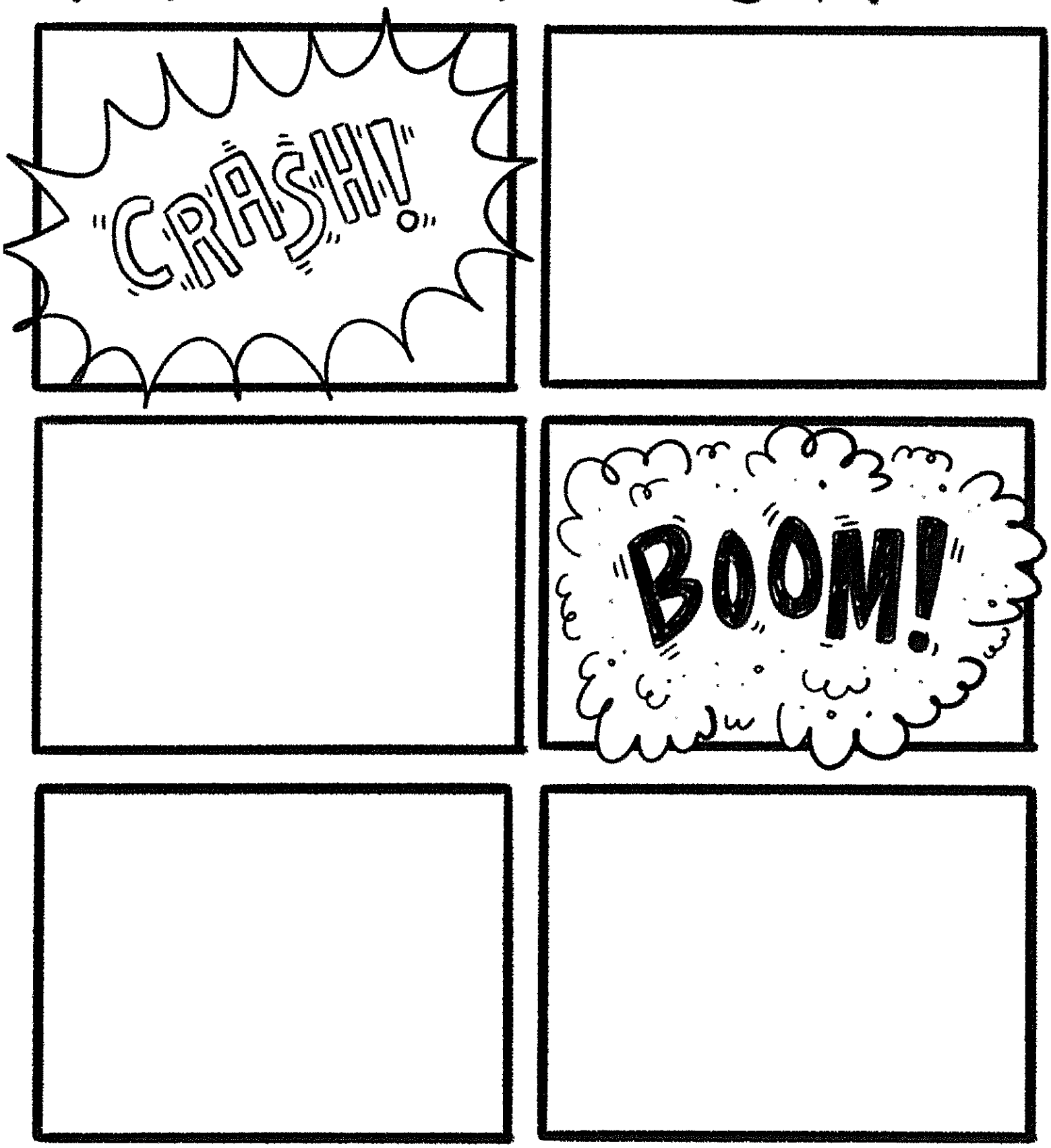

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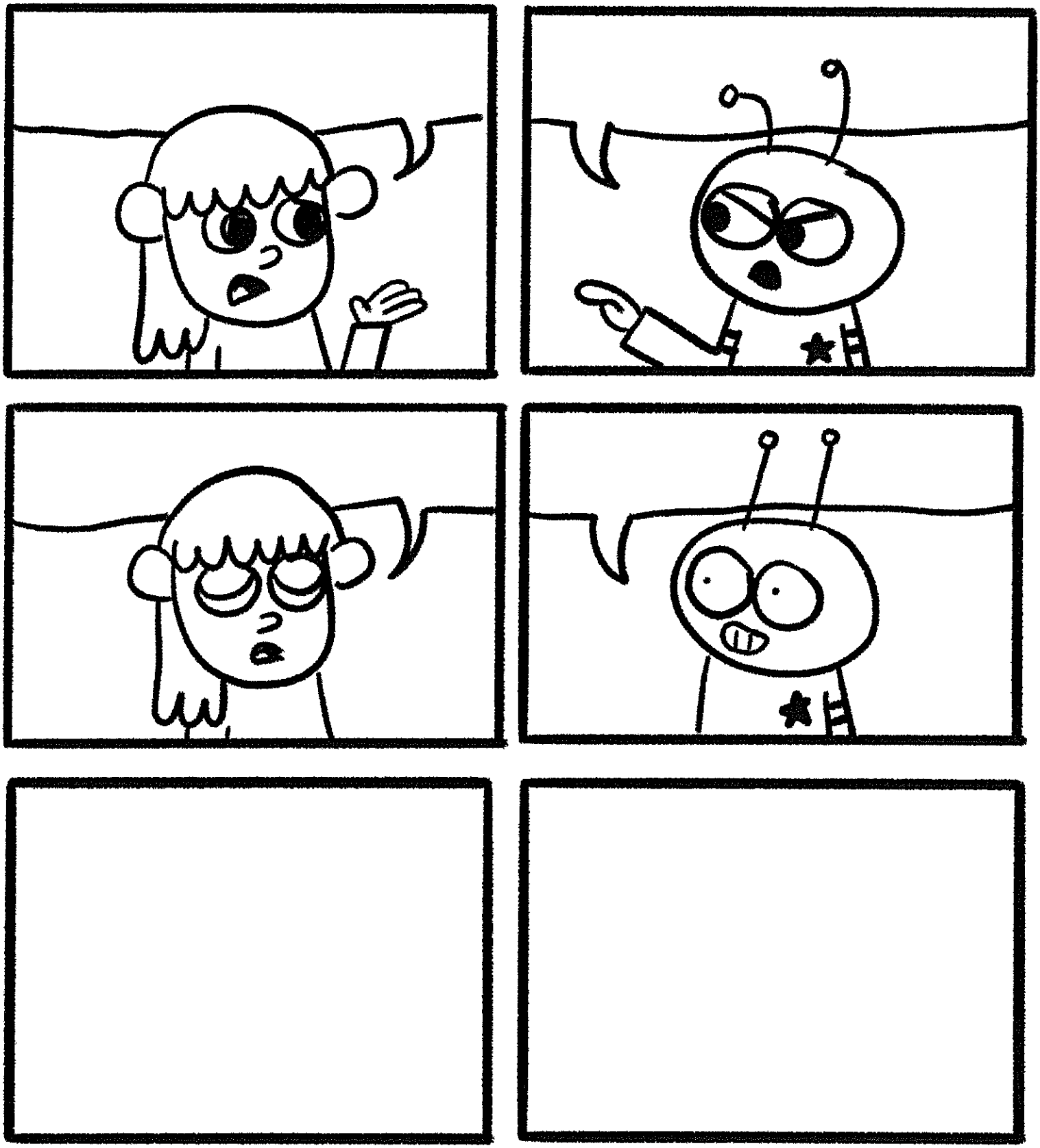

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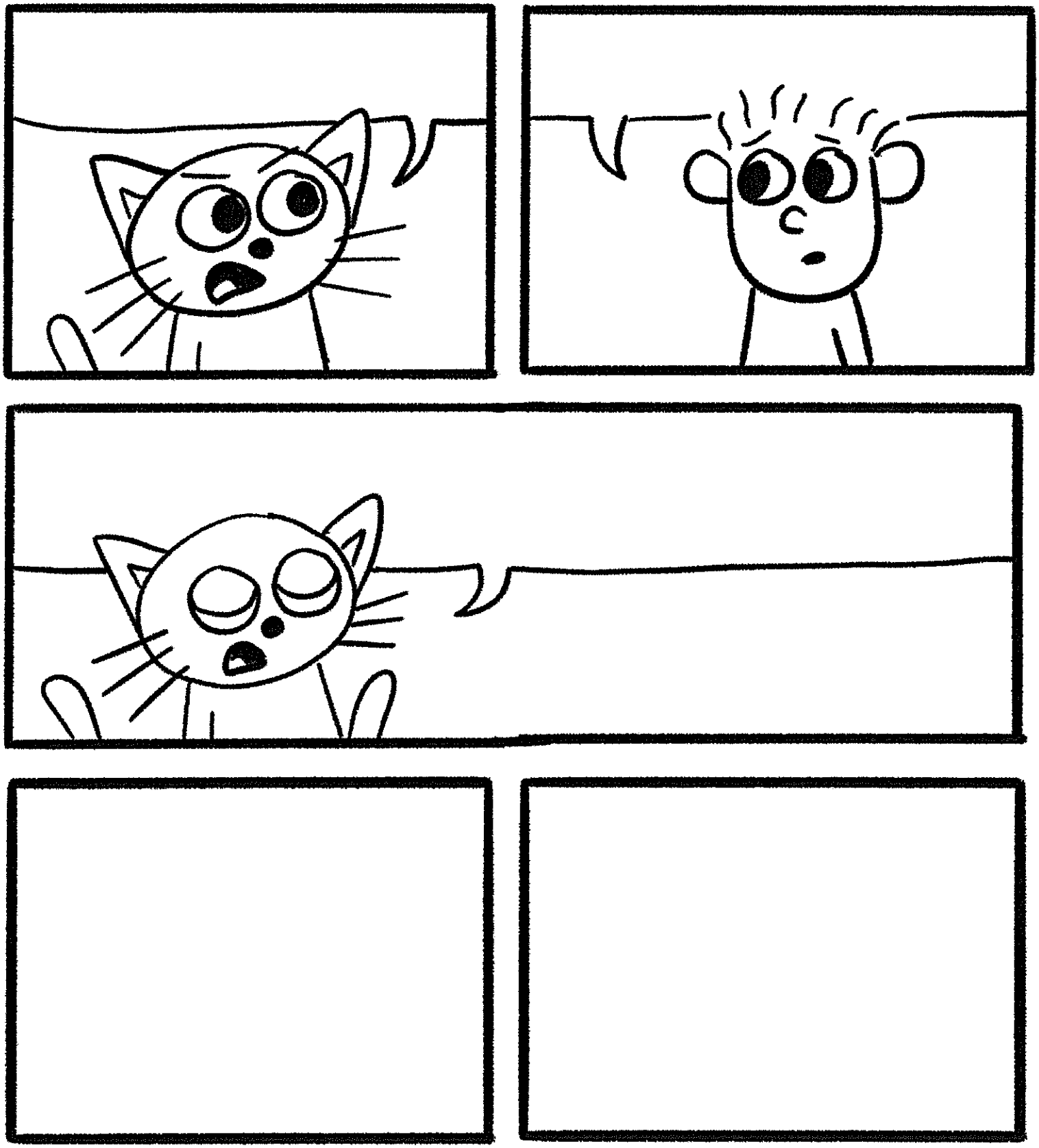

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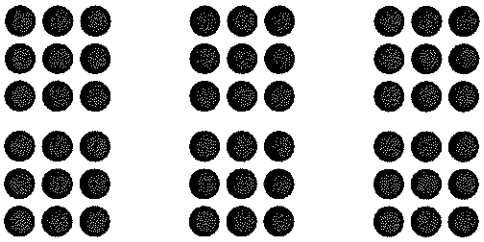
Unit 2 Lesson 5: Defining Equivalent Ratios

Objective: I can explain the meaning of equivalent ratios by using words and diagrams.

5.1 Dots and Half Dots

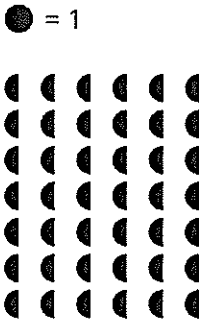
1. Without counting every single dot, find the number of dots in this dot pattern. Describe the method you used. (Describe your method in the space below.)

Dot Pattern 1:



2. Find the number of whole dots in dot pattern 2. Describe the method you used.

Dot Pattern 2:



5.2 Chocolate Chip Cookies

It's possible to make chocolate chip cookies with only 4 ingredients.

Ingredients
1 cup peanut butter
1 cup sugar
2 eggs
1 ½ cups of chocolate chips

Directions: Preheat oven to 350°F. Mix peanut butter, sugar, and 2 eggs. Fold in chocolate chips. Drop batter by tablespoons on baking sheet. Bake for 10-12 minutes until sides are golden brown. Transfer to a wire rack to cool. Makes 24 cookies.

3. How much of each ingredient would you need to make:
   a. twice as many cookies

   b. half as many cookies

   c. to yield at least 100 cookies

4. How many batches could you make with 8 cups of chocolate chips? Explain how you know.

5.3 What are equivalent ratios?

The ratios 5:3 and 10:6 are **equivalent ratios**.
5. Is the ratio 15:12 equivalent to these? Explain your reasoning.

6. Is the ratio 30:18 equivalent to these? Explain your reasoning.

7. How do you know when ratios are equivalent and when they are *not* equivalent?

8. Write a definition for *equivalent ratios.*

Complete the attached visual display. Be prepared to share your visual display with the class.

Objective: I can explain the meaning of equivalent ratios by using words and diagrams.
Summary: What did you learn today?

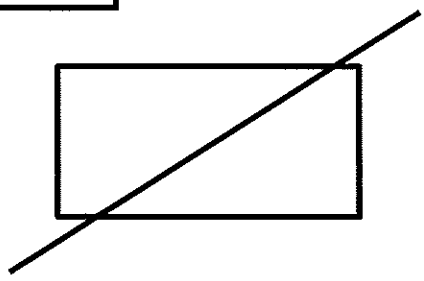
Equivalent Ratios

Equivalent ratios are created

3:2 is equivalent to

Look at how they are equivalent.

3:2 is NOT equivalent to

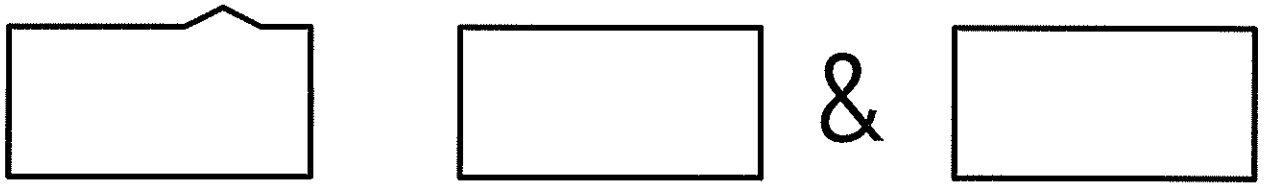


I know these are NOT equivalent, because

Equivalent Ratios

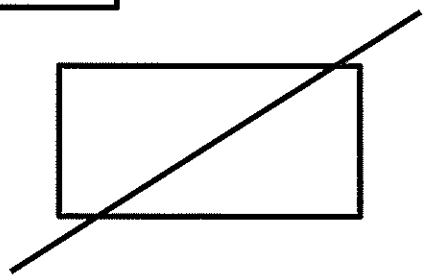
Equivalent ratios are created

4:5 is equivalent to



Look at how they are equivalent.

