



Compton USD Learning Packet #5

Fifth Grade

Name _____

5th Grade Learning Packet

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Week 6

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Recommended Online Usage	
<input type="checkbox"/> I-Ready Reading - 45 minutes per week	<input type="checkbox"/> I-Ready Math - 45 minutes per week
<input type="checkbox"/> Imagine Learning for English Learners - 90 minutes per week	<input type="checkbox"/> Dreambox - 90 minutes per week

Name _____

sadness	darkness	fearless	fondness	forgiveness
gladness	fullness	weakness	effortless	motionless
needless	stillness	bottomless	meaningless	ceaseless
harmless	hopeless	foolishness	emptiness	fierceness

A. Write the spelling word that matches each definition below.



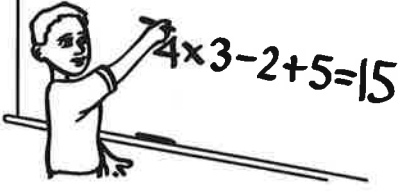

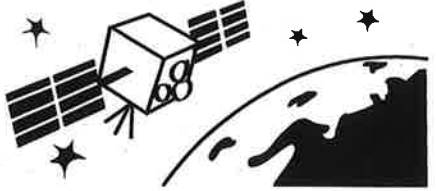

- | | |
|------------------------------|------------------------------|
| 1. sorrow; unhappiness _____ | 6. easy; without force _____ |
| 2. without stopping _____ | 7. deep; unlimited _____ |
| 3. desperate; doomed _____ | 8. happiness; pleasure _____ |
| 4. quietness; calm _____ | 9. not moving _____ |
| 5. safe; innocent _____ | 10. brave; not afraid _____ |

B. Write the spelling word that best completes each sentence.

11. Our voices echoed in the _____ of the large room.
12. The child drew _____ scribbles on paper.
13. It was _____ to ask the question more than once.
14. We laughed at the circus clown's _____.
15. She enjoys reading and has a _____ for science fiction.
16. He was sorry and asked for _____.
17. It was hard to find our way in the inky _____.
18. My arm still has some _____ because of the injury.
19. The cat arched its back and hissed with _____.
20. After a few hours, the balloons lost some of their _____.

Name _____

Use the word chart to study this week's vocabulary words.
Write a sentence using each word in your writer's notebook.

Word	Context Sentence	Illustration
approximately	She guessed there were <u>approximately</u> three hundred beans in the jar.	
astronomical	We used a telescope to see the <u>astronomical</u> objects at night.	
calculation	He wrote the <u>calculation</u> that gave him the answer.	
diameter	The <u>diameter</u> of the balloon was the same length as her arm.	
orbit	The new satellite would <u>orbit</u> Earth for several years.	
spheres	The sculptor added <u>spheres</u> to his work to show the planets.	

Name _____

approximately	astronomical	calculation	criteria
diameter	evaluate	orbit	spheres

A. Write each word next to its definition.

1. act of determining something using math _____
2. objects shaped like balls or globes _____
3. move in a circle around another object _____
4. relating to outer space or astronomy _____
5. examine closely to decide its value _____
6. rules for judging something _____
7. nearly or about _____
8. distance across a circle through its center _____

B. Write four sentences. Use at least one vocabulary word in each sentence.

9. _____

10. _____

11. _____

12. _____

Name _____

Estimate Decimal Sums and Differences



COMMON CORE STANDARD—5.NBT.7
Perform operations with multi-digit whole numbers and with decimals to hundredths.

Use rounding to estimate.

1.
$$\begin{array}{r} 5.38 \\ +6.14 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 2.57 \\ +0.14 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 9.65 \\ -3.12 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 7.92 \\ +5.37 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +6 \\ \hline 11 \end{array}$$

Use benchmarks to estimate.

5.
$$\begin{array}{r} 2.81 \\ +3.72 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 12.54 \\ +7.98 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 6.34 \\ +3.95 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 16.18 \\ -5.94 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 17.09 \\ + 3.98 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 14.01 \\ - 4.51 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 11.47 \\ + 9.02 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 19.97 \\ -11.02 \\ \hline \end{array}$$

Problem Solving



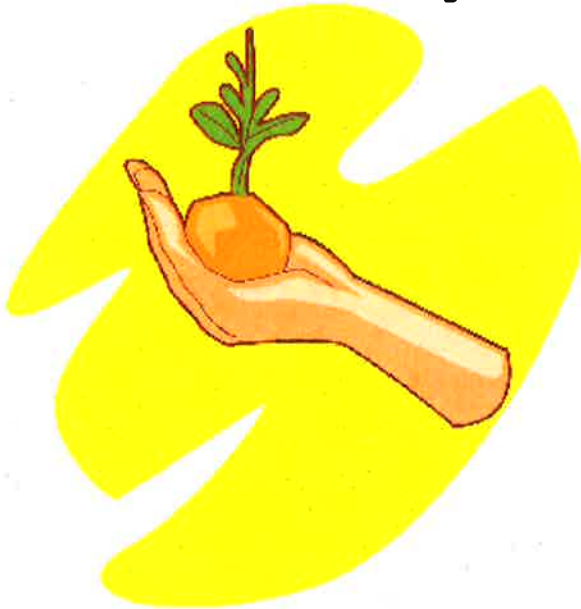
13. Elian bought 1.87 pounds of chicken and 2.46 pounds of turkey at the deli. About how many pounds of meat did he buy?

14. Jenna bought a gallon of milk at the store for \$3.58. About how much change did she receive from a \$20 bill?

How Do Plants Grow?

There are all kinds of plants on earth. Different kinds of plants are adapted to living in every kind of biome. For example, desert plants can live without much water while arctic plants are adapted to the extreme cold winter temperatures. Aquatic plants live only in the water and ocean plants are adapted to life in sea water. In this lesson we will focus on the most abundant kinds of plants, those that grow from seeds with their roots in the soil.

Adult plants produce seeds that fall near them or get carried by wind, water, insects or animals to another location. Those seeds that land in a suitable spot will naturally enter into the soil and stay there until conditions are right for the seed to germinate, that is, begin to



grow. Seeds require the right amount of moisture before they begin to germinate and grow. How much water is needed depends upon the plant species. Many seeds require warmth and the right temperature before they begin to grow. That's why so many plants begin to grow in the warmth of spring.

When conditions are right, the seed begins to change and develops the earliest stages of the plant underground. No one can see this early growth because it occurs underground and it may take weeks before any part of the plant is visible above ground. At

first the new plant uses energy stored within the seed itself in order to grow. Meanwhile, the plant is developing its roots and once the roots are mature enough, they take in nutrients from the surrounding soil. The plant then uses these nutrients in order to continue to grow. By then the nutrients in the seed have been used up.

Eventually the plant emerges from the ground and is visible. The amount of time it takes for a plant to emerge after the seed begins to germinate depends on the plant species. Once above ground the plant relies on energy from the sun that it takes in through its leaves as well as soil nutrients that come in through the roots. Some plants reach maturity in just a few days or a week and never get any taller. Large plants like trees grow slowly and take decades to reach their full height. When plants are mature enough they create seeds of their own and the cycle of plant life for that species begins again.

Name: _____ Date: _____

Multiple Choice Questions

Circle the correct answer.

1. Plants that can only live in water are
 - a. Arctic plants
 - b. Aquatic plants
 - c. Terrestrial plants
 - d. None of the above

2. Plants that are adapted to the extreme cold of the north are called
 - a. Arctic plants
 - b. Aquatic plants
 - c. Terrestrial plants
 - d. None of the above

3. What can move seeds away from an adult plant?
 - a. Water
 - b. Wind
 - c. Animals
 - d. All of the above

4. Before seeds can grow into plants they need the right amount of
 - a. Moisture
 - b. Warmth
 - c. Both a. and b. above
 - d. None of the above

5. The earliest growth of plants uses nutrients
 - a. From the sun
 - b. From the soil
 - c. Stored in the seed
 - d. All of the above

6. The roots of young plants take in nutrients
 - a. From the sun
 - b. From the soil
 - c. Stored in the seed
 - d. All of the above



Essential Question

How can scientific knowledge change over time?
Read about how our understanding of Earth has changed along with scientific developments over time.

1. Claim 1, Target 9: Central Ideas, Standard: RI 5.2

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

Part A

Which sentence **best** tells the author’s message in the section “On the Ground Looking Around” in this passage?

- A The author explains how something as simple as the rising sun perplexed people for centuries.
- B The author explains that the Earth orbits the sun.
- C The author explains how people had to study the sky to learn about stars, planets, and the solar system as well as life on Earth.
- D The author explains that people used to believe that the Earth stayed in place while the sun moved around it.

Part B

Which detail from the passage **best** supports your answer in part A?

- A “They believed that the Earth stayed in place while the sun moved around it.”
- B “This weekend’s forecast may provide the main criteria for planning outdoor activities.”
- C “The Earth orbited the sun.”
- D “We had to look up at the skies to learn more about life here on Earth.”



On the Ground, Looking Around

No matter where on Earth you go, people like to talk about the weather. This weekend's forecast may provide the main **criteria** for planning outdoor activities. Where does all that information about the weather come from? The ability to predict storms and droughts required centuries of scientific innovation. We had to look up at the skies to learn more about life here on Earth.

Long ago, humans based their knowledge on what they experienced with their eyes and ears. If people could heighten their senses, they might not feel so mystified by the events confronting them daily. For example, something as simple as the rising sun perplexed people for centuries.

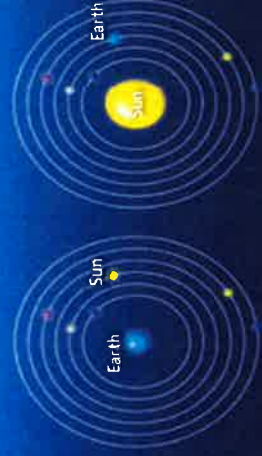
They believed that the Earth stayed in place while the Sun moved around it. This was called the geocentric model.

In the early 1600s, an Italian named Galileo pointed a new tool called the telescope toward the night sky. As a result of his heightened vision, he could see stars, planets, and other celestial **spheres** with new clarity. Each observation and **calculation** led him to support a radical new model of the solar system. In the heliocentric version proposed by the scientist Copernicus, the Sun did not **orbit** the Earth. The Earth orbited the Sun.



Galileo's telescope helped prove that Copernicus's heliocentric view was correct. ▶

These diagrams show the geocentric (Earth in the center) and the heliocentric (sun in the center) views of the solar system.



2. Claim 1, Target 8: Key Details, Standard: RI 5.1

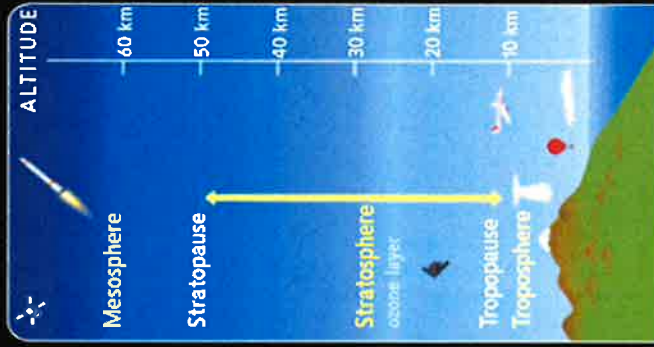
Which evidence from the passage **best** supports the conclusion that new technology allowed scientists to evaluate theories even better? Select **two** answers.

- Ⓐ "Measuring devices such as the thermometer and barometer offered new insights into weather patterns."
- Ⓑ "The development of the aircraft in the 1900s promised safer ways to observe Earth's surface and the atmosphere above it."
- Ⓒ "At first they used kites"
- Ⓓ "Kites and balloons were hard to control."



In the Sky, Looking Down

New technology allowed scientists to **evaluate** theories better than ever. Measuring devices such as the thermometer and barometer offered new insights into weather patterns. However, people were still limited to ground-based learning. What if they could travel into the sky, where the weather actually happened?



As humans reached higher, we learned more and more about Earth's atmosphere.