4:5 is NOT equivalent to

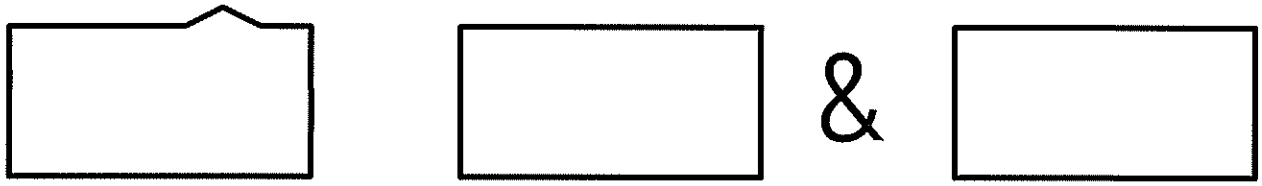


I know these are NOT equivalent, because

Equivalent Ratios

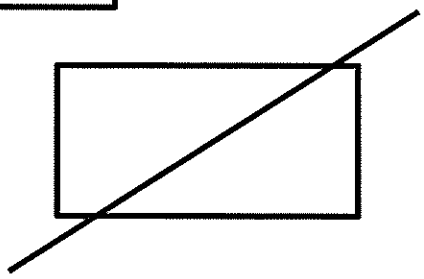
Equivalent ratios are created

3:4 is equivalent to



Look at how they are equivalent.

3:4 is NOT equivalent to



I know these are NOT equivalent, because

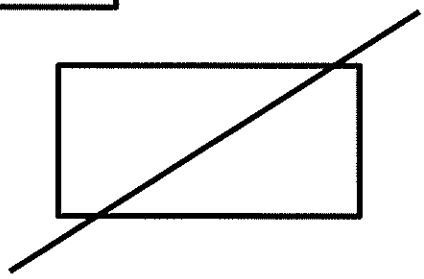
Equivalent Ratios

Equivalent ratios are created

4:1 is equivalent to

Look at how they are equivalent.

4:1 is NOT equivalent to



I know these are NOT equivalent, because

Unit 2 Lesson 6: Introducing Double Number Line Diagrams

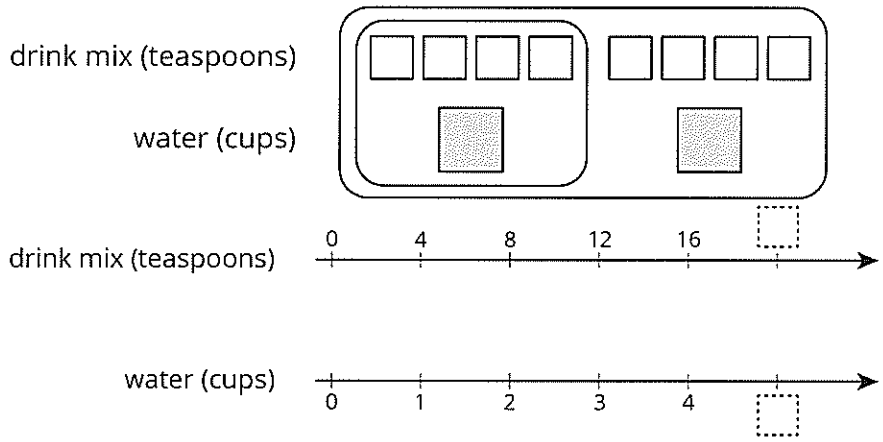
Objective: I can use a double number line diagram to find equivalent ratios. I can use a double number line to represent batches of a recipe or color mixture.

6.1 Number Talk: Adjusting Another Factor

1. $(4.5) \cdot 4 = 18$
How does knowing that product help you find $(4.5) \cdot 8$?

6.2 Drink Mix on a Double Number Line

The other day, we made drink mixtures by mixing 4 teaspoons of powdered drink mix for every cup of water. Here are two ways to represent multiple batches of this recipe:



2. How can we tell that 4:1 and 12:3 are equivalent ratios?

3. How are these representations the same? How are these representations different?
Two ways that these representations are the same are

Two ways these representations are different are

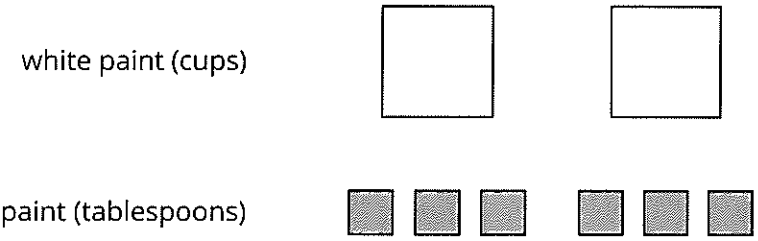
4. How many teaspoons of drink mix should be used with 3 cups of water?

5. How many cups of water should be used with 16 teaspoons of drink mix?

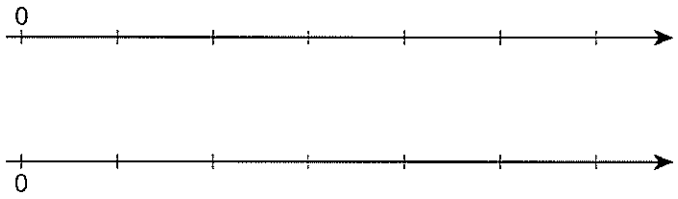
6. What numbers should go in the empty boxes on the double number line diagram? What do these numbers represent?

6.3 Blue Paint on a Double Number Line

Here is a diagram showing Elena's recipe for light blue paint.



7. Complete the double number line diagram to show the amounts of white paint and blue paint in different-sized batches of light blue paint.



8. Compare your double number line diagram with your partner. Discuss your thinking. Revise your diagram if needed.

9. How many cups of white paint should Elena mix with 12 tablespoons of blue paint? How many batches would this make?

Elena should mix ____ cups with 12 tablespoons of blue paint. This would make _____ batches.

10. How many tablespoons of blue paint should Elena mix with 6 cups of white paint? How many batches would this make? (Copy the previous sentence frames to write two complete sentences.)

11. Use your double number line diagram to find another amount of white paint and blue paint and state that ratio in two complete sentences as you did for numbers 9 and 10.

12. Explain how a double number line diagram works. How do you know what amounts to use to mix a batch of the same shade of light blue paint?

Objective: I can use a double number line diagram to find equivalent ratios. I can use a double number line to represent batches of a recipe or color mixture.
Summary: What did you learn today?

Unit 2 Lesson 12: Navigating a Table of Equivalent Ratios

Objective: I can solve problems about situations happening at the same rate by finding unit rate, or *1* row, in a table. I can use a table of equivalent ratios to solve problems about unit price.

12.1 Number Talk: Multiplying by a Unit Fraction

Find these products mentally.

$\frac{1}{3} \cdot 21$ $\quad\quad$ $(5.6) \cdot \frac{1}{8}$

$\frac{1}{6} \cdot 21$ $\quad\quad$ $\frac{1}{4} \cdot (5.6)$

1. Pick one and describe how you solved it without procedural steps.

12.2 Comparing Taco Prices

number of tacos	price in dollars

Add ratio values to the table to help you solve these problems. **Explain or show** your reasoning.

2. Noah bought 4 tacos and paid $6. At this rate, how many tacos could he buy for $15?

3. Jada's family bought 50 tacos for a party and paid $72. Were Jada's tacos the same price as Noah's tacos?

12.3: Hourly Wages

Lin is paid $90 for 5 hours of work. She used the following table to calculate how much she would be paid at this rate for 8 hours of work.

amount earned ($)	time worked (hours)
90	5
18	1
144	8

4. What is the meaning of the 18 that appears in the table?

5. Why was the number ⅛ used as a multiplier?

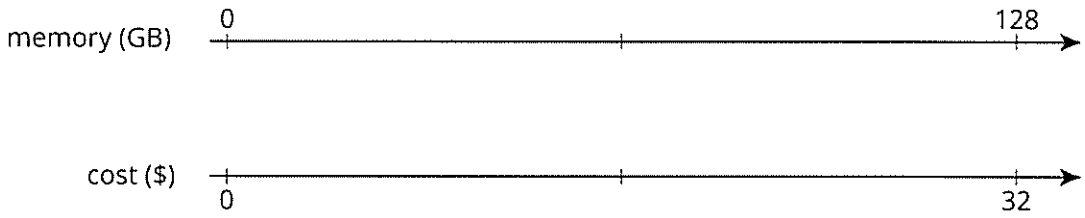
6. Explain how Lin used this table to solve the problem.

7. At this rate, how much would Lin be paid for 3 hours of work? For 2.1 hours of work?

12.4 Zeno's Memory Card

IN 2016, 128 gigabytes (GB) of portable computer memory cost $32.

Here is a double number line that represents the situation:



One set of tick marks has already been drawn to show the result of multiplying 128 and 32 by ½.
8. Label the amount of memory and the cost for these tick marks.
9. Next, keep multiplying by ½ and drawing and labeling new tick marks until you can no longer label each new tick mark with a number.

Here is a table that represents the situation.
10. Find the cost of 1 gigabyte. You can add as many rows as you need.

Memory (gigabytes)	Cost (dollars)

11. Did you prefer the double number line diagram or the table for solving this problem?

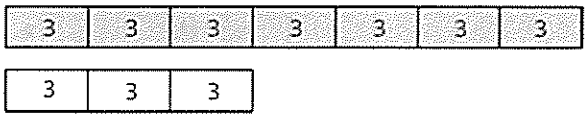
Objective: I can solve problems about situations happening at the same rate by finding an initial rate, or *1* row, in a table. I can use a table of equivalent ratios to solve problems about unit price.
Summary: What did you learn today?

Unit 2 Lesson 16: Solving More Ratio Problems

Objective: I can use diagrams to communicate to someone else my solution. I can choose and create diagrams that aid in finding a solution.

16.1 You Tell the Story

Describe a situation with two quantities that this tape diagram could represent.

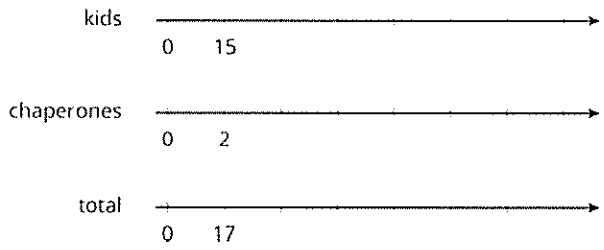


16.2 A Trip to the Aquarium

Consider this problem: A teacher is planning a class trip to the aquarium. The aquarium requires 2 chaperones for every 15 students. The teacher plans accordingly and orders a total of 85 tickets. How many tickets are for chaperones, and how many are for students?

1. Solve this problem in *one* of three ways: with a triple number line diagram, with a table, *or* with a tape diagram.

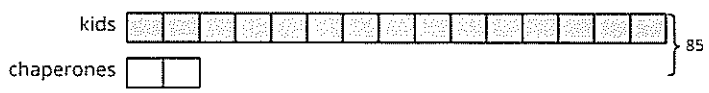
a. Use a triple number line.



b. Use a table. (Fill rows as needed.)

kids	chaperones	total
15	2	17

c. Use a tape diagram.



2. After discussing all three strategies, which do you prefer for this problem? Why?

16.3 Salad Dressing and Moving Boxes

Solve each problem. Show your thinking. Organize your work so it can be followed by others. Use a double number line diagram, a table, or tape diagram to support your solution finding.

3. A recipe for salad dressing calls for 4 parts oil for every 3 parts vinegar. How much oil should you use to make a total of 28 teaspoons of dressing?

4. Andre and Han are moving boxes. Andre can move 4 boxes every half hour. Han can move 5 boxes every half hour. How long will it take Andre and Han to move all 72 boxes?

Objective: I can use diagrams to communicate to someone else my solution. I can choose and create diagrams that aid in finding a solution.
Summary: What did I learn today?

Unit 2

Lesson 1: Introducing Ratios & Ratio Language	Objective: I can write or say a sentence that describes a ratio. I use correct order to accurately describe the ratio.
Lesson 2: Representing Ratios with Diagrams	I include labels when I draw a diagram representing a ratio so that the meaning of the diagram is clear. I can draw a diagram that represents a ratio and explain what the diagram means.
Lesson 3: Recipes	I can use a diagram to represent a recipe, a double batch, and a triple batch of a recipe. I can explain the meaning of equivalent ratios using a recipe as an example.

Summary

ratio doubling tripling batch equivalent ratio

Unit 2

Lesson 4: Color Mixtures	I can use a diagram to represent a single batch, a double batch, and a triple batch.
Lesson 5: Defining Equivalent Ratios	If I have a ratio, I can create a new ratio that is equivalent to it. I can decide if two ratios are equivalent.
Lesson 6: Introducing Double Number Line Diagrams	I can label a double number line diagram to represent batches of a recipe or color mixture.

Summary

ratio doubling tripling batch equivalent ratio number line
double number line multiples skip counting

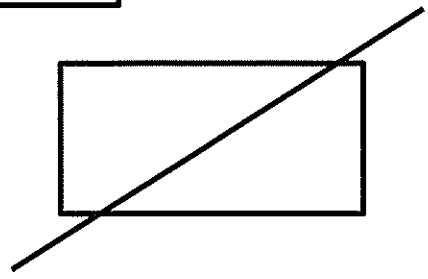
Equivalent Ratios

Equivalent ratios are created

3:2 is equivalent to

Look at how they are equivalent.

3:2 is NOT equivalent to



I know these are NOT equivalent, because

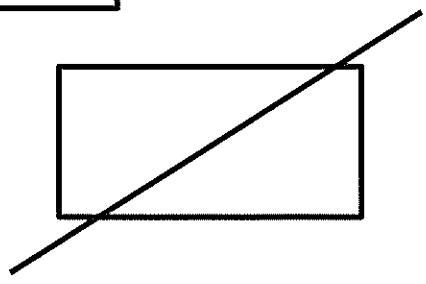
Equivalent Ratios

Equivalent ratios are created

4:5 is equivalent to

Look at how they are equivalent.

4:5 is NOT equivalent to



I know these are NOT equivalent, because

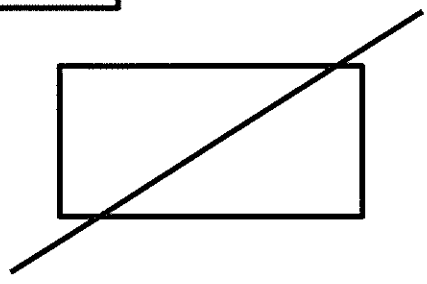
Equivalent Ratios

Equivalent ratios are created

3:4 is equivalent to

Look at how they are equivalent.

3:4 is NOT equivalent to



I know these are NOT equivalent, because

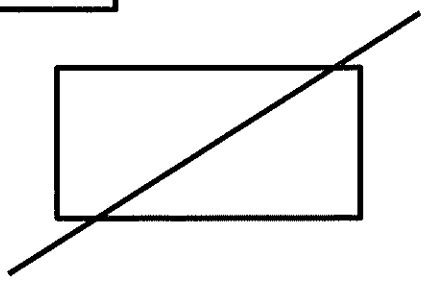
Equivalent Ratios

Equivalent ratios are created

4:1 is equivalent to

Look at how they are equivalent.

4:1 is NOT equivalent to



I know these are NOT equivalent, because

Unit 2

Lesson 7: Creating Double Number Line Diagrams	I can create a double number line diagram and correctly place and label tick marks to represent equivalent ratios. I can explain what the word *per* means.
Lesson 8: How Much for One?	I can choose and create diagrams to help me reason about prices. I can explain what the phrase *at this rate* means, using prices as an example.
Lesson 9: Constant Speed	I can choose and create diagrams to help me reason about constant speed.