In the mid-1700s, some scientists sent measurement devices higher and higher. At first they used kites. Before long, hot-air balloons offered new ways to transport the tools—and sometimes scientists themselves—into the sky.

However, scientists were not satisfied studying the lower layers of Earth's atmosphere. The more they learned, the higher they wanted to go. They also wanted to obtain information more quickly and accurately. Kites and balloons were hard to control. As a result, they occasionally veered off course or got lost, taking their data with them.

The development of aircraft in the early 1900s promised safer ways to observe Earth's surface and the atmosphere above it. Kites and balloons could reach altitudes of **approximately** three kilometers. By comparison, airplanes lifted scientists to a height of five kilometers and more. Radio technology allowed scientists to transmit data from the air to the ground, where other scientists analyzed and compared information. Breakthroughs came fast and furiously. Still, scientists dreamed of reaching ever higher.

3. Claim 1, Target 11: Reasoning and Evidence, Standard: RI 5.8

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

Part A

What inference can be made about the development of aircraft in the early 1900s and its ability to help scientists study the Earth?

- A Airplanes did not allow scientists to observe Earth from high altitudes.
- B Airplanes allowed scientists to observe Earth from high altitudes.
- C Kites allowed scientists to observe the Earth better than airplanes.
- D Balloons allowed scientists to observe Earth better than airplanes.

Part B

Which sentence from the passage best supports your answer in part A?

- A "Measuring devices such as the thermometer and barometer offered new insights into weather patterns."
- B "The development of aircraft in the early 1900s promised safer ways to observe the Earth's surface and the atmosphere above it."
- C "At first they used kites."
- D "Before long, hot-air balloons offered new ways to transport the tools."

Out in Space, Looking Back Home

In the late twentieth century, advances in aeronautics led to more powerful rockets that lifted satellites into orbit around Earth. From these heights, scientists could study the composition and relative thinness of our layered atmosphere. Since meteorologists could analyze multiple factors at once, the accuracy of their weather predictions improved dramatically.

NASA launched dozens of satellites into orbit in the following years. Some stared back at Earth, while others peered deep into endless space. They gathered **astronomical** data about the ages of planets and galaxies. Sensors

and supercomputers measured things such as Earth's **diameter** with incredible accuracy. Because of this technology, scientists could develop more reliable models about Earth's systems. For example, they could form theories to show how climate might change over time.

Space missions continue to venture farther from home. Even so, nothing compares to seeing Earth the old way, with our own eyes. Views of our planet from space inspire awe in nearly all people who have seen them, even in photographs. "With all the arguments . . . for going to the Moon," said astronaut Joseph Allen, "no one suggested that we should do it to look at the Earth. But that may in fact be the most important reason."

Make Connections

What were some effects of flight on our knowledge about Earth? **ESSENTIAL QUESTION**

How has your knowledge of Earth changed over time?

What effect has this change had on you? **TEXT TO SELF**

Satellites launched into orbit only last for a limited number of years and then must be replaced.



4. Claim 1, Target 10: Word Meaning, Standard: RI 5.4

Read the sentence.

In the late twentieth century, **advances** in aeronautics led to more powerful rockets that lifted satellites into orbit around the Earth.

The word **advances** has more than one meaning. What does the word "**advances**" most likely tell the reader about advances that were made in aeronautics? Choose **two** answers.

- (A) Aeronautics made rockets.
- (B) Aeronautics continued to make progress.
- (C) Aeronautics continued to make improvements.
- (D) Aeronautics lifted satellites.

5. Claim 1, Target 12: Analysis within/across Texts,
Standard: RI 5.1

Read the sentence.

“We had to look up at the skies to learn more about life here on Earth.”

What does the information in the last sentence of paragraph one of the passage tell the reader about the author’s point of view?
How does the sentence add to the development of the passage?

- Ⓐ It asks the reader if he/she wants to become a scientist.
- Ⓑ It makes the reader fantasize about space.
- Ⓒ It connects the reader to the passage and make them think about the important role that science plays in discovering more about space and the Earth.
- Ⓓ It gives a visual connection to the reader and shows what space looks like.

6. Claim 1, Target 13 Text Structures and Features, **Standard:** RI 5.7

What are the **most likely** reasons the author included a graph in the passage? Select **two** answers.

- Ⓐ It shows the reader different flight objects and how high they were able to reach in the atmosphere.
- Ⓑ It gives the reader a visual of the different layers in the atmosphere.
- Ⓒ It shows the reader how many airplanes were used.
- Ⓓ It shows the reader how many satellites were used.

7. Claim 1, Target 14: Language Usage, **Standard:** L 5.5

Read the sentence.

"New technology allowed scientists to evaluate theories better than ever."

How does the word "evaluate" affect the reader's understanding of the meaning of the passage?

- (A) It helps the reader to picture scientists studying technology.
- (B) It shows the reader that all scientists study.
- (C) It helps the reader understand that everyone should study technology.
- (D) It shows the reader that new technology gave scientists the opportunity to study theories.

8. Claim 2, Target 9: Edit Clarify (conventions), **Standard:** L 5.1

Choose the sentence with one grammar usage error with frequently confused words.

- (A) They gathered astronomical data about the ages of planets and galaxies.
- (B) Space missions continue too venture farther from home.
- (C) The more they learned, the higher they wanted to go.
- (D) At first they used kites.

9. Claim 2, Target 9: Edit Clarify (conventions), **Standard:** L 5.2

Choose the sentence that is punctuated correctly.

- (A) At first they used kites?
- (B) What if they could travel into the sky, where the weather actually happened.
- (C) Breakthroughs, came fast, and furiously.
- (D) NASA launched dozens of satellites into orbit in the following years.

Name _____

Problem Solving • Add and Subtract Money



COMMON CORE STANDARD—5.NBT.7
 Perform operations with multi-digit whole numbers and with decimals to hundredths.

Solve. Use the table to solve 1–3.

1. Dorian and Jack decided to go bowling. They each need to rent shoes and 1 lane, and Jack is a member. If Jack pays for both of them with \$20, what change should he receive?

Bowl-a-Rama		
	Regular Cost	Member's Cost
Lane Rental (up to 4 people)	\$9.75	\$7.50
Shoe Rental	\$3.95	\$2.95

Calculate the cost: $\$7.50 + \$3.95 + \$2.95 = \14.40

Calculate the change: $\$20 - \$14.40 = \$5.60$

2. Natalie and her friends decided to rent 4 lanes at regular cost for a party. Ten people need to rent shoes, and 4 people are members. What is the total cost for the party?

3. Warren paid \$23.85 and received no change. He is a member and rented 2 lanes. How many pairs of shoes did he rent?

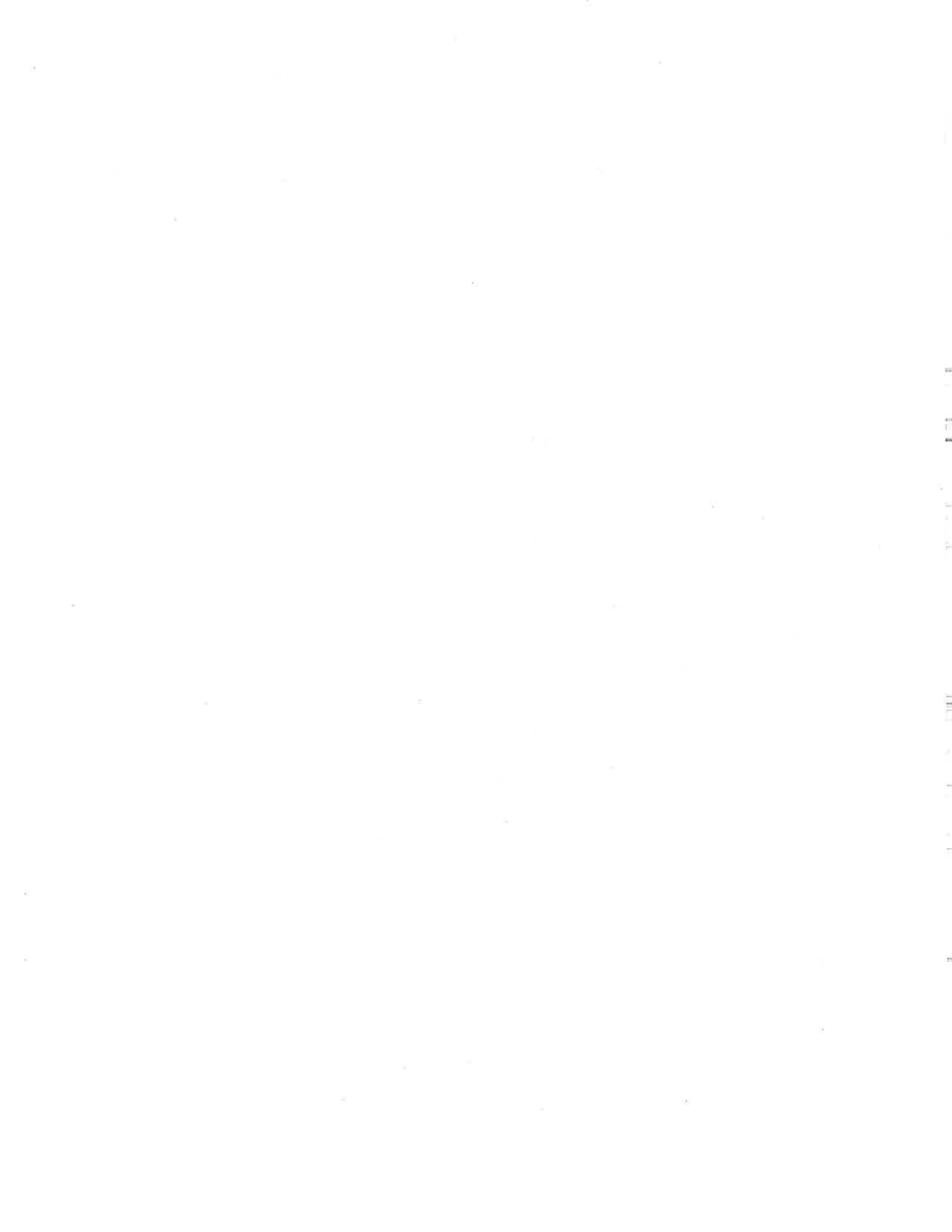
Use the following information to solve 4–6.

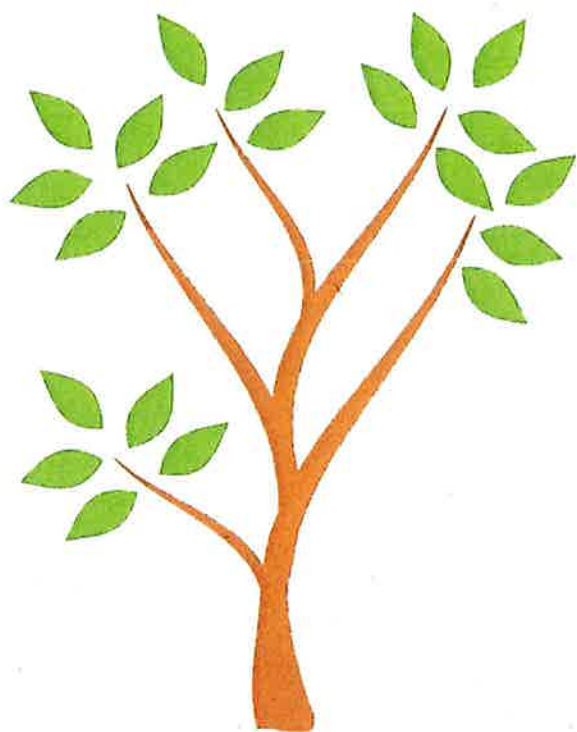
At the concession stand, medium sodas cost \$1.25 and hot dogs cost \$2.50.

4. Natalie's group brought in pizzas, but is buying the drinks at the concession stand. How many medium sodas can Natalie's group buy with \$20? Make a table to show your answer.

5. Jack bought 2 medium sodas and 2 hot dogs. He paid with \$20. What was his change?

6. How much would it cost to buy 3 medium sodas and 2 hot dogs?





The Basic Structure of Plants

The basic structure of plants is also known as a plant's anatomy. There are thousands of species of plants on earth but in this lesson we will focus on the anatomy of the most abundant kinds of plants, those that grow from seeds with their roots in the soil. The roots of plants are below ground level; they are called the root system. The root system keeps the plant anchored in the soil while it also takes in nutrients for plant growth from the soil. The main root of the plant below ground, also called the tap root, joins to the plant's main stem above ground. Roots that branch off from the tap root are called

lateral roots. Lateral roots branch from the tap root like branches of tree. At the end of lateral roots are root hairs where moisture and nutrients from the soil enter the root system.

Above ground, branches may form along the main stem. Leaves will be found along the main stem if the plant does have any branches. Otherwise, leaves are on the plant's branches. Leaves have veins inside them similar to the veins of a human. The veins bring nutrients to the leaves that come up from the roots and through the stems. There are seed leaves, called cotyledons, at the bottom of the plant. Cotyledons are the first leaves to form once a plant grows above the ground. Cotyledons generally have a different shape than other leaves of the plant.

Most plants produce some kind of flower. Landscaping plants, like lilacs and roses, are chosen for the beauty of their flowers. Even species of desert cacti have lovely flowers but the flowers of many plants are not pretty or showy. Flowering is the way a mature plant creates new seeds. For some plants, like apple trees, the flowers turn into fruit and the plant's seeds are stored inside the fruit. Eventually the fruit ripens to the point where it falls and eventually bursts open. Then the seeds stored inside are able to enter the soil and begin the plant's life cycle again.

At the very top of a plant is a structure called the terminal bud. Terminal means "ending" so a terminal bud is at the top end of a plant. Complex plants like deciduous (leafy) trees have many terminal buds located on the branches.

Name: _____ Date: _____

Multiple Choice Questions

Circle the correct answer.

1. The basic structure of a plant is also known as a plant's
 - a. Astronomy
 - b. Astrology
 - c. Anatomy
 - d. All of the above

2. The purpose of the root system of a plant is
 - a. Anchor the plant in the soil
 - b. Take in nutrients from the soil
 - c. Both a. and b. above
 - d. None of the above

3. The main root of a plant is called the _____ root.
 - a. Terminal
 - b. Lateral
 - c. Hairy
 - d. Tap

4. A cotyledon is a type of
 - a. Leaf
 - b. Root
 - c. Stem
 - d. Branch

5. In some species of plants flowers turn into
 - a. Leaves
 - b. Fruit
 - c. Stems
 - d. Roots

6. Fruit is important to some species of plants because it contains
 - a. Nutrients
 - b. Seeds
 - c. Terminal buds
 - d. All of the above

Name _____

- **Comparative adjectives** compare two nouns or pronouns. Add *-er* to most adjectives to compare two items.
- **Superlative adjectives** compare more than two nouns or pronouns. Add *-est* to most adjectives to compare two or more items.
- Drop the *e* in adjectives such as *pale* before adding *-er* or *-est*. Change the *y* to *i* in adjectives such as *sunny*. For one-syllable adjectives such as *red*, double the final consonant.

Read each sentence. Write the proper form of the adjective in parentheses on the line provided.

1. My cousin is the (funny) person I know. _____
2. She is also a (strong) swimmer than I am. _____
3. She lives in a (large) town than ours. _____
4. Her school has a (big) campus than we do. _____
5. Our school has the (small) stadium in the state. _____
6. We have (pretty) parks than her town, though. _____
7. Our town's lake has one of the (sandy) beaches around. _____
8. The water also tends to be the (cold) of all, too. _____
9. This year, I spent a (short) amount of time with my cousin than last year.

10. We have already scheduled a (lengthy) visit than our last one. _____

Name _____

- Use **more** in front of most long adjectives to compare two items.
- Use **most** in front of most long adjectives to compare more than two items.

Read each sentence. Write the proper form of the adjective in parentheses on the line provided.

1. The mountain climbers' club was planning its (exciting) trip yet.

2. It would certainly be a (dangerous) outing than their last one. _____
3. Some climbers were (worried) than others. _____
4. The (concerned) club member of all asked many questions. _____
5. The mountain had some of the (icy) slopes the group had seen.

6. After hearing the answers, the member felt (confident) than before.

7. The climbers discussed which tools would be (useful) than others.

8. They agreed that safety was the (essential) thing to consider. _____
9. People were (talkative) during the latter half of the meeting. _____
10. For many, this would be the (adventurous) thing they had ever done!

Name _____

- Never use *more* and *-er* with the same adjective.
- Never use *most* and *-est* with the same adjective.

Read each sentence. Choose which word or words in parentheses best complete the sentence. Write your answer on the line provided.

1. Mom gathered the (most freshest, freshest) vegetables she could find.

2. She wanted to make the (more, most) delicious soup ever. _____
3. First, she chose the (most ripe, ripest) tomatoes in the garden.

4. Next, she chopped up some of the (greenest, most green) peppers.

5. She put the ingredients in the (largest, most largest) pot she had.

6. "I want to make a (more spicier, spicier) soup than before," she told me.

7. "Fresh herbs will make it (more, most) flavorful than the last one."

8. Her worst soup ever was also the (most saltiest, saltiest). _____
9. "I have a (heavier, more heavier) hand than your father when it comes to seasoning," she said. _____
10. It turned out to be the (healthfulest, most healthful) soup she had ever made.

Name _____

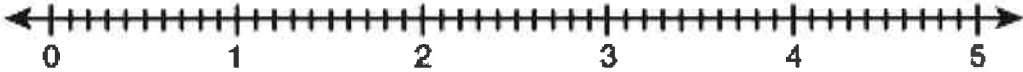
- **Comparative adjectives** compare two nouns or pronouns. Add *-er* to most adjectives to compare two items. **Superlative adjectives** compare more than two items. Add *-est* to most adjectives to compare two or more items.
- Use ***more*** in front of most long adjectives to compare two items. Use ***most*** in front of most long adjectives to compare more than two items.
- Never use *more* and *-er* with the same adjective. Never use *most* and *-est* with the same adjective.

Proofread the paragraph. On the lines below, correct mistakes in adjective usage and the formation of comparatives and superlatives.

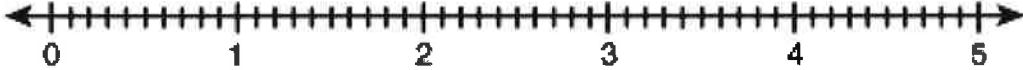
After our ride, my bike was more dirty than a dog in a mud puddle. I thought about making it cleanest than it was before by hosing it down. My sister does that, but her bike is the most rustiest one in town. Dad usually has the usefulest suggestions in the family, so I asked his advice. He said that the hose was the quicker solution of all, but that a carefuller person than my sister would also wipe the bike dry afterward.

Multiplying Decimals: Use the graphic organizer below to multiply a whole number by a decimal.


1) $4 \times 0.5 =$ _____

Words:	Equal Groupings:	Repeated Addition:
Number Line:		
		

2) $3 \times 0.4 =$ _____

Words:	Equal Groupings:	Repeated Addition:
Number Line:		
		

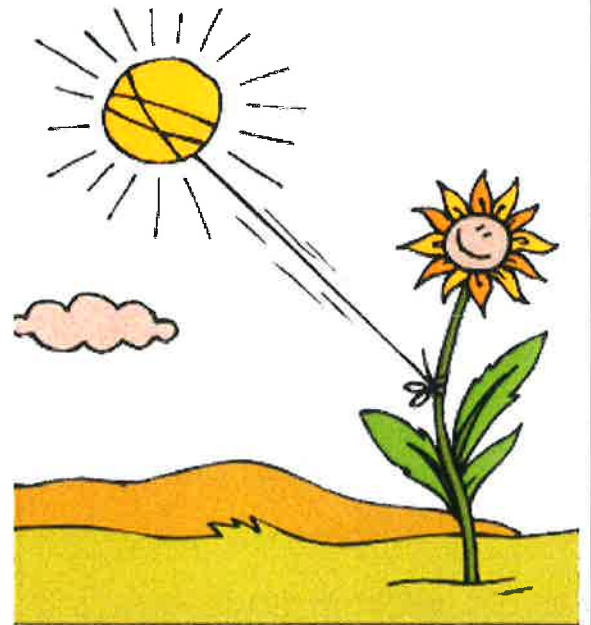
3) $6 \times 0.3 =$ _____

Words:	Equal Groupings:	Repeated Addition:
Number Line:		
		



How Do Plants Make Their Own Food?

Humans rely on plants for food. Even the meat we eat comes indirectly from plants. For example, cattle are the source of the beef we eat and cattle graze on plant material. Where do plants get their food? Plants are the only living things on earth that make their own food.



The process by which plants manufacture their own food is called photosynthesis. Here "photo" means "light" and "synthesis" means "make" so photosynthesis means to make something from light. Plants need sunlight in order to make their own food. Of course plants need more than just sunlight in order to make food.

In order to make food plants need:

- Sunlight
- Nutrients from the soil.

Nutrients enter the plant through its root system.

- Water.

Water also enters a plant through its root system but some species of plants can take in small amounts of water through their leaves.

- Carbon dioxide.

Carbon dioxide is a gas that is always present in the air. Its chemical formula is CO_2 which means carbon dioxide is made up of one carbon atom and two oxygen atoms. Animals breathe in oxygen and breathe out carbon dioxide. Plants take in carbon dioxide and release oxygen into the air as part of photosynthesis.

- Chlorophyll.

Chlorophyll is the substance inside plants that makes them green in color. Chlorophyll is responsible for combining sunlight, water, nutrients and carbon dioxide into food for the plant.

Photosynthesis combines water and carbon dioxide using energy from the sun to produce sugars as food for the plants. Photosynthesis also breaks down carbon dioxide and releases oxygen into the atmosphere for humans and animals to breathe. The process opposite to photosynthesis where animals breathe in oxygen and produce carbon dioxide is called respiration.

Remember that trees are plants and like other plants trees feed themselves through photosynthesis. Forests clean the air of the carbon dioxide and produce oxygen for all animals, including humans, to breathe. Forests are an important part of the earth's life cycle.

Name: _____ Date: _____

Multiple Choice Questions

Circle the correct answer.

1. In the word photosynthesis "photo" means
 - a. Picture
 - b. Painting
 - c. Chlorophyll
 - d. Light

2. Nutrients that are needed by plants enter the plant through
 - a. Leaves
 - b. Rain
 - c. Root system
 - d. Sunlight

3. One source of carbon dioxide in the atmosphere is
 - a. Animals, including humans
 - b. Plants
 - c. Both a. and b. above
 - d. None of the above

4. Photosynthesis
 - a. Converts carbon dioxide to oxygen
 - b. Converts oxygen to carbon dioxide
 - c. Both a. and b. above
 - d. None of the above

5. Photosynthesis
 - a. Creates sugars for the plants
 - b. Uses energy from the sun
 - c. Both a. and b. above
 - d. None of the above

6. When humans breathe it is called
 - a. Restoration
 - b. Respiration
 - c. Respiratory
 - d. Respite



Assignment

Write an Opinion Piece Based on the Sources

Topic: Dodgers

Note: This task uses the same sources as another task. But even if you did that task previously, please read the sources again before you start writing (the sources are repeated below).

Your Assignment:

Your class recently went on a field trip to the California Science Center. You saw an exhibit about the mechanics of swinging a baseball bat and the players in history that science considers having the best swing. This got you thinking about the baseball teams in California and which you think is the best. So, you did some research.

As part of your research you found some sources. After you reviewed these sources, you answered questions about them.

Now, in Part 2, you will write an opinion piece using information you have read.

Directions for Beginning:

You will now review several sources. You may review the sources as often as you like.

Sources for the Performance Task:

+ Source #1

You have found a "Time for Kids" article about the history of the Dodgers:

Go Dodger Blue!

By Jose Edmin

The Los Angeles Dodgers Major League Baseball (MLB) team is one of the most popular sports teams in Los Angeles. It was the first MLB team to play in LA. The team moved from Brooklyn, New York in 1957, and they have been playing in LA ever since. The franchise, or the baseball team as an organization, has been around since 1884. That is more than 130 years! The Los Angeles Angels of Anaheim are also a very popular MLB baseball team in LA. However, they have a shorter history in the area, and they do not have a record of winning that is as great as the Dodgers'!