Summary

equivalent ratio number line double number line multiples skip counting per unit price constant speed meters per second

Unit 2

Lesson 10: Comparing Situations by Exaning Ratios	I can decide whether or not two situations are happening at the same rate and explain what it means to be the same rate.
Lesson 11: Representing Ratios with Tables	I can add a new row to a table of equivalent ratios. I can identify rows and columns.
Lesson 12: Navigating a Table of Equivalent Ratios	I can solve problems about situations happening at the same rate by using a table and finding a "1" row. I can use a table of equivalent ratios to solve problems about unit price.

Summary

per unit price constant speed meters per second same rate rows columns table

Unit 2

Lesson 13: Tables & Double Number Line Diagrams	I can create a table that represents a set of equivalent ratios and label the columns. I can explain when tables are preferred over double number line diagrams.
Lesson 14: Solving Equivalent Ratio Problems	I can identify information I need to know to solve problems about situations happening at the same rate.
Lesson 15: Part-Part-Whole Ratios	I can solve problems when I know a ratio and a total amount. I can create tape diagrams to help me reason about problems involving a ration and a total amount.

Summary

per unit price constant speed meters per second same rate rows columns table part-part-whole tape diagram

Lesson 16: Solving More Ratio Problems	I can choose and create diagrams to help think through my solution. I can solve all kinds of problems about equivalent ratios.

Summary

per unit price constant speed meters per second same rate rows columns table part-part-whole tape diagram

What is a ratio?

What are equivalent ratios?

How can I show different-sized batches with a diagram?

ratios

What is a tape diagram?

What is double number line diagram?

Life in Ancient Egypt

What's the first thing that comes to mind when you hear the word "Egypt"? Most likely you think of mummies and pyramids. In this first of two issues about Egypt, we will learn about ancient Egyptians' way of life and some of their contributions to the world.

The ancient Egyptians settled along the Nile River around 5000 B.C. The Nile, which many believe is the longest river in the world, provided necessities like water, food and fertile land in a desert. Every June and July the river, which flows for more than 4,100 miles, would overflow its banks. As it receded, it would leave black silt on the ground. This made the soil great for growing crops.

Around 3100 B.C., a powerful king from Upper Egypt (near Sudan), conquered the kingdom of Lower Egypt (near the Mediterranean Sea). His name was King Menes. He created one large kingdom of Egypt with Memphis as the capital. Memphis was near the old border between Upper and Lower Egypt. In those days, the Egyptians believed it was rude to call their leader by his given name. Instead, they called him "pharaoh," which means "great house." King Menes was the first pharaoh of Egypt.

A pharaoh basically controlled everything in Egypt. In fact, a pharaoh was thought to be a living god. No one questioned a pharaoh. When a pharaoh died, he was given a wonderful place to spend eternity - a pyramid. It took years to build these remarkable, triangular-shaped structures, and we still don't know exactly how the ancient Egyptians did it. Egyptians believed placing treasures in the pyramids would give a pharaoh a luxurious afterlife. Unfortunately, pyramids were like neon signs that said, "Treasures Inside! Tomb Robbers Welcome!"

Eventually the Egyptians stopped building pyramids because they were just too expensive. In their place, they built beautiful tombs and hid them below the desert sands. These hidden tombs were thought to give the pharaohs a peaceful eternity. Many years later, people like Howard Carter and Kent Weeks uncovered some of these hidden tombs. This discovery makes it possible to learn much more about these fascinating Egyptians. We will read more about pyramids in the next issue. For now, let's start our study of these remarkable people - the Egyptians.

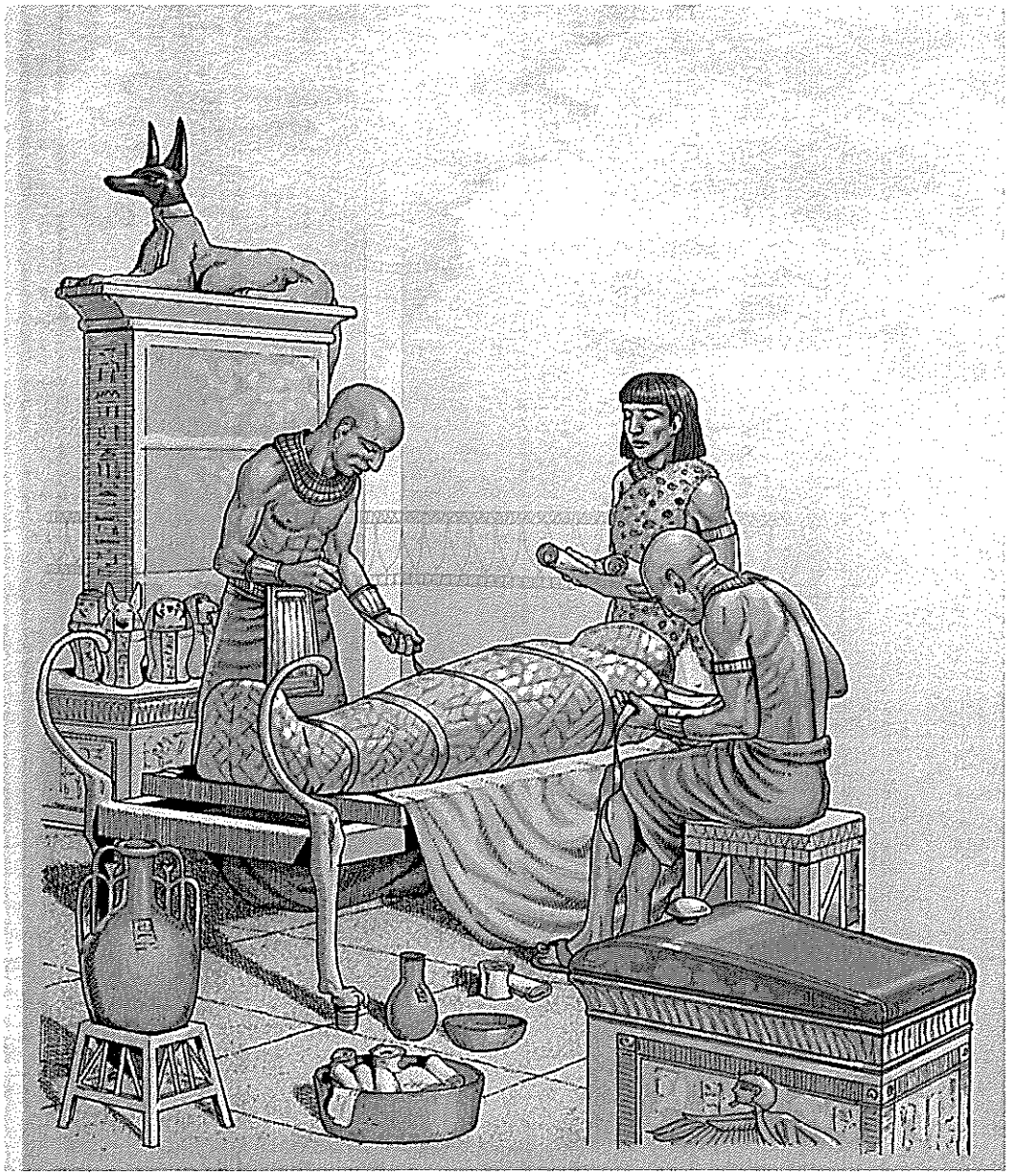
Ancient Mummies

Scientists have been looking for the causes of cancer for a long time. Many scientists think that the disease is caused by genetics (something that is inherited) or by the environment. An ancient mummy at the National Archaeology Museum of Lisbon in Spain has pointed scientists in the direction of genetics.

Scientists studied the bones of the Lisbon mummy with special X-ray equipment. The mummy is an unknown man who lived in Egypt between 200 and 300 B.C. He died in his 50s. Lesions (injuries to the tissue or bone) on his pelvis and spine show that he died of cancer.

Some scientists think cancer may be caused from pollution or over-processed food. Other scientists are looking into how chemicals might cause cancer. In ancient Egypt the re were not pollutants, processed food or chemicals in the environment like we have today. Finding cancer during this time may help scientists figure out how it is caused.

Discovering how ancient people developed cancer helps scientists get a step closer to finding a cure. This new discovery points to genetics as one possible cause. Cancer has been with us for a long time. The good news is that each new discovery takes us closer to a cure. It could even be cured in your lifetime.



Religion

Like the people of Mesopotamia, the ancient Egyptians practiced polytheism. This means they worshiped many gods - more than 700 gods and goddesses, in fact. The most important god to the Egyptians was probably the sun god, Ra. The sun is what made life possible. Other gods included Anubis, god of the dead, who had the body of a man and the head of a jackal; Thoth, god of wisdom; Osiris, another god of the dead; and Horus, god of the sky.

The Egyptians believed in an afterlife and that a person's behavior in this life would determine how he or she would spend eternity. The Egyptians also believed that the dead went to the Hall of Judgment where the deeds of their lives would be judged. This was where Anubis would place your heart on a scale that was balanced with a divine feather. The scale weighed your good and bad deeds on Earth. If you had more good in your life, your spirit would have an eternity of happiness. Too many bad deeds meant Ammut, the devourer of the dead, would destroy your spirit.

Egyptians believed they could take their possessions with them into the afterlife. Food, chariots, extra wigs - even clean underwear - were all packed for the next life. The wealthy wanted help for all their chores in the afterlife. Sometimes, they even packed slaves. (Not that the slaves wanted to go along, since it meant they would be killed.) Egyptians also believed that in order to live forever, your spirit, or Ka, needed a home. It needed your body, even if it was dead. Without your body, the Ka would fly away and you'd be fully dead forever. That's why mummification, or preserving the dead body, became so important.

Mummies

Because the Egyptians believed Ka needed a body to call home, they developed the mummification process. They began mummification around 2600 B.C. and used the process for 3,000 years. The procedure took about 70 days and involved drying out the entire body. The embalmer who performed this task kept his identity secret by wearing a mask of a jackal, so he looked like Anubis.

He removed all organs from the body to prevent decaying. He removed the brain through the nose using a long metal hook. He threw it away because the Egyptians didn't think the brain was very important. He placed other organs like the stomach, liver and lungs in special containers called canopic jars for safekeeping. He carefully wrapped the heart, the center of caring, and replaced it in the body cavity. Then he wrapped the body in linen, sometimes 20 layers thick. The head, neck, fingers and toes were all individually wrapped.

The Egyptians didn't just mummify people. Archaeologists have found tombs that contain mummified cats, birds, bulls, monkeys, crocodiles and even a gerbil (with its own sack of food for the afterlife).

Where did all the mummies go? Grave robbers unwrapped many of the mummies in hopes of finding jewelry. The bodies were left behind to decay. Some mummies were ground up and mixed into paints.

Artists thought it would help make paints last longer. People also believed that the black ointment on the skin of mummies had medical uses. Some doctors ground up thousand-year-old mummies and gave the powder as a cure for stomachaches and headaches. Because people in the 1800s were fascinated with Egypt, some visitors brought back mummies and unrolled them in front of guests! When mummies are discovered today, they are treated with care and respect.

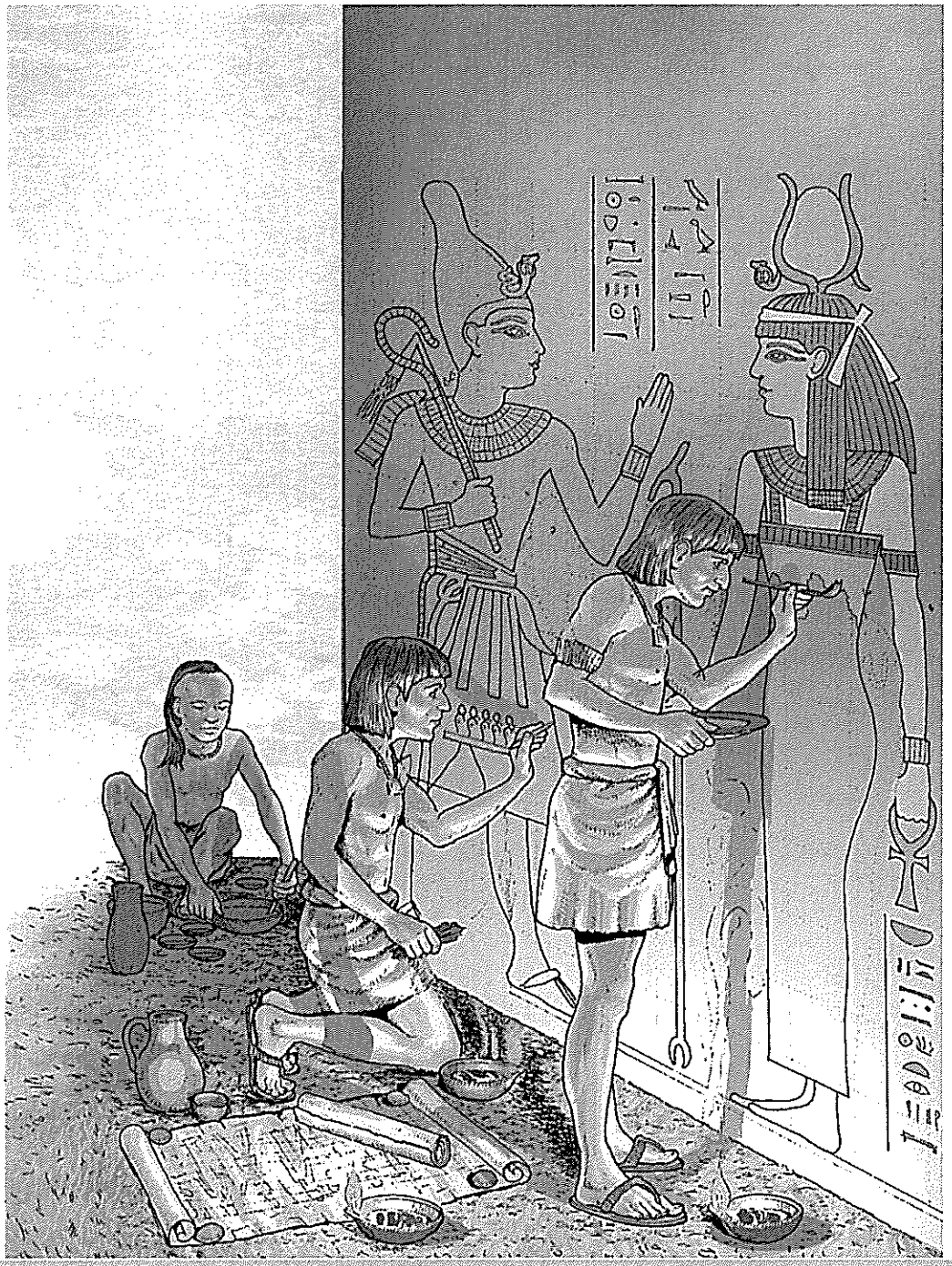
Hieroglyphs

Hieroglyphs, which means "sacred-writing" in Greek, was the picture writing of the ancient Egyptians. It was thought to be sacred because very few could understand it. The writing system included hundreds of pictures, and people who could read and write hieroglyphs were called scribes.

To read hieroglyphs, you need to follow the direction of the pictures. For example, if a vulture faces to the right, you read the hieroglyphs from right to left. Hieroglyphs could be written left to right, top to bottom or right to left. There were no spaces or punctuation. Later, the pictures that represented whole words were changed to represent only a syllable.

Papyrus

The ancient Egyptians found a reed growing along the Nile River that could provide many necessities. The aquatic plant, papyrus, could grow to be 15 feet tall. They wove it into mats, rope, baskets and sandals. The root of the papyrus was a source of medicine, food and perfume. It was also perfect as a writing material. It is from the word "papyrus" that we get the word "paper."