The Dodgers have a winning history! They have won the World Series six times. The World Series is played each year in October, and it determines which MLB team is the best. It is the championship of professional baseball. The first time the Dodgers won the World Series, it was in 1955, and the team had Jackie Robinson as a player. Jackie Robinson is famous, even without being known as a Dodger, for being the first African American baseball player to play in the MLB in modern times. Although the Dodgers have a history of winning, it has been almost thirty years since they last won the World Series in 1988. Most people say that they are due, now overdue, because they lost two championships in a row due to the other teams stealing pitching signs. It could be argued that the Dodgers have technically won eight times even though they did not officially win.

The Dodgers are fan favorites for many reasons. They have a long history of bringing great baseball to the fans in blue! They have a fierce rivalry with the San Francisco Giants, another baseball team in California. Many people consider the Dodgers THE team in California, not just one of the many!

+ Source #2

You have found a chart that shows how many championships have been won by several of the baseball teams in California:

Let the Numbers Decide!

By A Loyal Giants Fan Since 1971

	Los Angeles Dodgers	Los Angeles Angels	San Francisco Giants	San Diego Padres
World Series Champions	6 Years: 1955, 1959, 1963, 1965, 1981, and 1988	1 Years: 2002	8 Years: 1905, 1921, 1922, 1933, 1954, 2010, 2012, 2014	0
National League Championship	23	Not applicable (N/A)	23	2
American League Championship	Not applicable (N/A)	1	Not applicable (N/A)	Not applicable (N/A)
Other title wins	18	10	11	5

What determines a winning organization? What makes one able to decide that they are “the best”? Many Californians believe that the best MLB (Major League Baseball) team in the state is the Dodgers. They have an extensive history in California. They are well-loved

by their fans. But, do the numbers tell the story that the fans do? You decide...with the help of the numbers, that is!



Name _____

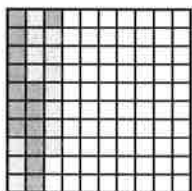
Multiply Decimals and Whole Numbers



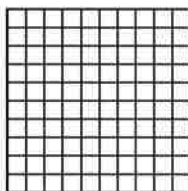
COMMON CORE STANDARD—5.NBT.7
Perform operations with multi-digit whole numbers and with decimals to hundredths.

Use the decimal model to find the product.

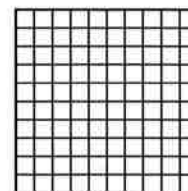
1. $4 \times 0.07 = \underline{0.28}$



2. $3 \times 0.27 = \underline{\hspace{2cm}}$



3. $2 \times 0.45 = \underline{\hspace{2cm}}$



Find the product. Draw a quick picture.

4. $2 \times 0.8 = \underline{\hspace{2cm}}$

5. $3 \times 0.33 = \underline{\hspace{2cm}}$

6. $5 \times 0.71 = \underline{\hspace{2cm}}$

7. $4 \times 0.23 = \underline{\hspace{2cm}}$

Problem Solving

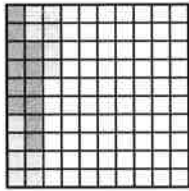


8. In physical education class, Sonia walks a distance of 0.12 mile in 1 minute. At that rate, how far can she walk in 9 minutes?

9. A certain tree can grow 0.45 meter in one year. At that rate, how much can the tree grow in 3 years?

Lesson Check (5.NBT.7)

1. What multiplication sentence does the model represent?



2. A certain type of lunch meat contains 0.5 grams of unsaturated fat per serving. How much unsaturated fat is in 3 servings of the lunch meat?

Spiral Review (5.OA.1, 5.NBT.2, 5.NBT.3b, 5.NF.3)

3. To find the value of the following expression, what operation should you do first?

$$20 - (7 + 4) \times 5$$

4. Ella and three friends run in a relay race that is 14 miles long. Each person runs equal parts of the race. How many miles does each person run?

5. What symbol makes the statement true? Write $>$, $<$, or $=$.

$$17.518 \bigcirc 17.581$$

6. Each number in the following sequence has the same relationship to the number immediately before it. How can you find the next number in the sequence?

$$3, 30, 300, 3,000, \dots$$



How Plants Reproduce

There are hundreds of thousands of plant species that grow in all kinds of conditions everywhere in the world. With such a great diversity of plants it's easy to understand that plants have several different types of reproduction but all plants of the same species use the same method of reproduction. Reproduction means that new plants are made from one or more parent plants. Plants that don't have flowers reproduce differently than plants that flower.

There are tens of thousands of plant species that don't have flowers. These plants use asexual reproduction to create new plants that are clones of the parent. Flowering plants can also reproduce asexually without using the flower. There are many forms of asexual plant reproduction. Some plants will send up new shoots next to the parent plant. These new shoots grow from the roots of the parent. Dandelions and aspen trees are examples of plants that grow from roots. Other plants, like irises and daylilies, reproduce from rhizomes. A rhizome is special underground stem of these types of plants. Some plants, such as daffodils and tulips, grow from bulbs. Mature plants form new bulbs next to the parent bulb to create more

plants. Some plants can even grow from leaves or stems taken from the plant and placed in the ground.

Flowering plants create seeds from their flowers through sexual reproduction. Flowering plants have male and female parts inside the flower. The male part of a flower is called the stamen and the female part is called the pistil. Insects like bees that travel from flower to flower gathering nectar pollinate the flowers. That means they bring pollen from male flower parts to female flower parts. Pollinated flowers then can create seeds. When the flower dies off the seeds get scattered to new locations by wind, rain or animals. If the seed lands in a suitable location it can germinate when conditions are right and grow into a new plant.

Some flowering plants, especially trees and bushes, produce fruit like apples and blueberries from their pollinated flowers. The plant's seed is enclosed inside the fruit and is exposed once the fruit rots away. If an animal eats the fruit the seeds will not be digested and the seed will land wherever the animal poops. Then the new tree or bush will grow far away from the parent.

Name: _____ Date: _____

Multiple Choice Questions

Circle the correct answer.

1. In plant reproduction
 - a. All plants of the same species reproduce the same way
 - b. New plants are made from parent plants
 - c. Flowering and non-flowering plants are different
 - d. All of the above

2. Asexual plant reproduction always creates plants that
 - a. Are clones
 - b. Flower
 - c. Grow from bulbs
 - d. All of the above

3. Aspen trees reproduce asexually through their
 - a. Stems
 - b. Roots
 - c. Leaves
 - d. Branches

4. A rhizome is an underground
 - a. Root
 - b. Stem
 - c. Branch
 - d. None of the above

5. Flowering plants
 - a. Reproduce sexually
 - b. Have male and female flower parts
 - c. May produce fruit that contains seeds
 - d. All of the above

6. Depending on the plant species seeds are the result of
 - a. Pollinated flowers
 - b. Asexual reproduction
 - c. Bulbs
 - d. Rhizomes

+ Source #3

You have found another article in Scholastic News about the history of baseball in California:

We've Been Here Longer!

By Art G

It isn't often mentioned that the beginning of modern baseball in America, and more specifically in California, coincided with the Gold Rush of the mid-1800's, but Alexander Cartwright, the father of modern baseball as we all know it, moved west in 1849 with a love of gold and baseball in his heart! And so the beginning of California's long baseball legacy begins!

The first team in California was the Los Angeles Angels. They actually were not the Angels of modern day, but in 1921, one of the Wrigley family members (like Wrigley gum) bought the team and built a million dollar stadium for the team in South Los Angeles. The stadium was called Wrigley Field, and it was very much like the Wrigley Field that still exists in Chicago! William K. Wrigley, Jr. owned the Chicago Cubs and the Los Angeles Angels! The Angels played at that stadium until 1961 when it closed. The stadium was shut down 5 years later.

In 1958 both the Los Angeles Dodgers and the San Francisco Giants arrived in California after a move from New York. They had been rivals in New York for nearly 70 years. The Giants decided to make the move when they heard that their big rivals, the Dodgers, were moving to Los Angeles. Thus began the "new" rivalry of the West!

When it comes to sports, everybody has an opinion! Which team is the best? It depends on which person you ask? Why is that team the best? It depends on which numbers you use to decide? Do the numbers tell the whole story? What about history and longevity? Doesn't it count for something being the first? Not even the sportscasters will comment on these tough questions! Go _____! What do you fill in?

The Assignment:

When your class was riding the bus back from the museum, your classmates begin to share their thoughts on baseball. One thing leads to another, and suddenly the discussion is which baseball team in California is the best! Many kids insist that it is the Dodgers, but others seem to disagree. Your teacher decides that this seems to be a “hot” topic, so he asks you to write a paper supporting your opinion.

In your paper, you will take a side as to whether you think the Dodgers are the best California baseball team or not. Your paper will be read by your classmates. Make sure you clearly state your opinion and write several paragraphs supporting your opinion with reasons and details from the sources. Develop your ideas clearly and use your own words, except when quoting directly from the sources. Be sure to give the source title or number for the details or facts you use.

REMEMBER: A well-written opinion paper

- has a clear opinion
- is well-organized and stays on the topic
- has an introduction and conclusion
- uses transitions
- uses details or facts from the sources to support your opinion
- puts the information from the sources in your own words, except when using direct quotations from the sources
- gives the title or number of the source for the details or facts you included
- develops ideas clearly
- uses clear language
- follows rules of writing (spelling, punctuation, and grammar usage)

topic: **Dodgers**

opinion: **best team in California**

long history in California	winners
<ul style="list-style-type: none">• started in 1884 in New York 😊• moved to California in 1958 (62 years ago) 😊 <p>Sources Key</p> <ul style="list-style-type: none">😊 = source #1★ = source #2🏆 = source #3	<ul style="list-style-type: none">• Dodgers due to win World Series 😊• Dodger more championships and titles overall ★

Your Response:

Name _____

Multiplication with Decimals and Whole Numbers



COMMON CORE STANDARDS—5.NBT.2, 5.NBT.7 Perform operations with multi-digit whole numbers and with decimals to hundredths.

Find the product.

Think: The place value of the decimal factor is tenths.

$$\begin{array}{r} 1. \quad 5.2 \\ \times \quad 4 \\ \hline 20.8 \end{array}$$

$$\begin{array}{r} 2. \quad 9.8 \\ \times \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 13.02 \\ \times \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 8.42 \\ \times \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 14.05 \\ \times \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 23.82 \\ \times \quad 5 \\ \hline \end{array}$$

$$7. \quad 4 \times 9.3$$

$$8. \quad 3 \times 7.9$$

$$9. \quad 5 \times 42.89$$

$$10. \quad 8 \times 2.6$$

$$11. \quad 6 \times 0.92$$

$$12. \quad 9 \times 1.04$$

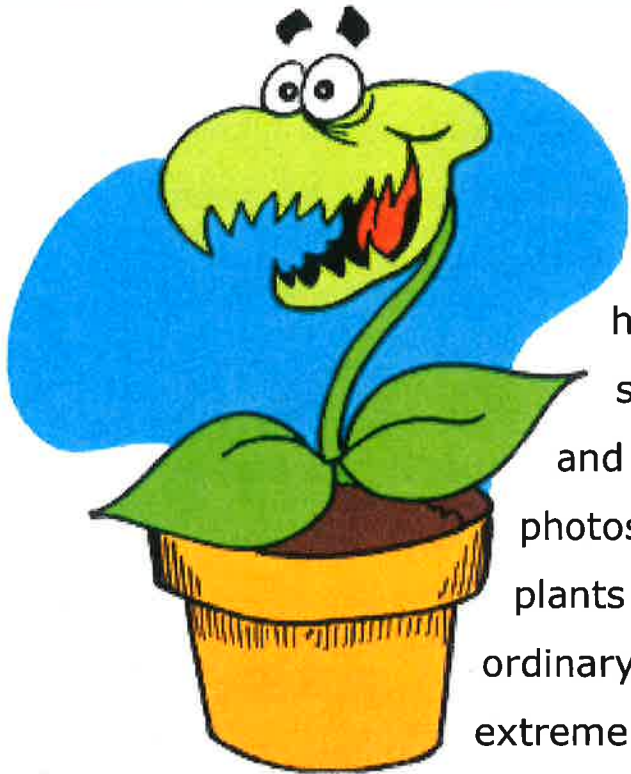
$$13. \quad 7 \times 2.18$$

$$14. \quad 3 \times 19.54$$

Problem Solving



15. A half-dollar coin issued by the United States Mint measures 30.61 millimeters across. Mikk has 9 half dollars. He lines them up end to end in a row. What is the total length of the row of half dollars?
16. One pound of grapes costs \$3.49. Linda buys exactly 3 pounds of grapes. How much will the grapes cost?



Strange Plants

The plants that we are accustomed to seeing every day have roots in the soil; have a center stalk or, in the case of trees, a trunk; and obtain their food through photosynthesis. It's easy to label these plants of every size, shape and biome as ordinary plants. Meanwhile there are some extreme plants that we can readily say are strange plants. Strange plants are found in some unusual places.

The most famous plants that are in the strange category are carnivorous plants. These plants obtain some of their nutrients by trapping and digesting insects and sometimes small amphibians like little frogs. The Venus flytrap is native only to North and South Carolina in the United States where it grows in poor soil that lacks nutrients. It somehow adapted to trapping insects to add the proteins it needs to survive. The Venus flytrap is not a tropical plant and it does survive the Carolina mild winters. The Venus flytrap has a pod that opens into halves. When an insect travels between the halves they quickly close like a trap. The insect cannot escape and is digested.

Another carnivorous plant is called sundew, which grows in Australia. The sundew flower has small sticky spikes. When an insect lands on a sundew flower it remains stuck and gets digested for its nutrients.

There are even plants that don't require any soil for growth. Some aquatic plants like the water hyacinth live by floating in water with roots that dangle downward. They get their nutrition from the air and water. Air plants don't need soil either. Air plants obtain all their nutrients by absorbing them from the air through their leaves. Air plants are called epiphytes and they usually are found growing on the branches of trees, using the tree only for support.

Other strange flowers give off a bad smell, usually like rotting flesh, in order to attract flies and other insects. Some of these plants are carnivorous but the Stapelia flower of Africa uses the rotten smell to attract pollinators. The Stapelia flower has pollen that sticks to the body of a visiting insect and this insect carries the pollen to other Stapelia flowers so they can reproduce.

These are just some examples of strange flowers. Botanists study strange flowers to learn more about the natural world around us.

Name: _____ Date: _____

Multiple Choice Questions

Circle the correct answer.

1. Carnivorous plants
 - a. Do not need soil
 - b. Trap and digest insects
 - c. Trap and eat small mammals
 - d. Grow in the air

2. A carnivorous plant native to the United States is
 - a. Venus flytrap
 - b. Stapelia
 - c. Sundew
 - d. None of the above

3. The Venus flytrap captures insects
 - a. On sticky spikes
 - b. On sticky leaves
 - c. In a pod that opens and shuts
 - d. Underground, in its roots

4. Water hyacinths are
 - a. Epiphytes
 - b. Carnivorous
 - c. Terrestrial
 - d. Aquatic

5. Plants that obtain all their nutrients by absorbing them from the air are called
 - a. Epiphytes
 - b. Carnivorous
 - c. Terrestrial
 - d. Aquatic

6. Flies are attracted to plants that smell like
 - a. Apples
 - b. Lettuce
 - c. Rotting flesh
 - d. All of the above



Compton USD

Learning Packet # 5

ELD

Grade 5

Name: _____

5th Grade-ELD Learning Packet

TABLE OF CONTENTS

Week 6



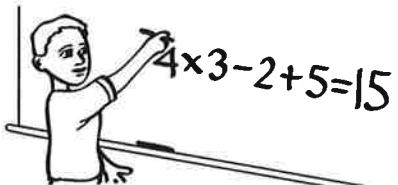

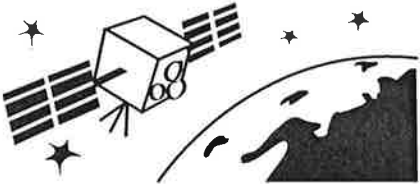

Day	Lesson	Date Completed
1	Vocabulary: complete the following steps: <ul style="list-style-type: none"> • Read the vocabulary words in the boxes. Follow these steps: • Read the sentences. • Identify cognates. • Write a sentence using the words in the boxes. 	
	Comprehension and Fluency: Read the literary passage: “Is There Life Out There?” Answer section A (questions 1-3). Then complete the table of section B.	
2	Vocabulary: greek Roots. Read the information in the box. Complete items 1-4.	
	Comprehension and Fluency: Read the literary passage “Is There Life Out There?” again. Complete the Cause and Effect Graphic Organizer.	
3	Word Study: suffixes -less and -ness. Read the information in the box. Then, complete questions 1-8.	
	Genre/Text Element: Read the academic passage “Seeing the Light”. Answer questions 1-4.	
	Writing Traits: Organization. Read the Draft Model. Use the questions to help you to revise the draft by adding related ideas and deleting unrelated ideas to make a strong paragraph.	
4	Differentiated Text: Read the literary passage “Changing world Views”. Respond to the text by reading and completing the sentence starters.	
	Write to Sources: Read the paragraph. Then, follow the directions below to mark the text.	
5	Leveled Reader: Read the book “Mars”. Then, complete the following: <ul style="list-style-type: none"> • Complete activities on page 18 • Read the story “Zach, the Martian” pages 19-23 • Complete activities on pages 24-25 	

Recommended Online Usage

<input type="checkbox"/> I-Ready Reading - 45 minutes per week	<input type="checkbox"/> I-Ready Math - 45 minutes per week
<input type="checkbox"/> Imagine Learning for English Learners - 90 minutes per week	<input type="checkbox"/> Dreambox - 90 minutes per week

Name _____

Use the word chart to study this week's vocabulary words.
Write a sentence using each word in your writer's notebook.

Word	Context Sentence	Illustration
approximately	She guessed there were <u>approximately</u> three hundred beans in the jar.	
astronomical	We used a telescope to see the <u>astronomical</u> objects at night.	
calculation	He wrote the <u>calculation</u> that gave him the answer.	
diameter	The <u>diameter</u> of the balloon was the same length as her arm.	
orbit	The new satellite would <u>orbit</u> Earth for several years.	
spheres	The sculptor added <u>spheres</u> to his work to show the planets.	

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Name _____

Read the passage. Use the ask and answer questions strategy to check your understanding as you read.

Is There Life Out There?

12 Scientists who study astrobiology look for life in space. They have been
13 studying one of Jupiter's moons. That moon is Europa.

21 Europa is a little smaller than Earth's moon. It is covered by a sheet of
36 ice. Its surface is too cold and has too much radiation for anything to live
51 there. Scientists want to know what is under the ice. They believe that is
65 where life on Europa might be.

71 What Life Needs

74 For years, scientists thought all life on Earth depended on energy
85 from the sun. During a process called photosynthesis, plants use energy
96 from sunlight to make food and to put oxygen into the atmosphere, or
109 air. Aerobic creatures use that oxygen to breathe. Sunlight also provides
120 warmth. Scientists believed that nothing could live in extreme, or severe,
131 temperatures.

132 Scientists once thought that all food chains led back to plants and
144 photosynthesis. New discoveries have changed what scientists think about
153 life. They have found creatures living around hydrothermal vents, or
163 openings, on the ocean floor. These creatures do not depend on the sun or
177 plants for food and energy.

Name _____

The animals living around hydrothermal vents eat bacteria that live on or below the ocean floor. The bacteria get energy through a process called chemosynthesis. Hydrothermal vents spit warm water filled with chemicals from inside the earth. The bacteria use these chemicals as a source of food and energy.

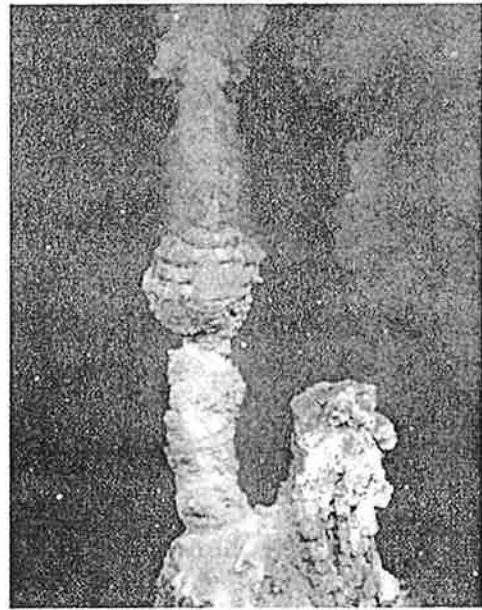
New Possibilities

The discovery of life near the vents changed the way scientists think about life in space. They no longer have to look only for places with sunlight and oxygen. Planets with oceans and hydrothermal vents might also support life. Based on these discoveries, Europa began to seem like a place where life might exist.

Europa has oxygen in its atmosphere, but the oxygen does not come from photosynthesis. Europa is too far from the sun and too cold for plants to live. Its surface temperature is usually more than 200 degrees below zero Fahrenheit.

Europa does have oceans. The ice on this moon covers what looks like moving liquid water. Are there hydrothermal vents in the oceans? Scientists do not know. If the oceans have vents, they might support life. People need to visit Europa to find out.

Until then, scientists are studying the most Europa-like environment they can find on Earth: Lake Vostok in Antarctica. Like Europa's oceans, Lake Vostok sits miles beneath a frozen surface. It does not receive direct sunlight, either. Therefore, like Europa, the lake cannot support photosynthetic life. If scientists find life in the lake, it would support the idea that Europa might also have life.



Hydrothermal vent.

Image courtesy of New Zealand American Submarine Ring of Fire 2007 Exploration, NOAA Vents Program

Name _____

A. Reread the passage and circle the letter of the best answer to each question.

1. **Why did scientists initially think life could not exist on Europa?**
 - a. There is no oxygen on Europa.
 - b. Europa’s water is frozen.
 - c. Europa lacks sunlight.