Strips of papyrus were laid side by side vertically. Another layer of cut papyrus was laid across the first layer horizontally. Pressing the pieces firmly together created a yellowish paper. They pasted several sheets of paper together to make scrolls and stored them in pottery jars for safekeeping. They used a reed that spread out at the end (like a small paintbrush) as a writing tool. The ink was a mixture of water, black soot and vegetable gum.

When the Chinese method of making paper came to the area, it replaced papyrus because it was easier and less expensive. For many years, papyrus could not be found in Egypt except in museums. The land where papyrus grew had been tilled into farmland. Realizing the importance of the plant to Egypt's history, one Egyptian began growing papyrus on a plantation in 1969. Today, there are several papyrus

plantations in Egypt, and this important part of history is being preserved.

Did you know?

- The first mummified lion was unearthed in 2004 from a tomb at Saqqara. It dates back about 3,500 years.
- An ancient Egyptian remedy for poor eyesight was to pour honey, ground up pig's eye and red
- earth into your ear and recite a spell at the same time.
- The oldest mummy isn't from Egypt but from Chile. It dates back about 7,800 years.
- Ancient Egyptian women wore wax cones sprinkled with perfume on their heads.
- The Egyptian game of Senet is one of the world's oldest board games.
- The Egyptians used a 365-day calendar similar to the one we use

Jean-Francois Champollion

Born in 1790, Jean-Francois Champollion helped change what the world knows about ancient Egypt. Soon after Champollion was born, a magician said that one day Champollion would become famous. He was correct. Champollion is credited with discovering the meaning of the ancient Egyptian writing called hieroglyphs. He helped us understand the world of the ancient Egyptians.

As a young boy, Champollion was often sick so he couldn't go out and play sports, and there weren't computers and video games at the time. Champollion spent his days in the world of books. The French boy learned to read Hebrew, Arabic, Chinese, Syriac and Chaldean - all by the time he was a teenager. He also could read Latin and Greek. Champollion was just a young boy when the Rosetta Stone was found. He announced then that he would be the first person to translate the hieroglyphic writing.

Champollion spent years trying to figure out the meaning of the Egyptian hieroglyphs. Studying the three different writings of the stone - of which only Greek could be read - Champollion determined they were the same message. He used the Greek as a key to deciphering the hieroglyphic writings.

Champollion was working on an Egyptian dictionary and grammar book when he died in 1832.

A Key Made of Stone

When Napoleon Bonaparte's soldiers were working along the Nile Delta, one of the men tripped on something in the mud. The object was a stone, which turned out to be a key to translating the ancient

Egyptian hieroglyphs. Imagine what would have happened if he had not found the stone or if he ignored it and kept walking. Perhaps we would still be unable to read hieroglyphs.

The black stone was named the Rosetta Stone because it was found in 1799 along a branch of the Nile River called Rosetta. The stone contains three inscriptions and dates back to 196 B.C. Two inscriptions are in a form of hieroglyphs and the other is Greek. All three inscriptions say the same thing in different written languages. People could read the Greek writing, so this became the key to deciphering hieroglyphs.

The Rosetta Stone is extremely heavy, weighing nearly 1,676 pounds. It is about 45 inches at its highest point, 11 inches thick and 28.5 inches wide. You can see the Rosetta Stone in London's British Museum. At one time, you could actually touch the stone, but now it is kept safely in a museum.

CLOSE READING INSTRUCTIONS

1. **Close Read:** Read with a pencil/highlighter in hand, and annotate the text.
   - Annotating *means* underlining or highlighting key words and phrases—anything that strikes you as surprising or important, or that raises questions.
   - Annotating *includes* writing your thoughts and reactions in the margins next to what you have highlighted or underlined. These need to be rich comments. Rich comments might begin with the word, what or why or any of the phrases that could also be used to start your reflection statement.
   - Highlight or circle words you don't know, and look them up! Write down the definition in the margin next to the word.
   - I am looking for 6-8 annotations per page of the article.

2. **Summary Statement:** Write a summary statement for the article in which you include:
   - The author, title, and source
   - The sentence completed with the main idea of the article
   - The summary statement is 25 words or less; the author/title/source counts as **1** word.
   - At the end of your statement, write the number of words in your statement and circle it.

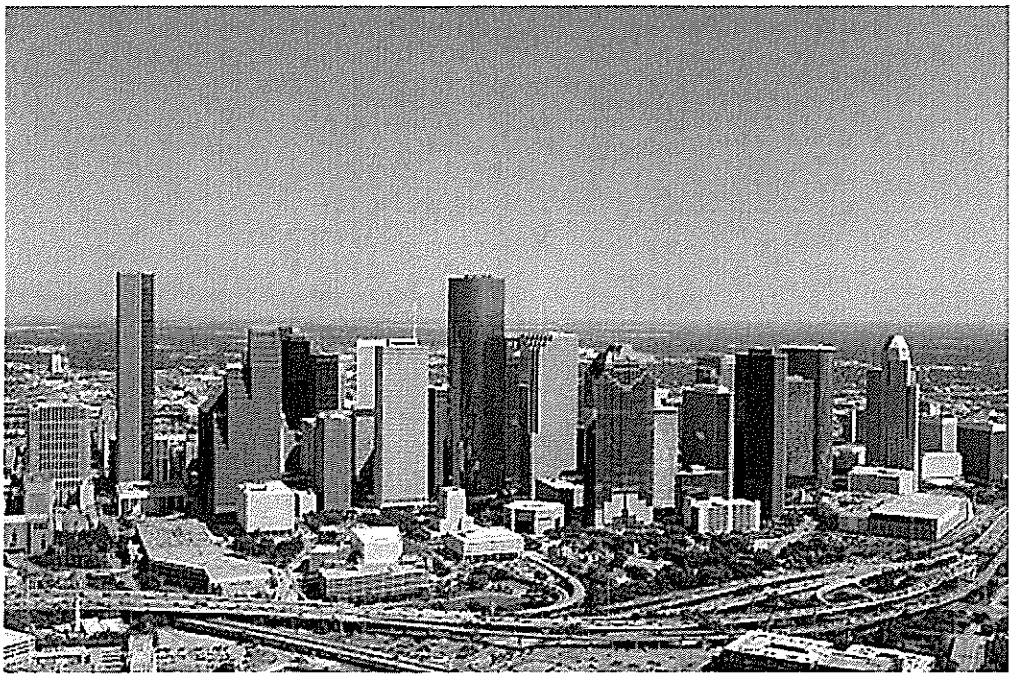
3. **Reflection Statement:** Use one of the following sentence starters and write a brief 1-2 sentence reflection statement for the article.

A.	I noticed. . .	E) I'd like to know. . .
B.	I wonder. . .	F) I realized. . .
C.	I was reminded of. . .	G) If I were. . .
D.	I am surprised that. . .	H) I am not sure. . .

Day 1

Predicting the Future

by ReadWorks



Houston, Texas

Garry Golden sits in a small cafe in Brooklyn, New York. In front of him, sheets of paper with diagrams litter the table. He rapidly sketches trains, cars and highways as he explains his ideas. Garry Golden has one passion: transportation. The science of how to move people from place to place fascinates him. He spends his days studying the relationships between cars, subways, and trains. But he's most excited about imagining the way these relationships will change in the next 20 years.

Golden is a futurist. Futurists are scientists who analyze the way the world is today and use that information to make predictions about what the world will be like in the future. In this way, they are the opposite of historians, who try to better understand the present through studying the past. Futurists hope that by making scientific predictions about the future, we can make better decisions today.

Some futurists study the environment. Some study human society. Golden focuses on the study of transportation. He earned his graduate degree in Future Studies from the University of Houston. Living in Houston for those two years changed the way he viewed transportation in the United States.

Many public transportation advocates dislike Houston. They argue the city is too sprawling (it can take more than three hours to drive from one side of the city to the other during rush hour) and that there aren't enough buses and subways. However, Houston was a source of inspiration for Golden.

"Houston is a really interesting place, and their transportation is a fascinating story-it's worth watching. When you think about it, what is the U.S. like? It's more like Houston. So you need to understand how Houston approaches things to understand the country as a whole. New York City is the exception," said Golden in an interview with *The New York Times*.

Golden points out that people in New York City own fewer cars and walk much more than anywhere else in the United States. "It's a unique environment," says Golden. "Very different from the rest of the country."

However, Golden believes American cities will become more similar to New York City in several ways over the next 20 years. He sees a trend toward fewer cars in the future. He explains, "Cities have a cost of car ownership that is a challenge. All these vehicles cost the city: in services, in having to repair roads and all of the other things." Cars also take up a lot of space. Houston, for example, has 30 parking spaces for every resident. That's 64.8 million parking spaces in only one city.

Golden points out that having so many parking spaces is inefficient. Much of the time the parking spaces sit empty. At high-use times-for example, Saturday afternoon when everyone is running errands-every parking space at a shopping center is full. But at 3 a.m. on a Monday, no one is at the shopping center. What is the solution? "I think cities are going to start to legislate cars in very new ways," says Golden. He explains that cities will make new laws to limit the number of cars people can have within city limits. Instead, people will use taxis, subways and buses. New technology, like smartphones, can make these forms of public transportation even better.

Buses have the same problem of inefficiency as parking spaces, explains Golden. Sometimes they are full, and sometimes they are empty. But imagine if everyone had a smartphone and used them to signal when they wanted to ride the bus. Buses could change their route, depending on who wanted to ride.

How soon would these changes come? Golden admits that it will take several years. Cities can be slow to change. Also, new systems of transportation can be expensive. "But it's coming," he says. "The trend of the empowered city will be here soon."

The other trend that excites Golden is electric cars. "We need to reduce the amount of fuel we consume," says Golden. "Everyone agrees on this. The question is how to do it." Golden especially believes in the future of electric cars that have sensors to understand the world around them. "If we have cars that can communicate with one another, they can adjust speeds to eliminate traffic jams," he says. Rush hour in Houston would suddenly be much less painful.

One challenge related to the production of electric cars is that it is hard to cheaply produce batteries that are strong enough for these cars. This is partially because cars are so heavy. But Golden argues you could also make cars out of strong plastic composites. The cars would then be much lighter and much cheaper to make. "This could revolutionize the highways," he says. When could electric smart cars become the norm? Golden argues as soon as 2030.

As a futurist, Golden shares his predictions with other scholars at conferences across the country. He also provides advice to companies that want to know what the future will be like so that they can make better strategies. Golden remains optimistic about the future. "There are so many exciting developments," he says. "In thirty years we will live a very different world."

Name: _____ Date: _____

1. What is Gary Golden's one passion?

A. Houston, Texas

B. the environment

C. human society

D. transportation

2. One problem with electric cars is that they require very strong batteries. Part of the reason the batteries have to be so strong is that cars are so heavy. What solution does Golden propose for this problem?

A. build cars out of strong plastic composites so that they are lighter

B. find an easier and faster way to produce strong batteries for cars

C. build cars out of lighter weight metals so they don't need as many batteries

D. create a way for cars to communicate with each other and adjust their speeds

3. Cars require a lot of space in cities. What evidence from the passage best supports this conclusion?

A. Cities have to build parking spaces and repair roads for cars.

B. Cities may limit the number of cars people can have within the city.

C. In Houston, there are 30 parking spaces for every resident.

D. Parking lots at shopping centers are not full all of the time.

4. Based on Garry Golden's predictions, how can transportation systems of the future best be described?

A. expensive and complicated

B. high-tech and efficient

C. high-tech yet impractical

D. inexpensive yet outdated

5. What is this passage mostly about?

A. how one futurist thinks transportation will change in the coming years

B. reasons why cars cost the city money and are an inefficient use of resources

C. how to improve electric cars so that they are more widely used and available

D. a comparison of public transportation systems across the United States

6. Read the following sentences: "Houston, for example, has 30 parking spaces for every resident. That's 64.8 million parking spaces in only one city. Golden points out that having so many parking spaces is **inefficient**. Much of the time the parking spaces sit empty. At high-use times-for example, Saturday afternoon when everyone is running errands-every parking space at a shopping center is full. But at 3 a.m. on a Monday, no one is at the shopping center."

As used in this sentence, what does the word **"inefficient"** most nearly mean?

A. productive without wasting time and materials

B. successful and effective

C. imaginative and creative

D. wasteful of space and materials

7. Choose the answer that best completes the sentence below.

Historians study the past in order to better understand the present. _____, futurists analyze the present in order to make scientific predictions about the future.

A. In particular

B. Such as

C. In contrast

D. Ultimately

8. What does Garry Golden spend most of his days studying?

9. Buses are currently inefficient. According to Golden, how could this type of transportation be improved?

10. Explain how communications technology (such as smartphones and sensors) could help improve transportation in the future. Support your answer using information from the passage.

Understanding Ratio Concepts

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

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

   Write the following ratios.

   tennis balls to tennis rackets _____

   tennis balls to total pieces of tennis equipment _____

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

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

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

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

Understanding Rate Concepts

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

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

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

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

Understanding Rate Concepts *continued*

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

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

COMMONLIT

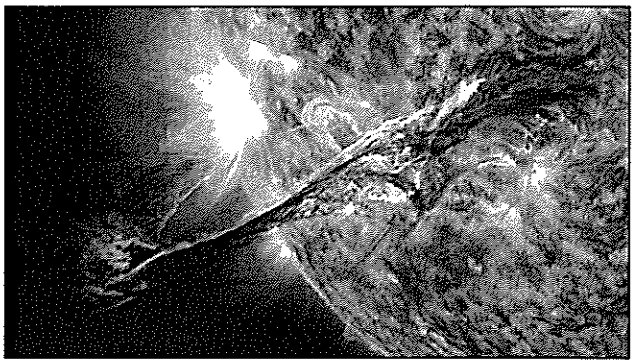
Name: _____ Class: _____

The Center of Our Solar System

By Jessica McBirney
2018

In this informational text, Jessica McBirney discusses the importance of the sun to our solar system. As you read, take notes on the different things that the sun does for the earth.

[1] Have you ever been outside on a hot summer day and wished the sun was just a little cooler or just a little farther away? Like it or not, the sun is vital[1] to our existence here on Earth. The sun's energy keeps our planet at just the right temperature to support life and allow us to grow food. It even keeps the earth spinning year after year. For all that the sun does for us, maybe it's worth learning a little bit more about it.



"Giant prominence on the sun erupted" by NASA/SDO/AIA/ Goddard Space Flight Center is in the public domain.

It's NOT All About Earth

For a long time, people believed the earth stood at the center of the universe and everything, including the sun, revolved around it. This belief is called geocentrism. Geocentrism was an accepted truth until the Polish astronomer Nicolaus Copernicus came along. In 1543, Copernicus proved through his observations and mathematical calculations that the earth actually revolved around the sun. This view is called heliocentrism. Copernicus was not the first scientist to discover heliocentrism, but his book *On the Revolutions of the Heavenly Spheres* provided more detailed support behind the theory.

Other scientists built on his work. In 1609, Italian astronomer Galileo Galilei built the most powerful telescope of his time and used it to confirm heliocentrism. Unfortunately, the Catholic Church, which was a major power in Europe, supported the more commonly-held theory of geocentrism. The Roman Inquisition questioned Galileo and accused him of heresy.[2] In 1633, they sentenced him to life under house arrest. But Galileo continued to write. His work was so influential that he is often called the "father of modern physics."

Heliocentrism became widely accepted over the next century, and eventually the Church stopped resisting. Scientists could freely study the skies and our star, the sun.

1. **Vital** *(adjective):* absolutely necessary or important
2. the support of an idea that contradicts the teaching of the Roman Catholic Church

One of Many Stars

[5] The sun is a star, just like the other millions of stars you see when you look at the night sky. In fact, the sun is a relatively normal star. Like all stars, it is a large ball of gas that produces huge amounts of energy. Stars form when particles floating in space are drawn closer together by gravity, until the cloud of space dust is round and dense. Inside that dense center, hydrogen atoms are under so much pressure that they fuse together into helium atoms. This process is called nuclear fusion, and it releases a lot of extra energy in the forms of heat and light. Nuclear fusion is what keeps stars burning.

A Whole New World

4.5 billion years ago, when the sun formed, it was not the only clump of gas and dust swirling around space. As the sun's particles pulled together, other particles and clouds farther away began circling around it, too. Those clouds started condensing[3] into planets. The process was dramatic. Clumps of space dust slammed into each other, breaking apart and reforming, over millions of years. Finally, they solidified into the eight planets we know today. Without the sun and its powerful gravity, the earth may not be here!

The Sun: The Center of Attention

The sun sits at the center of our solar system. The solar system includes the sun and everything that circles around it: the eight planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune), their moons, and asteroids.[4] The sun is so huge that it accounts for over 98% of all of the mass in the solar system; the pull of its gravity is incredibly strong. All of the planets are stuck circling in this gravitational field, orbiting the sun. Imagine tying a weight to one end of a string, then holding the other end of the string in your hand and spinning the weight around. The weight is orbiting your hand. The sun holds the whole solar system together in a similar way.

The one big difference between the weight on your string and the planets is that each planet's orbit is actually an oval, or an ellipse, not a circle. This theory was popularized in the early 1600s by Johannes Kepler, a German mathematician and astronomer. Kepler's laws of planetary motion, as well as Isaac Newton's law of gravity, supported Copernicus' theory that the sun was the center of the solar system because it explained how the sun held other planets in orbit.

3. to make dense or more compact
4. a small rocky body circling the sun

Putting It in Perspective

Even though it acts just like any other star, the sun is extremely important to us here on Earth. Here are some more things to know about our sun:

1. It is actually pretty big. Scientists estimate that, by mass, it is in the top 10% of all stars.

2. It is about 4.5 billion years old. Think about this: humans have been around for about 200,000 years, so humans have existed for only 0.00004 percent of the sun's life.

3. Sun is about halfway through its supply of hydrogen. This means that in another 4.5 billion years, it will run out of hydrogen and swell into a different kind of star that cannot sustain[5] life on Earth.

4. The sun's core is about 27 million degrees Fahrenheit. Compare that to Earth's core at about 11,000 degrees Fahrenheit.

5. The volume of the sun is about 1,409,272,569,059,860,000 km3. That means 1.3 million Earths could fit inside it.

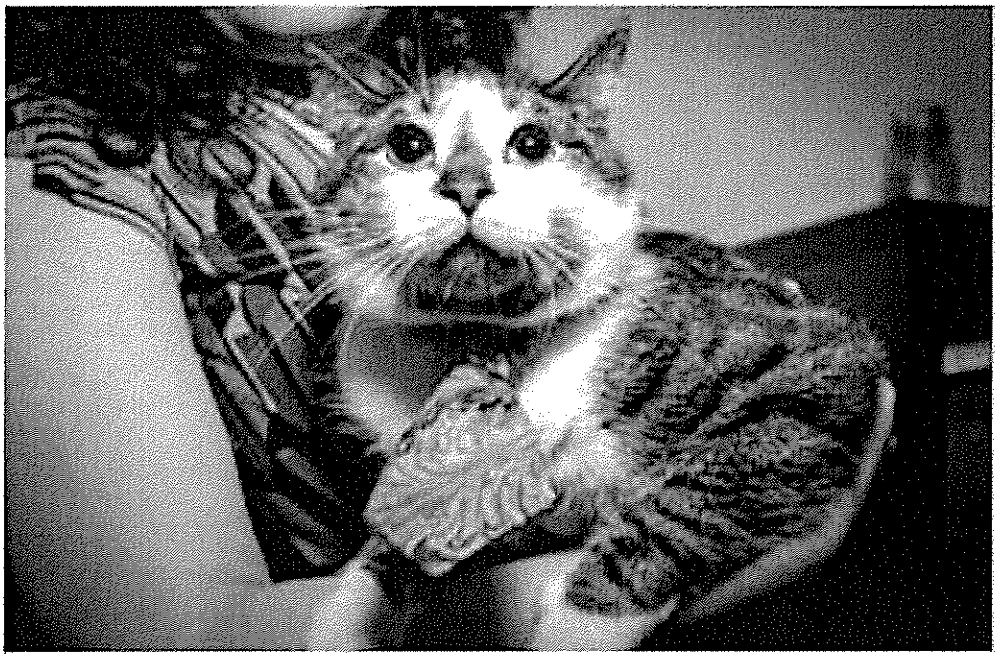
[10] The sun helps us in more ways than we can count. Its gravitational pull helped form the earth and keeps our planet spinning. Its nuclear fusion keeps us warm and gives us light to grow our food. It holds our solar system together! No wonder so many of scientists have dedicated their lives to figuring out how it works.

5. **Sustain** *(verb):* to provide what is needed for something exist or continue

Day 2

The Stolen Kitten

by Kyria Abrahams



I found the kitten sitting on my front porch in the toy bin. He was black and white and crying like a human baby. Where did he come from? I noticed he had no collar. Who would be so irresponsible?

I went inside and opened a can of tuna fish. After I placed the tuna in the doorway, the kitten hungrily lapped it up and then walked right inside the house.

"Hey, kitten! I didn't say you could come in!" I yelled.

The kitten seemed unconcerned with this information. He plopped down onto a bunch of pillows on the couch and began to groom his paws.

My older brother Michael walked into the room, saw the kitten, and started laughing. "What the heck? You brought home a cat?" he asked.

"I didn't exactly bring him home," I explained. "He just kinda walked in through the front door and made himself at home."

"Aw, Mom is gonna be so angry!" Michael said. "You'd better call her."

"Okay," I said. "I promise I'll call right now."

At that moment, I had every intention of doing the right thing and calling my mother. What happened next was slightly different, though.

I picked up the kitten and put him into a box. I gave him a blanket and a toy. And then I brought him to

my bedroom and shut the door.

Our family never owned pets, but I had always wanted one. I knew a little bit about taking care of them. I knew he wasn't a newborn kitten because he was big and fluffy, and his eyes were open. Newborn kittens are not supposed to be separated from their moms. When a human finds them, they have to be extra careful.

I knew he was going to need a litter box. Of course, since I don't own a cat, I didn't have one. So I took a cardboard box and ripped up an old newspaper into shreds. I learned this trick from an Internet video.

Immediately, the kitten jumped into the box to do his business. I knew this meant he was already litter box trained.

I really should call my mom about this, I thought, as the kitten meowed and jumped up onto my lap. Well, he sure did seem to like me! Maybe I didn't have to give him back after all!

If someone can't take care of their kitten, they deserve to lose him! I thought.

The kitten kept meowing quite a lot. It wouldn't stop. And then, it started trying to bite my hand.

"Hey, kitten! I'm not food!" I said.

"Meow!" yelled the kitten, trying again to bite my finger.

I knew I had to go to the store and get some cat food. I opened my piggy bank to see what was inside.

Five dollars and 98 cents. Well, that would certainly be enough to buy a can of cat food.

"You stay put, kitten!" I told him. "I'm going to get you food!"

I bet his last owners never gave him food. They probably didn't love him at all!

I made sure he had plenty of water and shut the bedroom door. I put on my coat and grabbed my keys. I headed out to Whiskers Organic Pet Supply up the street from my house in Astoria, Queens.

On my way out the door, I spotted a sign on the telephone pole:

LOST KITTEN

Black and White, very friendly. If you find him, please call us. We are worried sick.

"Hmm," I thought. "Well, if you were so worried about your kitten, maybe you should have taken better care of him!"

I laughed to myself and headed into the pet store. *People are so irresponsible! It's a good thing I found that kitten and took him in. Now, I'm buying him food! Thank goodness he found me!*

When I walked into the pet store, I could barely get through the door. The place was packed! A group of kids were hanging up flyers about this same cat.

In the back of the store, I saw a little boy in a wheelchair. He was about five years old, and he was crying.

"I can't believe I lost my kitten!" he said to his parents. "I couldn't get to the open door in time!"

I looked at the flyers on the wall. It was definitely the cat I had back at home, sitting in my bedroom, behind a closed door.

Then the truth of the situation hit me. I had stolen a little boy's cat!

In my mind, I had made up a whole story about the people who lost the kitten, and how they deserved to lose him. Now I realized there was a lot I didn't understand. I tried to justify why I should keep the kitten by convincing myself the owners deserved to lose him. Now I saw that it was all a big mistake.

I approached the little boy in the wheelchair. He blew his nose and looked up at me.

"I have your kitten," I told him. "I'm sorry. I just found him and fed him. He's at my house."

The little boy began to cry with laughter. He stretched his arms out and gave me a great big hug. "Thank you so much! I was just about to put a new flea collar on him when he ran out the door. I couldn't chase him! Because of my... you know... my legs."

"I'll be right back," I told him. I ran home to get the kitten and reunite owner and pet.

A situation isn't always as simple as it seems on the outside. I thought for sure the kitten's owners deserved to lose him, but I didn't have all the information. In the end, I was the one who didn't deserve to keep the kitten.

Name: _____ **Date:** _____

1. What does the narrator find on her front porch?

A. a dog

B. a kitten

C. a can of tuna

D. a lost boy

2. How do the narrator's feelings about the kitten's owner change in the story?

A. At first she thinks the owner is irresponsible, but then she realizes she is wrong.

B. At first she thinks the owner is responsible, but then she realizes she is wrong.

C. At first she thinks the owner misses his or her kitten, but then she realizes she is wrong.

D. Her feelings do not change. She thinks the owner is irresponsible throughout the story.

3. The narrator assumes that the kitten's owner did not take care of the kitten. What evidence from the story best supports this conclusion?

A. "Well, he sure did seem to like me! Maybe I didn't have to give him back after all!"

B. "*It's a good thing I found that kitten and took him in. Now, I'm buying him food!*"

C. "I laughed to myself and headed into the pet store.*People are so irresponsible!*"

D. "I bet his last owners never gave him food. They probably didn't love him at all!"

4. Why does the narrator convince herself that the kitten's owner was irresponsible?

A. because she thinks the kitten looks skinny

B. because she is worried about the kitten

C. because she wants to keep the kitten

D. because her mom won't let her keep the kitten

5. What is this story mostly about?

A. The narrator makes an assumption, then realizes that she was wrong.

B. The narrator finds a lost kitten that was neglected by its previous owner.

C. The narrator finds a lost kitten and learns how to care for it.

D. The narrator finds a lost kitten, hides it from her mother, and gets in trouble.

6. Read the following sentences: "In my mind, I had made up a whole story about the people who lost the kitten, and how they deserved to lose him. Now I realized there was a lot I didn't understand. I tried to **justify** why I should keep the kitten by convincing myself the owners deserved to lose him."

As used in this sentence, what does the word "**justify**" most nearly mean?

A. tell the truth about a situation before a judge
B. realize that you have been wrong about something
C. pretend that a situation does not exist
D. come up with a good reason for something

7. Choose the answer that best completes the sentence below.

The narrator tells herself that the kitten's owner must not have loved him; _____, she later learns that her assumption was wrong.

A. meanwhile
B. however
C. for instance
D. therefore

8. What does the narrator see at the pet store?

_____

_____

_____

9. At first, the narrator thinks that the kitten's previous owner was irresponsible, but then she realizes that she was wrong. What causes her to change her opinion?

10. What is the main theme or message of the story, and why? Support your answer using information from the story.

Using Equivalent Ratios

➢ **Solve each problem.**

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

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

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

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

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

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

COMMONLIT

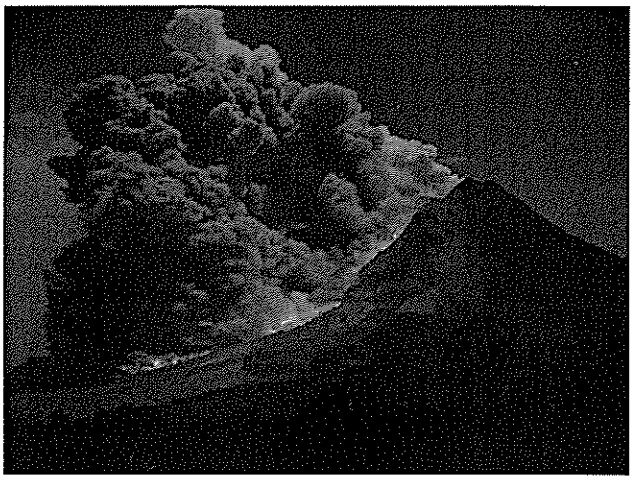
Name: _____ Class: _____

Why do volcanoes erupt?

By Heather Handley
2018

Volcanic eruptions are amazing events in nature, but what causes a volcano to erupt? In this information text, Heather Handley provides valuable information on volcanoes. As you read, take notes on the details provided about magma.

[1] The rock inside the planet we live on can melt to form molten[1] rock called magma. This magma is lighter than the rocks around it and so it rises upwards. Where the magma eventually reaches the surface we get an eruption and volcanoes form.



"untitled" by Marc Szeglat is licensed under CC0

The top part of the Earth is made up of a number of hard pieces called tectonic plates. Magma and volcanoes often form where the plates are pulled apart or pushed together but we also find some volcanoes in the middle of tectonic plates.

Volcanoes have many different shapes and sizes, some look like steep mountains (stratovolcanoes), others look like bumps (shield volcanoes) and some are flat with a hole (a crater or caldera) in the centre that is often filled with water.

The shape of the volcano and how explosively it erupts depend largely on how "sticky" and how "fizzy" (how much gas) the magma is that is erupted.

[5] For example, if you try to blow bubbles in cooking oil through a straw, the bubbles can escape quite easily because the cooking oil is runny.

If you try to blow bubbles in jam or peanut butter you would find it very difficult because the jam and peanut butter are very sticky, they wouldn't move much at all if you tried to pour them out of the jar.

It is the same with volcanoes. When magma rises towards the surface gas bubbles start to form. Whether or not they can escape as the magma is rising affects how explosive the eruption will be.

Where the magma is runny like cooking oil and doesn't have much bubbly gas mixed in it, such as places like Hawaii, then we see lots of slow-moving lava flows and shield volcanoes. Lava is what we call magma when it reaches the surface.

1. turned to liquid by heat

However, where the magma is very sticky, like jam or peanut butter, and if it contains a lot of bubbly gas then the gas can get stuck and eruptions can be very powerful and explosive, like the recent eruptions at Fuego volcano in Guatemala.

Damage caused by eruptions

[10] In explosive eruptions the frothy, bubbly magma can be ripped apart into tiny bits called volcanic ash. This is not ash like you get after a barbecue or fire, it does not crumble away in your fingers. It is very sharp and is dangerous to breathe in.

Some explosive volcanoes can send ash high up into the sky and it can travel around the world over different countries. If aeroplanes travel through an ash cloud from a volcano it can cause a lot of damage to the engine.

Other explosive eruptions create fast-moving, hot clouds of volcanic ash, gas and rocks that travel down the sides of the volcanoes and destroy pretty much everything in their path.

The benefits of volcanoes

Despite the great damage they can cause, volcanoes also help us to live. Volcanic ash provides food for the soil around volcanoes which helps us grow plants to eat. The heat from some volcanoes is used to make energy to power lights, fridges, televisions and computers in people's houses.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which sentence describes the central idea of the text?
    A. Volcanoes are the most destructive forces in nature and do little good for people, plants, or animals.
    B. How large a volcanic eruption will be depends on the strength of the volcano's exterior and whether it can keep the lava in.
    C. Volcanoes can vary in their shape and erupt in different ways which can be dangerous yet beneficial to humans.
    D. Volcanic eruptions have a bad reputation for hurting people and causing damage, but the number of deaths caused by volcanoes is very small.