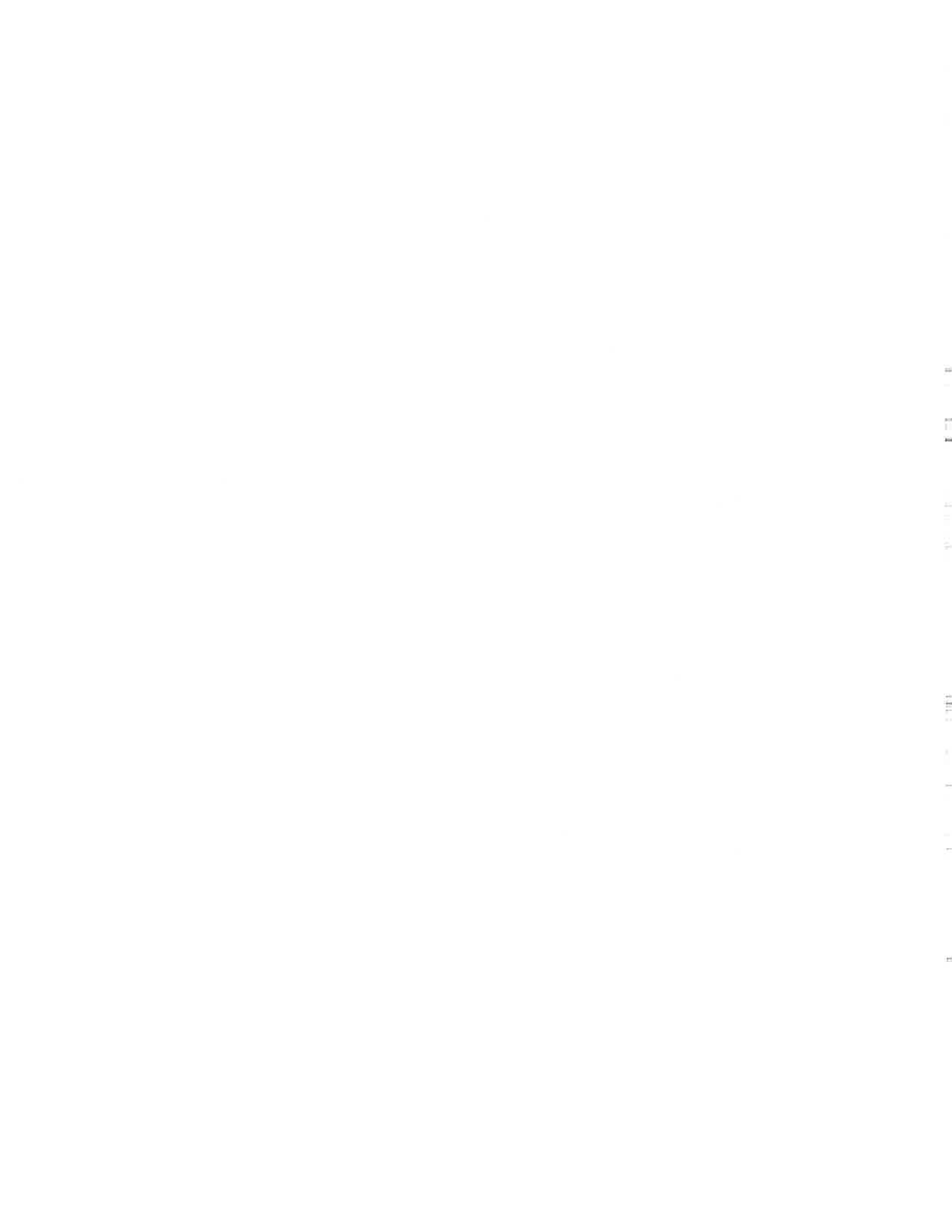
2. **Which discovery changed how scientists think about life in space?**
 - a. Europa
 - b. chemosynthesis
 - c. Lake Vostok

3. **If scientists find life in Lake Vostok, how would that affect their ideas about Europa?**
 - a. Finding life on Europa would seem more likely.
 - b. Finding life on Europa would seem less likely.
 - c. Ideas about life on Europa would not change.

B. Work with a partner. Read the passage aloud. Pay attention to accuracy. Stop after one minute. Fill out the chart.

	Words Read	-	Number of Errors	=	Words Correct Score
First Read		-		=	
Second Read		-		=	

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Name _____

A **root** is the basic part of a word that gives the word its meaning. Many English words contain Greek roots.

Greek root	Meaning	Greek root	Meaning
<i>aero</i>	air	<i>logy</i>	the study of
<i>atmos</i>	vapor, steam	<i>photo</i>	light
<i>astro</i>	star	<i>sphaira</i>	globe, ball
<i>bio</i>	life	<i>syntithenai</i>	making or putting together
<i>chemo</i>	chemical	<i>therme</i>	heat
<i>hydro</i>	water		

Read each passage below. Look at each word in bold. Use the chart above to find the Greek root or roots in the word. Place an "X" next to each root that you find.

1. Scientists who study **astrobiology** look for life in space.

_____ bio _____ logy _____ astro

2. During a process called **photosynthesis**, plants use energy from sunlight.

_____ syntithenai _____ therme _____ photo

3. They make food and put oxygen into the **atmosphere**.

_____ aero _____ atmo _____ sphaira






4. **Aerobic** creatures use that oxygen to breathe.

_____ aero _____ astro _____ atmo

Comprehension: Cause and Effect Graphic Organizer

Name _____

Read the selection. Complete the cause and effect graphic organizer.

Cause		Effect
		
		
		
		

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Name _____

A suffix is word part added to the end of a word. A suffix changes the word's meaning and its part of speech.

-less means "without" (*fear + less = fearless*)

-ness means "state of being" (*sad + ness = sadness*)

Fearless is an adjective that means "without fear." *Sadness* is a noun that means "state of being sad."

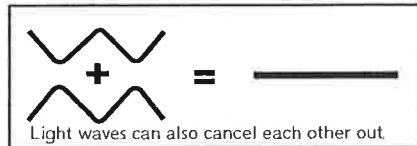
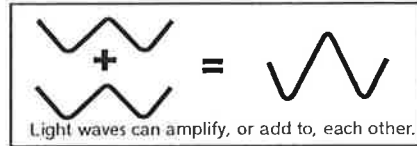
Underline the suffix in each word. Circle the correct meaning of the word. The first one has been done for you.

- | | | |
|----------------|------------------------|---------------------------|
| 1. goodness | a. state of being good | b. without good |
| 2. hopeless | a. state of hope | b. without hope |
| 3. weakness | a. not weak | b. state of being weak |
| 4. gladness | a. state of being glad | b. without happiness |
| 5. motionless | a. without motion | b. state of motion |
| 6. foolishness | a. not foolish | b. state of being foolish |
| 7. harmless | a. state of harm | b. without harm |
| 8. restless | a. without rest | b. state of rest |

Name _____

Seeing the Light

In 1803, Thomas Young made a discovery about light. He saw that when light from two sources overlapped, it made a pattern of bright light and darkness. He thought light acted like a wave: the bright areas were created when two light waves matched up; the dark areas were created when two light waves did not match. His theory led to future discoveries about light.



Young discovered that light waves change in brightness when they overlap.

Answer the questions about the text.

1. How can you tell that this is expository, or informational, text?

2. What is the text's heading? What does it tell you?

3. What is another text feature in this text?

4. Which sentence or sentences does the diagram help you understand?



Essential Question

How can scientific knowledge change over time?

Use Graphic Organizer 86 to take notes while you read.

Changing World Views

Expository Text

The ancient Greeks believed that Earth was the center of the solar system, and the planets and the Sun orbited around Earth. This idea is the geocentric theory. The Greeks thought this theory was correct because they did not feel the Earth move.

The Greek astronomer Ptolemy believed in the geocentric theory. He used mathematical calculations to support the theory. For many centuries, people thought the theory was true.

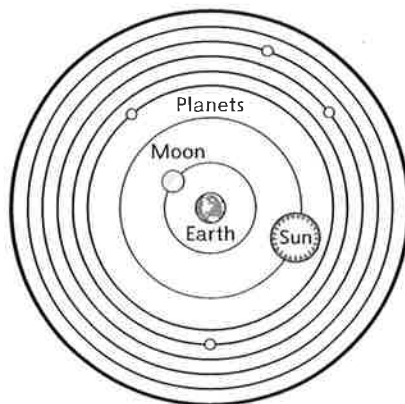
Then in the 16th century, an astronomer named Nicolaus Copernicus studied how planets move. He believed in a different theory. He thought that the Sun was the center of the solar system and Earth and the other planets orbited around the Sun. This is the heliocentric theory.

Many people disagreed with Copernicus. People had believed that the geocentric

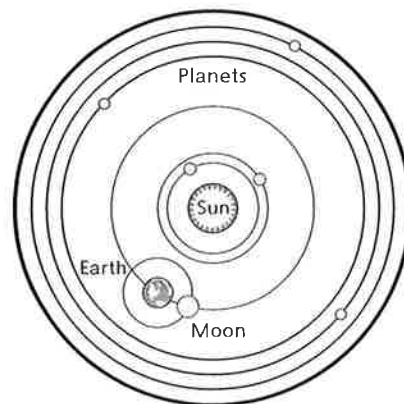
theory was correct for hundreds of years, so Copernicus's ideas seemed ridiculous. They needed more proof of the heliocentric theory.

In the 17th century, scientists invented the telescope. An astronomer named Galileo used the telescope to find astronomical evidence to prove the heliocentric theory. He saw that Venus had phases similar to the moon. Galileo believed that the phases of Venus were not possible if Earth were the center of the solar system. He wrote a **composition** to explain his theory.

Galileo did a good job of **confronting** problems with the geocentric theory. However, he did not prove that Earth moves around the Sun. Years later another scientist Isaac Newton proved the heliocentric theory.



Geocentric theory



Heliocentric theory

According to the geocentric theory, the Sun orbited around Earth.
According to the heliocentric theory, Earth orbited around the Sun.

ELD.PI.5.1.Ex, ELD.PI.5.3.Ex, ELD.PI.5.6.Ex, ELD.PI.5.10.Ex See the California Standards section.

Respond to the Text

Name _____

Read the text. Use Graphic Organizer 86 to record your ideas and notes. Have a collaborative conversation with your partner. Use the sentences below to start the conversation. Cite text evidence and record your ideas on the graphic organizer. Present your ideas to the class.

1. Explain why people believed in the geocentric theory.


People believed in the geocentric theory because _____.

2. Explain why people did not accept the heliocentric theory.

People thought Copernicus's ideas were wrong because his ideas _____

_____.

3. Explain how Copernicus and Galileo helped to change people's view of the solar system from the geocentric view to the heliocentric view.

 **Write** Work with a partner. Discuss your notes about "Changing World Views." Then write your answer to the Essential Question.

How did scientific knowledge about our solar system change over time?

The ancient Greeks believed that _____.

Then, the invention of telescopes changed the world's view because _____

_____.

Scientists like Galileo helped to change the view of the solar system from

_____ to _____ because _____.

Name _____

April wrote the paragraphs below using text evidence from two different sources to respond to the prompt: *Explain the relationship between objects in space, including the Sun, planets, and moons. Use text evidence from When Is a Planet Not a Planet? and "New Moon" to support your answer.*

When it comes to the relationships between objects in space, the most important force is gravity. Gravity shapes celestial bodies as they form and affects how these bodies travel around each other.

Our solar system would never even have formed without gravity. *When Is a Planet Not a Planet?* describes how the Sun's gravity pulled on the bits of rock, dust, ice, and gas in the ring that surrounded it, causing them to clump together and form planets. In addition, the International Astronomical Union states that a planet's own gravity is what pulls it into its round or nearly round shape as it forms.

When a planet becomes large enough, its gravitational pull will "clear the neighborhood" of smaller objects around it. These objects may be pulled into orbit around the planet, becoming its moons. But these moons also pull on the planet they orbit. According to "New Moon," the gravitational pull between the Earth and the Moon creates the tides on Earth. Even such daily sights as the Moon rising or the tide coming in show the force of gravity at work.

Reread the passage. Follow the directions below.

1. **Circle** the comparative adjective April uses in her writing.
2. **Draw a box** around the transitional phrase in the second paragraph that April uses to connect two relevant facts.
3. **Underline** the figurative language that April uses to describe the effects of a planet's gravity.
4. **Write** one of the domain-specific words April uses in the first paragraph.

Expository
Text

MARS

BY YVONNE MORRIN

Mc
Graw
Hill
Education

PAIRED
READ

Zach the Martian

STRATEGIES & SKILLS

Comprehension

Strategy: Ask and Answer
Questions

Skill: Cause and Effect

Vocabulary

approximately, astronomical,
calculation, criteria, diameter,
evaluate, orbited, sphere

ELL Vocabulary

conducted, develop

Content Standards

Science

Earth and Space Science

Word Count: 1,416**

Photography Credit: Cover Stock Trek/Photodisc/Getty Images

**The total word count is based on words in the running text and headings only. Numerals and words in captions, labels, diagrams, charts, and sidebars are not included.

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Essential Question

How can scientific knowledge change over time?

MARS

BY YVONNE MORRIN

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INTRODUCTION

The planet Mars has always fascinated people. Ancient people observed a red light in the sky. The red light didn't move like a star, which moves in an arc. Instead, the red light moved all around the sky.

The ancient Egyptians called the red light Her Desher, which means "the red one." The Romans called the red light Mars. Mars was the Roman god of war.

Later, **astronomers** used telescopes to observe Mars. They discovered many things about Mars, but they still had questions. What is Mars made of? How big is Mars? Is Mars hot or cold? Is there life on Mars? Some of these questions still haven't been answered today.