2. PART B: Which TWO details from the text best support the answer to Part A?
    A. "The rock inside the planet we live on can melt to form molten rock called magma. This magma is lighter than the rocks around it and so it rises upwards." (Paragraph 1)
    B. "Magma and volcanoes often form where the plates are pulled apart or pushed together but we also find some volcanoes in the middle of tectonic plates." (Paragraph 2)
    C. "Volcanoes have many different shapes and sizes, some look like steep mountains (stratovolcanoes), others look like bumps (shield volcanoes)..." (Paragraph 3)
    D. "For example, if you try to blow bubbles in cooking oil through a straw, the bubbles can escape quite easily because the cooking oil is runny." (Paragraph 5)
    E. "If you try to blow bubbles in jam or peanut butter you would find it very difficult because the jam and peanut butter are very sticky, they wouldn't move much at all if you tried to pour them out of the jar." (Paragraph 6)
    F. "Despite the great damage they can cause, volcanoes also help us to live. Volcanic ash provides food for the soil around volcanoes which helps us grow plants to eat." (Paragraph 13)

3. How does the section "Damage caused by eruptions" contribute to central idea of the text (Paragraphs 10-12)?
    A. It emphasizes how good ash is for the environment.
    B. It warns people that ash from eruptions can be deadly.
    C. It stresses how powerful volcanic eruptions can be.
    D. It suggests that it's impossible to escape a volcanic eruption.

4. How does the author's comparisons of magma to other substances contribute to the text?
    A. They help readers understand the different consistencies of magma.
    B. They suggest that magma isn't as dangerous as most people believe.
    C. They show how the consistency of magma can't be easily described.
    D. They help readers imagine what it would be like to touch magma.

5. What connection does the author draw between magma and volcanoes?

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. In the text, the author discusses how volcanic eruptions are dangerous, but also important to life. What are other events in nature that are dangerous but serve an important purpose?

2. How could the information provided in the text about different types of volcanoes and different eruptions help people that live nearby volcanoes? How might this knowledge help them prepare for an eruption?

Day 3

White Out

by Kirsten Weir

A strange fungus continues to attack the country's bat population.

Recently, bats with fuzzy white noses have popped up in Indiana, Ohio, Maine, North Carolina, and Kentucky. It's an ominous development. *White-nose syndrome* (*WNS*), a disease that kills hibernating bats, has officially spread into five more states.

The mysterious syndrome was first discovered in the state of New York in 2007. From there, it spread across the United States and Canada. Infected bats can now be found in 16 states and four Canadian provinces.

Courtesy Ryan von Linden/NY Department of Environmental Conservation

Scientists have learned a great deal about the disease since its discovery. There's much they don't understand, though, including how to stop it. "There's a lot of work still being done," says Tom Kunz, a bat expert at Boston University.

Time is of the essence. More than a million and perhaps as many as 2 million bats have died already, Kunz says. "We've got a disease that is causing one of the most precipitous declines of bats in American history," he says.

Skin and Bone

White-nose syndrome is named for the white fungus that typically appears on the muzzles and other body parts of infected bats. Initially, scientists weren't sure whether the fungus caused the disease. Many suspected it was an *opportunistic* infection-a secondary infection that gains a foothold in an animal already weakened by another illness.

Researchers haven't found any other infectious agents in the sickened bats. So most now agree that the fungus is the likely cause of WNS. The fungus is new to science, and researchers have named it *Geomyces destructans*.

"We still haven't determined how the bats are actually dying from the fungal infection," says Jeremy Coleman, the national WNS coordinator for the U.S. Fish and Wildlife Service. One clue: Infected bats seem to run out of fat in the middle of winter. Bats need that fat to nourish themselves until spring. Without it, they die.

Carol Uphoff Meteyer/USGS

This little brown bat is infected with white-nose syndrome. The arrows point to small patches where its wings have lost their elasticity, coloration, and surface sheen.

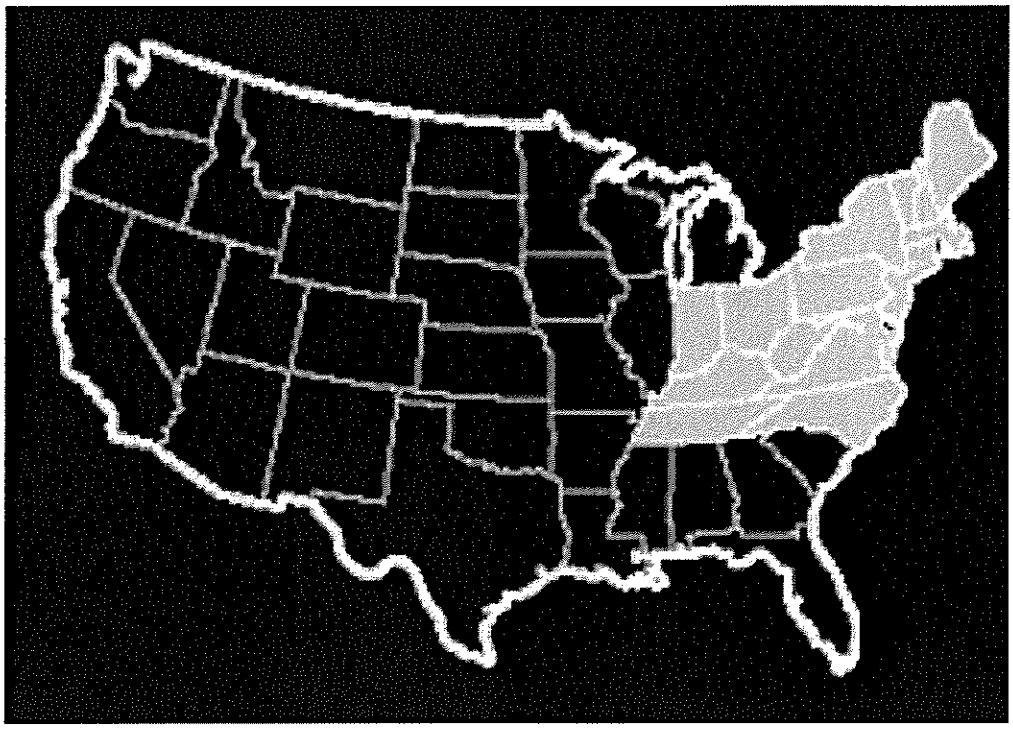
Normally, hibernating bats wake briefly once or twice a month, Kunz says. Infected bats arouse from hibernation every four or five days. They then expend valuable calories flying around. That activity probably explains why the bats are so skinny. "Every arousal burns up body fat," he says.

What makes infected bats wake up so often? Some scientists have proposed an "itch-and-scratch hypothesis." Just as people scratch their toes like crazy when they have *athlete's foot,* a common fungal infection, bats might feel a similar itch when the fungus invades their skin. The uncomfortable sensation could be rousing them from their winter naps.

Then again, the bats might just be thirsty. One of skin's many jobs is preventing water loss. In bats, healthy wing membranes help maintain a water balance in the body. The fungus damages bat wings, causing small holes and scar tissue to appear in the membranes. Bats could be losing excess water through their injured wings, some scientists propose. The animals might be waking up to find a drink and avoid *dehydration* (an excessive loss of fluid).

Fungus Among Us

The fungus *G. destructans* is itself puzzling. Hundreds of other species of *Geomyces* fungi live in U.S. caves but don't bother bats at all, says Coleman. And though *G. destructans* has been found in caves in Europe, bats there appear unaffected by it. Do European bats possess a gene that makes them resistant to infection? Is European *G. destructans* somehow different from the strain found in the U.S.? "We're trying to figure out why this fungus is so devastating for [North American] bats," Coleman says.



Joe LeMonnier

Discovered in New York state in 2007, white-nose syndrome has since spread to 15 other states and killed more than a million bats.

Meantime, the best hope for North America's bats seems to be preventing any further spread of WNS. The disease is thought to spread from bat to bat, says Coleman, but researchers haven't ruled out the possibility that people are spreading it too. The Fish and Wildlife Service has played it safe and closed a number of caves to human visitors. "We're trying to prevent people from moving the fungus faster than the bats can," Coleman says.

So far, WNS has been found in nine bat species, including two endangered ones: the Indiana bat and the gray bat. As more states and more species are affected, the impact of WNS could snowball. Bats play an important role in their ecosystems. A bat can eat half its weight in insects every night. A female bat that's *lactating* (feeding her pups with milk) can gulp down twice that amount. Insect-eating bats in the U.S. save farmers at least $3 billion a year by swallowing bugs that would otherwise damage crops, according to an analysis in the journal *Science.* WNS is just beginning to move into the Midwest, the nation's agricultural heartland. "As it continues to spread, we could see an agricultural impact," Coleman says.

AP Images

Scientist Britta Wood enters an abandoned limestone mine in Rosendale, N.Y., to collect bats infected with white-nose syndrome.

Scientists across the country are hard at work studying the bats, the fungus, and potential ways to manage the disease. "Bats provide a real value," Kunz says. "This is a massive loss."

Name: _____ Date: _____

1. What is white-nose syndrome?

A. a disease that kills hibernating bats

B. a disease that affects European bats

C. a disease that weakens small birds

D. a disease that kills one type of fungus

2. The fungus damages bat wings, causing small holes and scar tissue to appear in the membranes. What is a possible effect of this damage to bat wings?

A. The bats have to wake up to eat more food and avoid starving during the winter.

B. The bats have to wake up to find a drink and avoid dehydration.

C. The bats have to practice flying more often to become stronger.

D. The bats are no longer able to fly or hunt for food during the winter.

3. Read these sentences from the text:

"Infected bats seem to run out of fat in the middle of winter. Bats need that fat to nourish themselves until spring. Without it, they die. [...] Normally, hibernating bats wake briefly once or twice a month, Kunz says. Infected bats arouse from hibernation every four or five days. They then expend valuable calories flying around."

Based on this evidence, what conclusion can be drawn about the infection?

A. The infection is most likely an effect of bats flying around in the middle of winter.

B. The infection most likely causes bats to wake up during hibernation.

C. The infection is most likely found in bats with a lot of fat.

D. The infection is most likely found in bats that are already sick.

4. If more and more bats in the U.S. die of white-nose syndrome, how might the ecosystem be affected?

A. Crops and plantlife might grow more healthily.

B. The amount of water in the ecosystem might decrease.

C. The number of different kinds of fungus might increase.

D. The number of insects in the ecosystem might increase.

5. What is the main idea of this text?

A. A strange fungal disease is affecting the bat populations in the United States and Europe differently.

B. Scientists are studying a strange fungal disease that is killing the bat population in the United States.

C. White-nose syndrome is named for the white fungus that appears on the muzzles and other body parts of infected bats.

D. Fungus can damage bat wings, causing small holes and scar tissue to appear in the membranes.

6. Read these sentences from the text:

"As more states and more species are affected, the impact of WNS could snowball. Bats play an important role in their ecosystems. [...] Insect-eating bats in the U.S. save farmers at least $3 billion a year by swallowing bugs that would otherwise damage crops, according to an analysis in the journal Science. WNS is just beginning to move into the Midwest, the nation's agricultural heartland. 'As it continues to spread, we could see an agricultural impact,' Coleman says."

What does the word "snowball" in the first sentence mean here?

A. grow or increase

B. shrink or decrease

C. stay the same

D. stop completely

7. Choose the answer that best completes the sentence.

Bats with WNS could be losing excess water through their wings _____ the fungus damages bat wings.

A. before

B. therefore

C. because

D. however

8. According to the text, how do insect-eating bats in the U.S. save farmers money?

9. How does WNS negatively affect bats?

Support your answer with evidence from the text and images.

10. Why it is important to stop the spread of WNS?

Support your answer with evidence from the text and images.

Using Unit Rates to Find Equivalent Ratios

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

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

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

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

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

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

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

Using Unit Rates to Find Equivalent Ratios *continued*

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

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

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

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

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

COMMONLIT

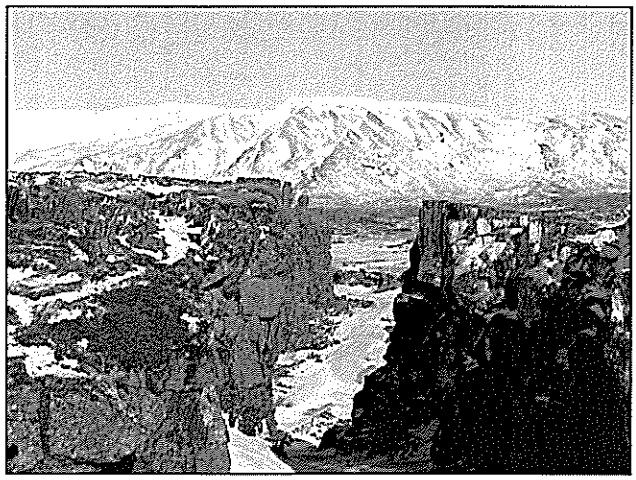
Name: _____ Class: _____

Plate Tectonics: Moving and Shaking

By National Geographic Society Staff
2013

Tectonic plates play an important role in shaping the surface of the Earth and our experience on it. This informational text goes into detail about what tectonic plates are and their different types of movement on planet Earth. As you read, take notes on the different types of tectonic plates and the events that they cause.

[1] There are a few handfuls of major plates and dozens of smaller, or minor, plates. Six of the majors are named for the continents embedded within them, such as the North American, African, and Antarctic plates. Though smaller in size, the minors are no less important when it comes to shaping the Earth. The tiny Juan de Fuca plate is largely responsible for the volcanoes that dot the Pacific Northwest of the United States.



"Tectonic Plate Rift" by Elizabeth Ellis is licensed under CC BY-SA 2.0.

The plates make up Earth's outer shell, called the lithosphere. (This includes the crust and uppermost part of the mantle.)[1] Churning currents in the molten[2] rocks below propel them along like a jumble of conveyor belts in disrepair. Most geologic activity stems from the interplay where the plates meet or divide.

The movement of the plates creates three types of tectonic boundaries: convergent, where plates move into one another; divergent, where plates move apart; and transform, where plates move sideways in relation to each other.

Convergent Boundaries

Where plates serving landmasses collide, the crust crumples and buckles into mountain ranges. India and Asia crashed about 55 million years ago, slowly giving rise to the Himalaya, the highest mountain system on Earth. As the mash-up continues, the mountains get higher. Mount Everest, the highest point on Earth, may be a tiny bit taller tomorrow than it is today.

[5] These convergent boundaries also occur where a plate of ocean dives, in a process called subduction, under a landmass. As the overlying plate lifts up, it also forms mountain ranges. In addition, the diving plate melts and is often spewed out in volcanic eruptions such as those that formed some of the mountains in the Andes of South America.

1. the layer of the Earth between the crust and the core
2. liquefied by heat

At ocean-ocean convergences, one plate usually dives beneath the other, forming deep trenches like the Mariana Trench in the North Pacific Ocean, the deepest point on Earth. These types of collisions can also lead to underwater volcanoes that eventually build up into island arcs like Japan.

Divergent Boundaries

At divergent boundaries in the oceans, magma[3] from deep in the Earth's mantle rises toward the surface and pushes apart two or more plates. Mountains and volcanoes rise along the seam. The process renews the ocean floor and widens the giant basins. A single mid-ocean ridge system connects the world's oceans, making the ridge the longest mountain range in the world.

On land, giant troughs such as the Great Rift Valley in Africa form where plates are tugged apart. If the plates there continue to diverge, millions of years from now eastern Africa will split from the continent to form a new landmass. A mid-ocean ridge would then mark the boundary between the plates.

Transform Boundaries

The San Andreas Fault in California is an example of a transform boundary, where two plates grind past each other along what are called strike-slip faults. These boundaries don't produce spectacular features like mountains or oceans, but the halting motion often triggers large earthquakes, such as the 1906 one that devastated San Francisco.

3. hot fluid or semifluid material below or within the Earth's crust

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Read the sentence from paragraph 2: "Churning currents in the molten rocks below propel them along like a jumble of conveyor belts in disrepair." How does this sentence contribute to the reader's understanding of the topic of the article?
    A. by describing the geologic features that can form along each of the three types of tectonic boundaries
    B. by providing an analogy connecting the concept of moving tectonic plates to a concrete image
    C. by signaling a shift in the structure of the article to a chronological narrative
    D. by connecting the introduction of the article to the central idea that the lithosphere is unique to planet Earth

2. PART B: Which THREE phrases provide examples that further develop the topic of the article in Part A?
    A. "the minors are no less important" (Paragraph 1)
    B. "the crust crumples and buckles" (Paragraph 4)
    C. "As the mash-up continues" (Paragraph 4)
    D. "the highest point on Earth" (Paragraph 4)
    E. "widens the giant basins." (Paragraph 7)
    F. "like mountains or oceans" (Paragraph 9)
    G. "the halting motion" (Paragraph 9)

3. PART A: In paragraph 4, how does the author's use of "crumples," "buckles," "crashed," and "mash-up" impact the reader's understanding of convergent boundaries?
    A. by helping the reader understand how to locate the convergent boundaries
    B. by helping the reader to imagine the violent movement associated with convergent boundaries
    C. by providing the reader with a comparison between convergent and divergent boundaries
    D. by illustrating for the reader the differences between convergent boundaries and transform boundaries

4. PART B: Which TWO additional phrases in the section titled "Convergent Boundaries" provide further support for the answer to Part A?
    A. "landmasses collide" (Paragraph 4)
    B. "slowly giving rise" (Paragraph 4)
    C. "a plate of ocean dives" (Paragraph 5)
    D. "forms mountain ranges." (Paragraph 5)
    E. "spewed out" (Paragraph 5)
    F. "forming deep trenches" (Paragraph 6)

5. PART A: Which best describes the overall structure of the article?
   A. an introduction to the main topic followed by discussions of various sub-topics related to the main topic
   B. a statement of a central argument followed by explanation of ideas that support the central argument
   C. a description of a problem followed by possible solutions to the problem
   D. an explanation of various features related to the topic followed by the causes of the features

6. PART B: How does paragraph 9 contribute to the structure in Part A?
   A. by introducing transform boundaries as a new main topic
   B. by elaborating on one of the subtypes of boundaries created by tectonic plates
   C. by suggesting a solution to the problem of tectonic plates that move in a jerky motion
   D. by providing reasons why geologic activity is necessary for Earth's future development

7. PART A: Which sentence from the article is based on a reasoned judgment?
   A. "Six of the majors are named for the continents embedded within them, such as the North American, African, and Antarctic plates." (Paragraph 1)
   B. "Mount Everest, the highest point on Earth, may be a tiny bit taller tomorrow than it is today." (Paragraph 4)
   C. "At ocean-ocean convergences, one plate usually dives beneath the other, forming deep trenches like the Mariana Trench in the North Pacific Ocean, the deepest point on Earth." (Paragraph 6)
   D. "These boundaries don't produce spectacular features like mountains or oceans, but the halting motion often triggers large earthquakes, such as the 1906 one that devastated San Francisco." (Paragraph 9)

8. PART B: On which piece of evidence is the reasoned judgment in Part A based?
   A. scientific theories based on geologic events in the past
   B. scientists' opinions about geologic events
   C. descriptions of similar geologic events in the past
   D. predictions about geologic events made by scientists several centuries ago

9. PART A: Which sentence states a central idea of "Plate Tectonics: Moving and Shaking"?
   A. The most dramatic geologic activity on Earth happens at tectonic boundaries.
   B. The highest mountain system on Earth, the Himalaya, was created by the movement of tectonic plates.
   C. All of the world's oceans are connected by one mid-ocean ridge system.
   D. The grinding of plates at a transform boundary may cause violent earthquakes.

10. PART B: Which TWO sentences support the answer to Part A?

A. "The tiny Juan de Fuca plate is largely responsible for the volcanoes that dot the Pacific Northwest of the United States." (Paragraph 1)

B. "Churning currents in the molten rocks below propel them along like a jumble of conveyor belts in disrepair." (Paragraph 2)

C. "Most geologic activity stems from the interplay where the plates meet or divide." (Paragraph 2)

D. "The movement of the plates creates three types of tectonic boundaries: convergent, where plates move into one another; divergent, where plates move apart; and transform, where plates move sideways in relation to each other." (Paragraph 3)

E. "Mount Everest, the highest point on Earth, may be a tiny bit taller tomorrow than it is today." (Paragraph 4)

F. "These convergent boundaries also occur where a plate of ocean dives, in a process called subduction, under a landmass." (Paragraph 5)

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. How does knowing the placement and movement of tectonic plates help inform us about the future?

2. In the context of the text, who is in control: man or nature? How does the movement of tectonic plates affect people's lives? Cite evidence from this text, your own experience, and other literature, art, or history in your answer.

3. In the context of the text, how do we understand the world around us? How does the information in the text contribute to your understanding of the natural features in your community?

Day 4

The Mountain

by ReadWorks

There are four peaks to climb until Manny reaches the top of the mountain. Each ledge is thinner and more dangerous than the last. Thankfully, he has a strong cane. He uses the cane to pull himself up. The climb is cold and snowy.

Day turns to night and back to day again. A strong gust of wind threatens to blow him off-course. But he persists.

The last thing Manny remembers is opening his eyes at the bottom of the mountain. He doesn't remember how he got there. To make things even stranger, he is wearing a fancy tuxedo.

The woman he loves is at the top of the mountain, waiting. He can hear her sweet voice, singing.

He remembers that she is waiting for him, but he doesn't remember anything else. Manny guesses he must have had an accident.

Maybe I hit my head and now I have amnesia! he thinks.

The snow is thick and cold. It gets in his mouth as he climbs. He must be hungry because it tastes sweet like sugar.

"Hello! Is anyone there?" Manny asks.

"Hello! Is anyone there?" he hears back. It's the sound of his own voice-an echo coming back at him.

"I love you! I'm waiting for you!" he hears. Now this, this is not *his* voice. This is the sound of his love calling for him.

He climbs higher and higher. Closer and closer. His arms ache from pulling. His tuxedo is covered in snow. Manny is soaking wet and exhausted. But he is also determined to get to the top.

"I love you! I'm coming!" he calls back.

He hears what he thinks is the faint sound of laughter. Deep and booming. The laughter of the gods?

Suddenly, the mountain is flooded with light. It's as if the sun were behind a door that was flung open suddenly.

The mountain begins to spin, and Manny hangs on with all his might.

"Why is this happening?" he cries. But no answer comes.

The mountain spins and spins. The room spins and spins. It's bright and then dark again. He sees trees and bright lights. Manny closes his eyes and falls off the mountain. He fears this could be the end.

When he lands, it is warm and soft. He feels himself lifted through the air. It is as if fate has saved him. The next words he hears are:

"Whoops, that was a close call. We almost lost our groom!"

"Good catch!" says another voice.

Manny opens his eyes and find himself on top of the mountain. Bella! The woman he loves! He rubs the snow from his eyes. The whirlwind had somehow picked him up and placed him right next to her.

Bella stands in a pile of white snow, wearing a beautiful wedding dress. Manny laughs because he's soaking wet and dirty, covered in sticky snow.

He kisses her and she giggles. "You taste like candy!" she says. "I'm so glad you're back! I thought you would miss the wedding!"

"Wedding?" Manny says. "I don't remember! Are we getting married?"

"Oh no! Not us," Bella says, laughing. "Them!"

She points to the sky, and for the first time he sees everything. There is a skylight and sunshine.

There is music playing. And people. Giant people!

Manny screams and falls back into the snow. Giants! As tall as the mountain! Taller! They come by and put their faces, with huge eyeballs as big as Manny's head, right up to him.

He thinks back to the laughter he heard before and the sunlight, suddenly so bright. Gods! It's all the work of Gods.

Suddenly, he is lifted up into the air. A giant hand is coming for him. This is surely the end now. A giant eye, a giant mouth. He is about to be eaten!

And then he sees it, a giant... napkin?

He hears Bella laughing below him as the soft napkin cleans his ears, his face, and his suit. When he is completely clean, he is placed back on top of the mountain's snowy peak. He stands upright next to Bella, and she holds his hand. The giant walks away as if nothing unusual at all has happened.

"You look beautiful," Bella says. "All clean! Are you ready?"

Music starts to play. Manny hears a voice say: "Introducing the bride and groom!"

The mountain is moving through the air, soaring, rolling. Bella grabs his hand tightly and whispers, "Get ready."

One of the giants leans down and pats his head. He notices she looks just like Bella. She's dressed in a beautiful white gown. This giant is also a bride.

"You're beautiful, little man!" the giant says. At that, she takes out a giant knife.

The mountain tips slightly, as if a slice is being cut out of it. He sees the bride feeding cake to the groom. The groom takes a big bite, and she smears frosting all over his face.

That's why the snow tasted so sweet, Manny thinks. *It's not snow at all. It's cake frosting!*

The snowy mountain is wheeled back into the corner, and Bella and Manny are finally alone together.

"I love you!" Manny says, and he takes her hand and kisses her sweetly. The kiss is every bit as sweet as the cake they are standing on. Two wedding cake toppers in love.

Name: _____ **Date:** _____

1. What is "the mountain" in the story?

A. a wedding cake

B. a real mountain

C. a table

D. a cupcake

2. Where does the story take place?

A. on a mountain

B. in a bakery

C. at a wedding

D. on Mount Olympus

3. The "mountain" in the story is not a normal mountain. What evidence from the story supports this conclusion?

A. The "mountain" has four peaks.

B. The "snow" tastes sweet like sugar.

C. There are strong gusts of wind.

D. Manny is wearing a tuxedo.

4. Read the following sentences:

"Manny closes his eyes and falls off the mountain. He fears this could be the end.

"When he lands, it is warm and soft. He feels himself lifted through the air. It is as if fate has saved him. The next words he hears are:

"'Whoops, that was a close call. We almost lost our groom!'"

What inference can be made about what happens in these sentences?

A. Manny falls off the cake and lands on the floor.

B. Manny falls off the mountain and lands in the snow.

C. Manny falls off the mountain and has a hallucination.

D. Manny falls off the cake and is caught by a human.

5. What is this story mostly about?

A. a dangerous, snowy mountain

B. Manny and Bella's wedding

C. the wedding of two gods

D. two wedding cake toppers in love

6. Read the following sentences:

"He remembers that she is waiting for him, but he doesn't remember anything else. Manny guesses he must have had an accident.

"Maybe I hit my head and now I have ***amnesia!*** he thinks."

What does **"amnesia"** mean as used in this sentence?

A. blood loss

B. an accident

C. memory loss

D. an injury

7. Choose the answer that best completes the sentence below.

At the beginning of the story, the setting appears to be on a mountain, _____ by the end of the story, this is not the case.

A. but

B. so

C. also

D. after

8. Who is getting married in the story?

9. Why are Manny and Bella wearing wedding clothing?

10. In the story, all is not as it originally seems. As the story progresses, the author gradually gives the reader more details and reveals what the story is really about.

Identify and explain the key points in the story where the reader is given clues about what the story is really about.

Using Unit Rates to Compare Ratios

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

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

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

Car	Miles	Gallons
Pickup Truck	120	8
Minivan	180	10

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

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

Athlete	Seconds	Meters
Ellen	28	200
Lindsay	60	400

Using Unit Rates to Compare Ratios *continued*

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

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

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

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

The transfer of thermal energy can occur in three ways

By National Geographic Society on 02.13.20
Word Count **1,088**
Level **MAX**

Image 1. Radiation is one way that heat transfer occurs. All objects radiate some amount of heat as electromagnetic waves, even humans. Hotter objects, like light bulbs and campfires, radiate higher-energy light that we can see. Photo by National Geographic

Thermal energy comes from the movement of atoms. Since atoms make up the entire known universe – and it is impossible to reach absolute zero (minus 273.15 degrees Celsius or minus 459.67 degrees Fahrenheit), the theoretical temperature at which even atoms are frozen in place – everything has thermal energy. Whether they are zipping around in a gas or barely shivering in a solid, atoms are constantly moving.

Although all objects have thermal energy, they do not all have the same amount. Extremely hot objects such as the sun have vastly more thermal energy than cold objects like ice. However, the sun can transfer some of its thermal energy to ice, which is what causes an ice cube to melt on a warm, sunny day. The movement of thermal energy from a hotter object to a colder object is called heat transfer.

Heat transfer can happen in three different ways: through conduction, convection, and radiation. All three forms of heat transfer happen constantly in daily life, and in fact, heat transfer is essential to life itself.

Conduction

Conduction requires contact between the objects involved. Solids, liquids and gases can all conduct heat. As with any form of heat transfer, there must be a temperature difference for conduction to happen, and thermal energy is always transferred from the hotter object to the colder one. Once the objects reach the same temperature, the heat transfer stops. This is called thermal equilibrium.

On a microscopic level, conduction happens when particles bump into each other. Consider a cold metal spoon in a hot cup of coffee: The molecules in the coffee are moving freely and the metal molecules in the spoon are vibrating. Since the coffee is hotter than the spoon, its molecules are (overall) moving more. As they bump up against the spoon, the coffee molecules transfer some of their energy to the spoon molecules. As these collisions keep happening, the spoon gets warmer and the coffee gets slightly cooler until both are the same temperature.

Once the spoon and the coffee reach this thermal equilibrium, the particles do not quit bumping against each other. They continue transferring energy back and forth, but there is no longer a net flow of thermal energy in one direction. The two objects remain at the same temperature unless acted on by something else that adds or subtracts heat from them. In most cases, that something is the air in the room, which draws heat from the coffee. Eventually, if allowed to sit, the coffee cup, the coffee, and the spoon will all be the same temperature as the ambient air. They are once again at thermal equilibrium, but this time with their surroundings.

Some materials conduct heat better than others. Materials that conduct heat well, like metals, are called conductors, while materials that do not conduct heat well, like wood and plastic, are called insulators. This is why people often choose wooden or plastic-handled spoons when cooking – they do not get nearly as hot as metal spoons.

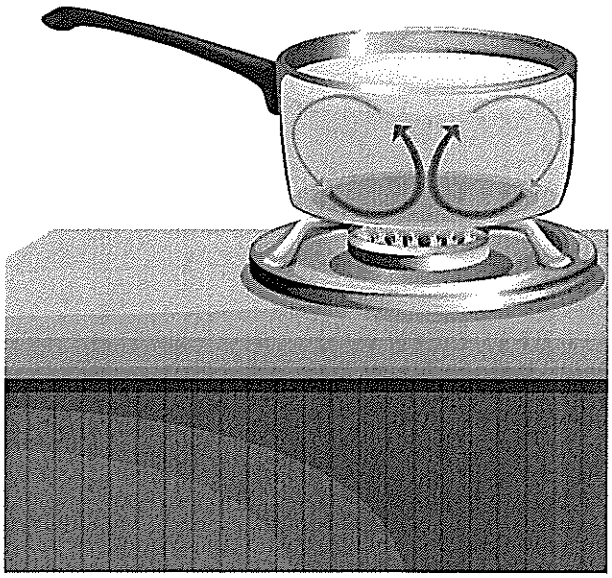
Convection

Heat transfer via convection happens only within fluids, like liquids and gases. Fluids are not very good conductors, so they transfer heat mostly by convection. Consider a pot of water heating on a stove: The heat source –the stove burner – is beneath the pot, so water near the bottom of the pot heats up first. Fluids expand when they heat up, so the water near the bottom becomes less dense. The difference in density between water at the bottom and at surface produces circulation currents. Hotter, less-dense water begins to rise and displace colder, denser water, which then sinks to the bottom where it is heated and begins to repeat the cycle. As time goes on, more of these circulation currents develop, transferring heat throughout the liquid. These convection currents can be easily observed when boiling rice in water.