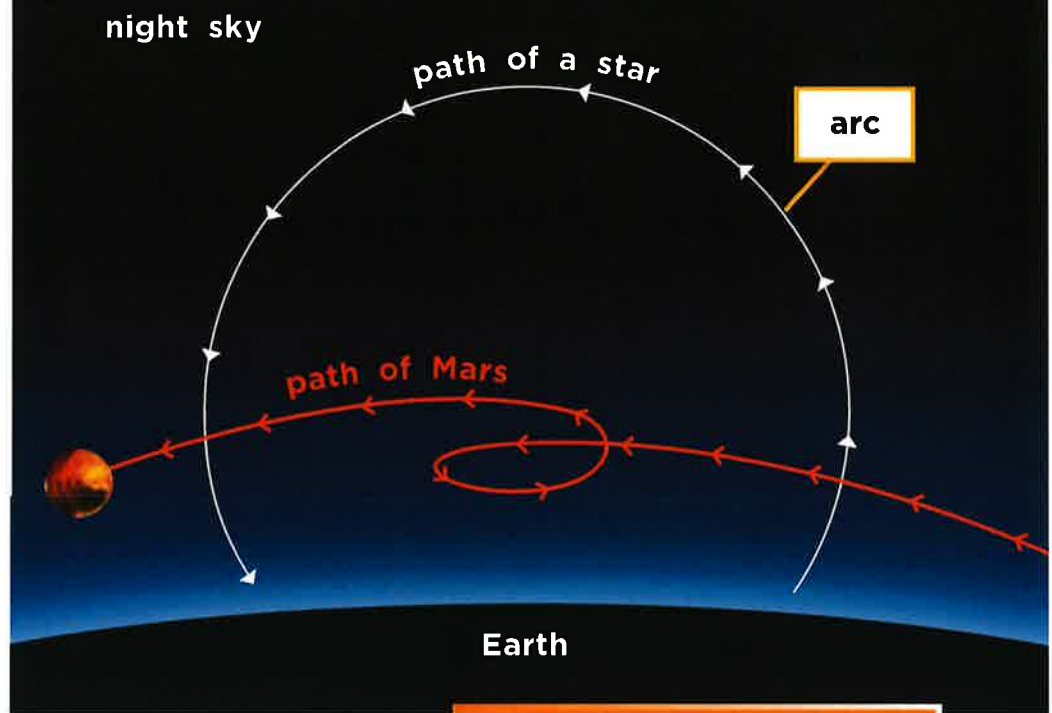
We know Mars as the red planet.

Stock Trek/Photodisc/Getty Images

Space missions to Mars have helped scientists answer some of the questions.

However, we need to explore Mars more to answer all the questions. Maybe humans will visit the red planet one day.

MARS AND THE STARS: THEIR PATHS



Mars and the stars follow different paths in the sky.

CHAPTER 1

DISCOVERING MARS

Mars is arid, or dry, and very cold. Nothing seems to live on Mars. Yet Mars is the most similar planet to Earth in the solar system. Mars has seasons and an **atmosphere**. A day on Mars is almost the same length as a day on Earth.

COMPARISON BETWEEN MARS AND EARTH

	MARS	EARTH
Average Distance from the Sun	142 million miles	93 million miles
Diameter	4,220 miles	7,926 miles
Length of Day	24 hours, 39 minutes	23 hours, 56 minutes
Length of Year	687 Earth days	365 days
Average Temperature	-81°F	57°F
Atmosphere	Mostly carbon dioxide	Mostly nitrogen and oxygen
Gravity	3/8 that of Earth*	1

* On Mars, you would weigh three-eighths of what you do on Earth.

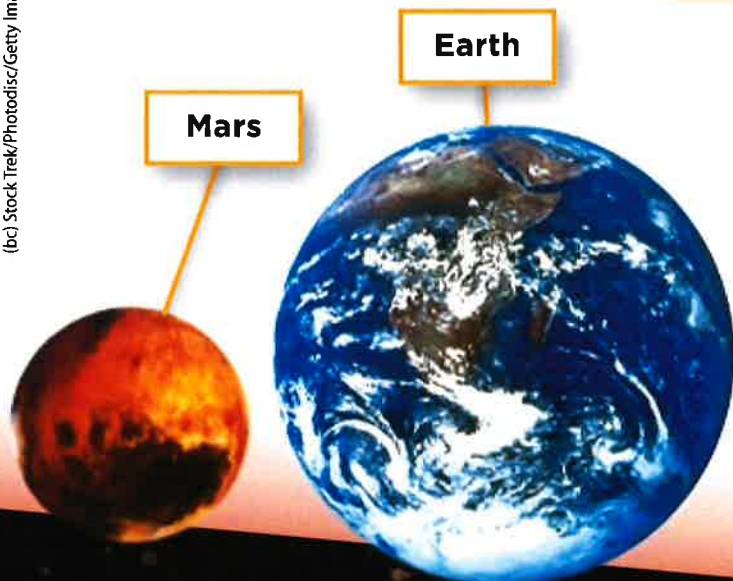
Astronomers have discovered many things about Mars. However, astronomers can make mistakes. They have drawn the wrong conclusions about Mars. Some of the mistaken **theories** are that Mars is a hot place, Mars had thick forests, and Mars has cities full of people like us!

Fortunately, science is flexible. Scientists develop new theories every time they investigate something. Scientists use **evidence** to prove or disprove ideas. New theories can be replaced when scientific research improves.

A WORD FROM MARS

The ancient Romans named the planet Mars after their god of war. Although we don't associate Mars with war, the word *martial* connects Mars with war. *Martial* means "war-like." For example, martial arts are sports that involve defending or fighting, such as judo and karate.

(bc) Stock-Trek/Photodisc/Getty Images, (br) Ingram Publishing



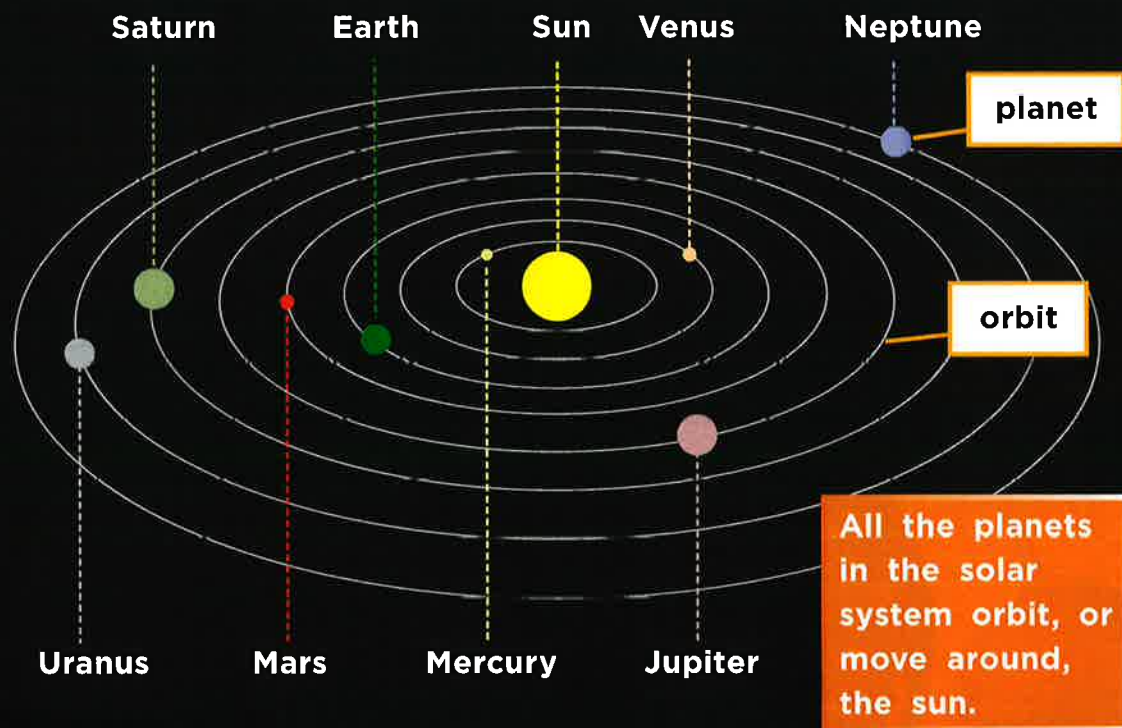
The diameter of Earth is nearly two times bigger than the diameter of Mars.

Approximately 500 years ago, an astronomer named Nicolaus Copernicus figured out that the planets move around the sun. People were shocked! They believed that the planets and the sun orbited Earth.

In 1609, an astronomer named Johannes Kepler also caused a stir. At the time, people believed that the planets orbited in circles. Kepler used a mathematical calculation to prove that the planets orbit in an **elliptical**, or oval, shape.

In Other Words made people feel alarmed and surprised.
En español, *caused a stir* quiere decir *causó un revuelo*.

ELLIPTICAL ORBITS OF PLANETS





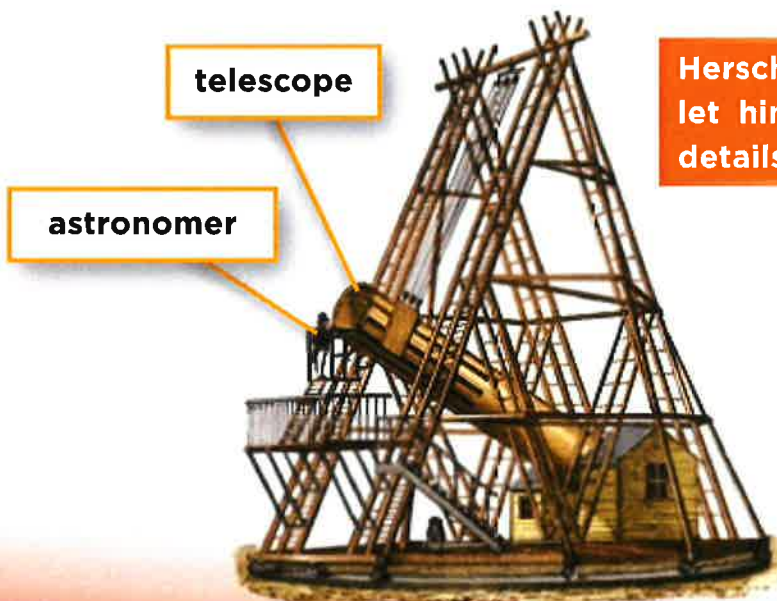
Early telescopes like this one helped astronomers learn about Mars.

Also in 1609, Galileo Galilei was the first person to use an astronomical telescope to observe the shape of Mars. Galileo's telescope was very simple. Telescopes have improved. Astronomers have observed more features on Mars, such as lines and patches of dark and light.

In 1784, an astronomer named William Herschel saw lighter spots at the poles on Mars. Herschel thought that the spots might be **polar** ice caps. He was right.

Language Detective

Lighter is a comparative adjective. What does it compare?

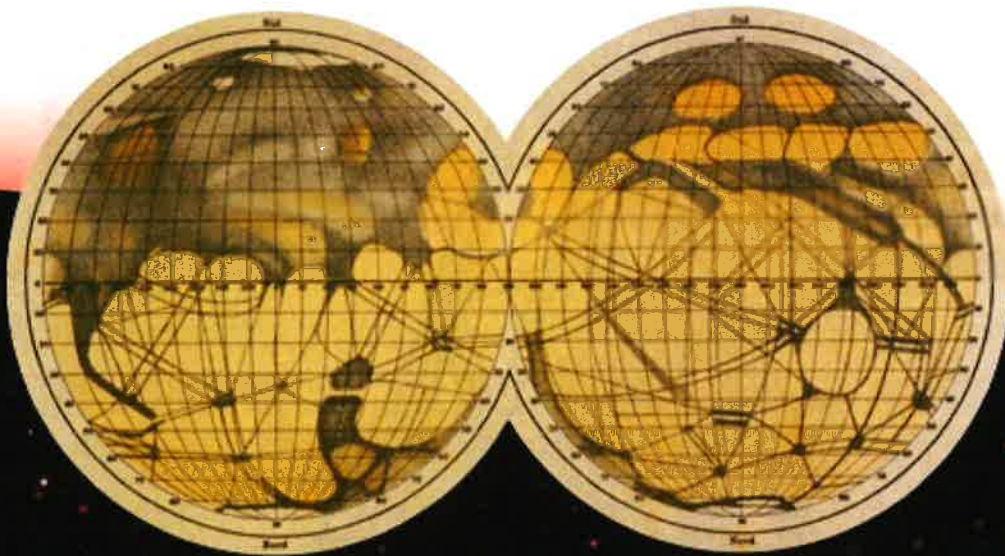


Herschel's telescope let him see more details on Mars.