Convection currents also allow heated air to circulate through a room. The phrase "heat rises" should really be "heated air rises," since it is the heated air molecules that are rising and circulating.

Convection plays a large role in moving plate tectonics. Earth's solid outer layer, the lithosphere, sits on top of a semi-molten layer called the asthenosphere. The asthenosphere is heated from

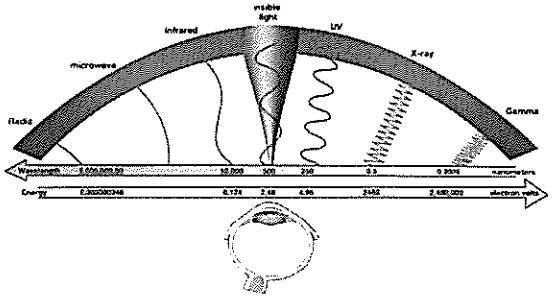
even-hotter regions below, so – just like a pot on a stove – this heat source creates slow, but massive, convection currents within the asthenosphere, which causes some of the movement of Earth's tectonic plates.



Radiation

To understand radiant energy, we need to understand electromagnetic waves. Light can act as both a particle and a wave, and when it acts as a wave, the waves are referred to as electromagnetic. These waves can have different amounts of energy based on how fast they vibrate up and down. Fast-vibrating (high-frequency) waves have more energy than slow-vibrating (low-frequency) waves. All of these waves exist on the electromagnetic spectrum, with low-energy waves on one end and high-energy waves on the other. Humans can only see light waves in a specific part of this range, called the visible spectrum.

Radiation is the transfer of heat via electromagnetic waves. All objects radiate some amount of heat as electromagnetic waves, even humans. Humans radiate energy as infrared light, which is too low-energy for us to see. However, we still feel it as heat – in fact, infrared radiation is commonly referred to as "heat rays." Hotter objects, like light bulbs and campfires, radiate higher-energy light that we can see.



Radiation can even transfer heat through the vacuum of space. The sun radiates heat through millions of miles of empty space down to Earth. Because the sun has so much thermal energy, it radiates many kinds of electromagnetic waves, including infrared light, visible light, ultraviolet light, and X-rays. Ultraviolet light and X-rays are high-energy forms of light that we cannot see.

Quiz

1 Which characterization accurately describes BOTH conduction and convection?

(A) Both only occur when currents are created by different densities.

(B) Both only occur when there is contact between two solid objects.

(C) Both can involve solids or gases, and need the presence of insulators in order to occur.

(D) Both can involve liquids or gases, and need a temperature difference in order to occur.

2 Which option BEST explains how thermal equilibrium interacts with heat transfer between particles?

(A) Thermal equilibrium stops the transfer of energy in just one direction when both objects reach the same temperature, but allows their particles to continue transferring that energy back and forth.

(B) Thermal equilibrium always transfers energy from the hotter object to the colder one, and increases the energy and speed of moving particles in both objects as the temperature decreases.

(C) Thermal equilibrium helps the transfer of energy between the particles of some materials better than others, but always stops the transfer of energy in materials like plastic and wood.

(D) Thermal equilibrium quickly transfers energy back to the particles of the object that was originally hotter, and requires that the particles in both objects have reached equal energy and density.

3 Which statement BEST explains the advantage of including Image 2 in the article?

(A) The image illustrates the temperature differences between hot and cold water using red and blue arrows familiar to most readers of the article.

(B) The image illustrates the circulation of hot water rising and cold water sinking during convection using the example that is described in the article.

(C) The image illustrates the effects of the heat transfer occurring with the air above an object in addition to the convection that is happening inside it.

(D) The image illustrates the way that the asthenosphere is heated from even hotter regions below it to create slow but massive convection currents.

4 How does Image 3 in the section "Radiation" support the reader's understanding of electromagnetic waves?

(A) It uses colored stripes to demonstrate that UV light and X-rays are low-energy forms of light.

(B) It indicates the reactions that take place within the human eye for visible light to be seen.

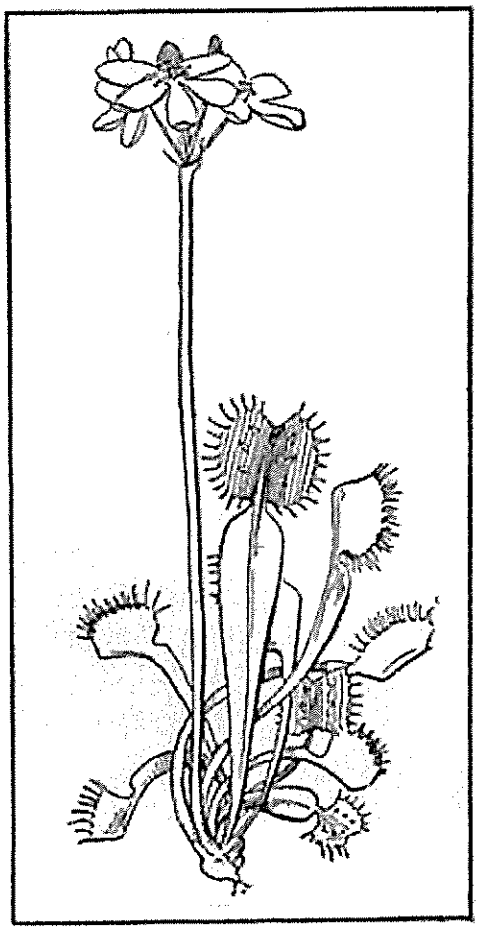
(C) It places different kinds of light on a spectrum to indicate the variations in their energy levels.

(D) It shows the differences in energy between light acting as a particle and light acting as a wave.

Day 5

The Venus Flytrap

by ReadWorks



VENUS'S FLYTRAP

The Venus flytrap is an insect-eating plant that lives mostly on the East Coast. Found primarily in swampy parts of the United States, like North and South Carolina, the Venus flytrap has colorful pink and green hues. Like most other plants, Venus flytraps get some nutrients from the soil, but since swampy areas tend to have soil that is nutrient-poor, it is hard for the plant to get nutrients from there. As a result, the flytrap has evolved to not only rely on the soil to survive. The Venus flytrap is a carnivorous plant because it catches insects and eats them to get the nutrients that it can't get from the soil.

The Venus flytrap has leaves that open to catch prey and then snap shut once it's ready to eat. On the inside of each leaf there are short, stiff hairs called trigger hairs. When an insect touches one of the three trigger hairs on either side of the leaf twice in a row, it signals to the flytrap that dinner is here. The leaves then snap shut, trapping the insect inside. Of course, some insects are able to escape, but many don't. And if they try and struggle to get out, the trap closes even tighter! The trap doesn't close all the way, though. It stays open for a few seconds, so smaller insects that might be trapped inside with the main meal can crawl out. Venus flytraps don't like to eat small insects because they don't provide a lot of nutritional value. If it's not an insect that is trapped, rather a nut or a stone, the trap will open after about 12 hours and spit it out. The inside of a flytrap has fingerlike tentacles

that help keep the insect from escaping. If you fold your hands together and lace your fingers on the inside, you'll get an idea of what the trap looks like.

In order to digest or eat the insect, the flytrap must squeeze its prey very tightly, as digestive juices dissolve the inside of the insect. At the end of this process, which takes anywhere from 5 to 12 days, the trap opens up again, and either rain or wind will carry the insect's remaining exoskeleton away. If the flytrap has caught an insect that is too big, and, say, the legs of the bug are sticking out of the trap, the digestion process might not happen the way it should. The trap will grow mold and once that happens, it will continue to get sicker and sicker, with the trap eventually turning black and falling off.

The exact amount of time it takes for the trap to open back up again depends on a variety of factors. These factors include the size of the insect, temperature, how old the trap is, and how many times the plant has gone through this process. In fact, the trap can only catch about three of its prey before it turns black, dies, and falls off. The trap can only open and close about seven times; that is why it is important to not go around touching the trap in order to get them to close. So if you ever see one, don't tease it!

Name: _____ **Date:** _____

1. What is the Venus flytrap?

A. a plant-eating insect

B. an insect-eating plant

C. swampy, nutrient-poor soil

D. a plant that grows on Venus

2. What does the author describe in the passage?

A. the species of insects the Venus flytrap eats

B. plants that are similar to the Venus flytrap

C. the swampy regions of North and South Carolina

D. how the Venus flytrap catches and eats its prey

3. The trap of the Venus flytrap may not last long. What evidence from the passage supports this conclusion?

A. The trap opens up again 5-12 days after catching and eating an insect.

B. The trap stays open for a few seconds so that smaller insects can crawl out.

C. The trap must squeeze the prey very tightly in order to digest or eat the insect.

D. The trap can only catch about three of its prey before it dies and falls off.

4. What was the Venus flytrap forced to adapt to?

A. an environment without any other plants

B. an environment with nutrient-rich soil

C. an environment without nutrient-rich soil

D. an environment without any large animals

5. What is the passage mainly about?

A. different types of carnivorous plants that live in swamps

B. the Venus flytrap and how it catches its prey

C. the swampy areas where the Venus flytrap lives

D. why the trap of the Venus flytrap turns black and fall off

6. Read the following sentence: "The inside of a flytrap has fingerlike **tentacles** that help keep the insect from escaping."

The author compares **tentacles** to what?

A. insects
B. flytraps
C. insects
D. fingers

7. Choose the answer that best completes the sentence below.

The Venus flytrap cannot get enough nutrients from the soil in which it grows. _____, the Venus flytrap evolved to get nutrients from an additional source.

A. Finally
B. Moreover
C. Although
D. Consequently

8. Where does the Venus flytrap get its nutrients?

9. Describe the process by which the Venus flytrap catches and digests its prey.

10. How has the trap of the Venus flytrap helped this plant to survive?

Using Unit Rates to Convert Measurements

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

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

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

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

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

Using Unit Rates to Convert Measurements *continued*

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

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

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

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

Name: _____ Class: _____

Can't We All Just Get Along?

By BirdBrain Science
2016

Earth is full of a variety of living things that interact with one another in many different ways. This informational text explains the various different types of relationships they can have with one another. As you read, identify the different types of relationships that exist.

[1] Have you ever watched a show about the wild? A pair of deer clash horns! A shark eats a seal! Lions run down a gazelle! Is all nature like that? All about eating and blood and guts? Or is that just what keeps our eyes glued to the TV screen? Let's look at some living things who work with each other rather than rip each other apart. These are the type of things that might not make it on TV. We will start with the not so nice ones and work our way to the nicest. Maybe this will make us think better of the natural world.

"Can't We All Just Get Along?" by BirdBrain Science is used with permission.

When a lion kills a gazelle, it wants to eat as much as it can and maybe share the rest with its family. Then there are some living things that will take small pieces of another living thing's body. They usually are much smaller than the thing they are taking from. **Parasitism** is when one living thing gets its energy from another living thing, does not give anything back, and hurts the thing it's taking things from. You have seen them before. Have you ever slapped a mosquito? Ever had a tick? Those are parasites. These little robbers do not want to kill their host. If they did, what would they eat? A mosquito nipping at your arm may be annoying, but that's a lot better than a lion gnawing[1] on your arm.

Now let's get a little nicer. Sometimes a living thing will live off the body of another living thing without hurting it. They do not steal anything. They do not bite. They just think the body of another living thing is a great place to hang out. **Commensalism** is when two living things live together and one gets good things out of it while the other is not hurt by it. Have you seen a picture of a whale with rocky white things stuck to its skin? Those are barnacles, living things that attach themselves to the whale. Living on a whale does two good things for them. First, nothing will try to eat them. They are on a whale! Also, they can eat things that float by. They may make the whale's skin a little itchy, but they do not hurt it. Unless, of course, the whale wants to go on a date. Barnacles do not look very pretty.

Now let's get really nice. While sharks are biting and elk are fighting, are there any animals that just get along? Yes! Actually, there are many. **Mutualism** is when two living things work together and both get good things out of it. Bees and flowers are the most common example. Without flowers, bees could not make honey. Without bees, flowers could not make new seeds. It's win-win for these two. There are lots of animals that get along. Birds will live on the backs of zebras and eat the ticks that are drinking the zebra's blood. The bird gets food. The zebra gets its ticks taken away. In some of these cases, one animal could not live without the other. So, lions, eat your hearts out. No, not that other animal's heart.

1. **Gnaw** ***(verb):*** to bite at or nibble something continually

[5] There's a word that we use for all of these kinds of relationships. **Symbiotic** is when two living things live together and change how the other one lives. Sometimes it's good for one and bad for the other. Sometimes it's just good for one. Sometimes it's even good for both. These relationships do not end with animals living with animals. Look at humans and dogs. The dog gets food and love. The human gets a friend and a guard. If you see two living things living together, think about whether one is getting a better deal than the other.

A bird sits on a zebra. A barnacle sticks to a whale. A tick steals a little blood. These are not as exciting as watching a shark hunt or a lion roar. However, it is nice to know that there are some living things out there that are finding ways to live together. We could take note of the animals that do not always make it on TV.

Text-Dependent Questions

Directions: For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which statement best identifies the central idea of the text? [RI.2]
   - A. The effect of one living thing on another depends on if their relationship is harmful or beneficial.
   - B. Relationships between animals are usually violent because they fight over food to survive.
   - C. TV companies make money by showing the violent relationships between animals.
   - D. It would be best if all living things only had symbiotic relationships with each other.

2. PART B: Which quote from the text best supports the answer to Part A? [RI.1]
   - A. "Is all nature like that? All about eating and blood and guts. Or is that just what keeps our eyes glued to the TV screen?" (Paragraph 1)
   - B. "When a lion kills a gazelle, it wants to eat as much as it can and maybe share the rest with its family." (Paragraph 2)
   - C. "They do not steal anything. They do not bite. They just think the body of another living thing is a great place to hang out." (Paragraph 3)
   - D. "There's a word that we use for all of these kinds of relationships. Symbiotic is when two living things live together and change how the other one lives" (Paragraph 6)

3. PART A: According to the text, which statement best describes the relationship between a whale and a barnacle? [RI.3]
   - A. Neither organism benefits from this relationship because barnacles are harmed when they are attached to whales.
   - B. The whale benefits from this relationship because nothing will try to eat it, and the barnacles are not harmed.
   - C. The barnacles benefit because they can eat food while they are attached to the whale, and the whale is not harmed.
   - D. Both the whale and the barnacle benefit because both of their lives are made easier by being attached.

4. PART B: Which quote from paragraph 3 best supports the answer to Part A? [RI.1]
   - A. "Now let's get a little nicer."
   - B. "one gets good things out of it while the other is not hurt"
   - C. "First, nothing will try to eat them. They are on a whale!"
   - D. "Unless, of course, the whale wants to go on a date."

5. How does the author structure the text to convey the central idea of the article? [RI.5]

Discussion Questions

Directions: Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.

1. What additional organism interactions can you think of that are symbiotic? How do these two kinds of organisms effect one another?

2. All over the world, bee colonies are disappearing. Some scientists hold humans responsible, believing that bees are dying because of loss of habitats and pesticides. How does the disappearance of bees effect other organisms, such as those that they have symbiotic relationships with? Can you think of other symbiotic relationships that humans might be responsible for altering?

3. In the context of the text, who is in control: man or nature? How might humans be in a symbiotic relationship with the natural world around them? Consider humans' relationships with plants and animals. Cite evidence from this text, your own experience, and other literature, art, or history in your answer.