Herschel also figured out that Mars had an atmosphere. However, Herschel made mistakes. He was wrong thinking the light and dark areas on Mars were land and oceans and that there was life on Mars.

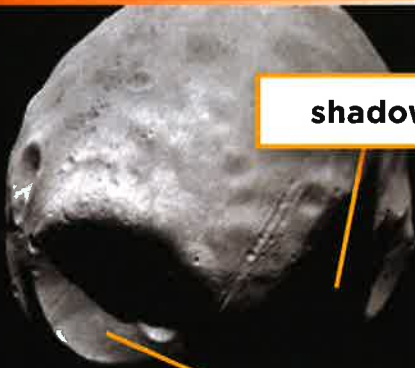
An Italian astronomer, Giovanni Schiaparelli, saw lines on Mars. He called the lines *canali*, which means “channels” in Italian. However, canali was mistakenly translated as “canals” in English. Canals are waterways that have been dug by people. The mistake in translation made people think wrongly that Martians had made canals on Mars. However, the lines Schiaparelli saw were illusions. They do not really exist.

Schiaparelli drew these maps of Mars. The lines that he saw on Mars were an illusion.



An astronomer named Asaph Hall correctly discovered that Mars has two moons. These moons look very different from Earth's moon. Earth's moon is a sphere. The two Martian moons have irregular shapes. They are much smaller in diameter than Earth's moon. They are called Phobos and Deimos.

Phobos has many craters.



shadow

crater

STOP AND CHECK

What did early astronomers learn about Mars?

EARLY MARS DISCOVERIES

300 B.C.E.

Aristotle sees the moon pass in front of Mars. Aristotle realizes that Mars is farther away than the moon.

1514 C.E.

Copernicus calculates that the planets orbit the sun.

1609 C.E.

Kepler calculates that the planets have elliptical orbits.

Galileo observes Mars with a telescope.

1780s C.E.

Herschel sees polar ice caps on Mars, and figures out that Mars has an atmosphere.

1877 C.E.

Schiaparelli thinks he sees lines on the surface of Mars.

Hall discovers that Mars has two moons.

CHAPTER 2

ORBITING AND ROVING

For more than 300 years, people observed Mars using a telescope. This changed when the space program began. In 1965, the *Mariner 4* **space probe** flew past Mars. The probe took 22 photographs of Mars. They showed big craters on Mars.

In 1971, *Mariner 9* was the first probe to orbit Mars. The probe took photographs that showed a giant dust storm, polar caps, volcanoes, canyons, and old riverbeds. The photos showed that Mars must have had water! Maybe it used to have life too.

This photograph was taken by a space probe. Scientists can see details of Mars's surface.

NASA/Brown RPIF

In 1976, two **landers**, called *Viking 1* and *Viking 2*, arrived on Mars. The landers had cameras and equipment to test the soil and measure the weather. *Viking 1* and *Viking 2* sent information back to Earth.

The *Pathfinder* mission in 1997 sent a **rover** called *Sojourner* to explore Mars. It traveled over the surface of Mars and conducted experiments. Since then, other probes, landers, and rovers have gone to Mars.

In Other Words from that time until now.
En español, *since then* quiere decir *desde entonces*.

(b1) NASA-JPL, (b7) NSSDC/NASA

EXTREME PLANET

Mars is an extreme planet. It has the tallest mountain and the longest canyon in the solar system. The mountain is called Olympus Mons. It is approximately three times taller than Mount Everest. The canyon is called Valles Marineris. It is nearly 2,500 miles (4,000 kilometers) long. The Grand Canyon is 277 miles (about 446 kilometers) long.

crater



Olympus Mons is an extinct volcano.

The dark areas in Valles Marineris are dunes formed by wind.

canyon



Rover and lander designs are tested in deserts on Earth before going to Mars. There are many criteria used to evaluate the designs. Rovers and landers must land safely. They must have reliable energy supplies, communication devices, and testing equipment. Rovers need to move easily over rough terrain. The cameras in the rovers need to send photographs back to Earth.

In the future, rovers and landers will use more advanced technology. This will increase our knowledge of Mars. We might find an answer to the question: Is there life on Mars?

THE COLORS OF MARS

Camera technology has improved since *Mariner 4* sent photographs of Mars back to Earth. However, the photographs may not show the exact colors of Mars. Colors can change for many reasons, such as different weather. The Martian sky can look blue, tan, or even pink.

sky

surface of Mars

Photographs show Mars in different colors.

STOP AND CHECK

How do rovers and landers help us learn about Mars?

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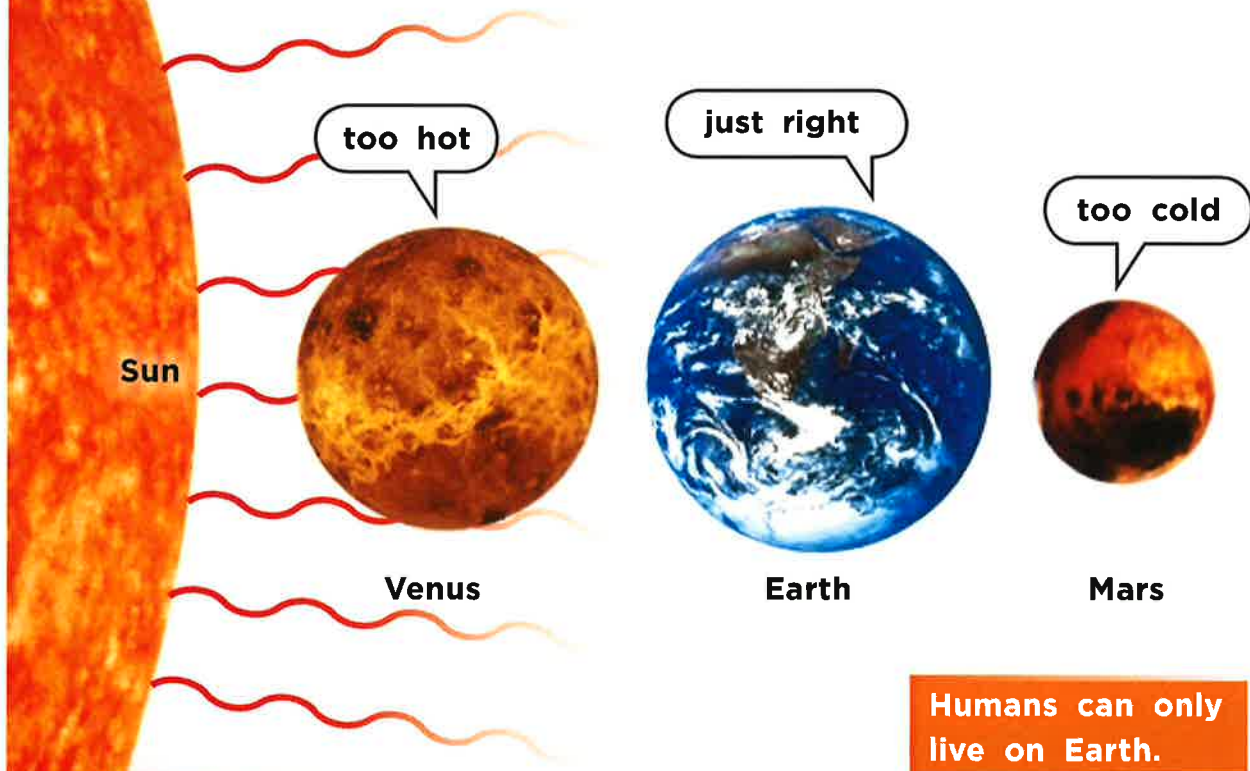
CHAPTER 3

LIFE ON MARS?

(i) NASA/SDO, (ii) NASA Jet Propulsion Laboratory
(NASA-JPL), (bc) Ingram Publishing, (br) Stock Trek/
Photodisc/Getty Images

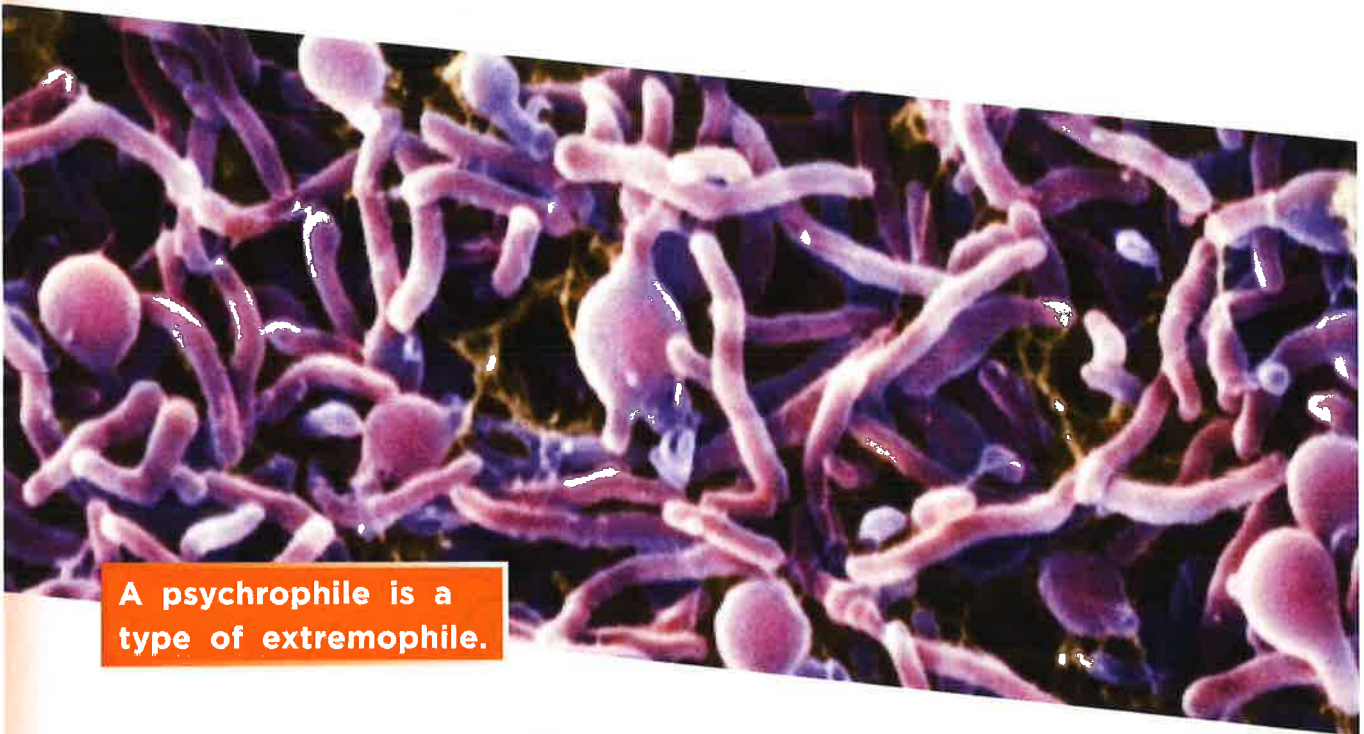
The position of Earth in the solar system is perfect for supporting life. Earth has water and air that we can breathe. Earth is not too hot or too cold. It is just right. Scientists call this the Goldilocks zone.

Although Mars is much colder than Earth, some scientists believe that Mars might support life, too.



Humans can only live on Earth.

Scientists used to think that all life on Earth gets energy from the sun. Now scientists know that most plants and animals get energy from the sun. They discovered that some plants and animals get energy from chemicals or from heat inside Earth's core. These plants and animals are called extremophiles. Scientists think that extremophiles might live on Mars too.



A psychrophile is a type of extremophile.

Scientists believe that finding water is a clue to finding life. Mars has water **vapor** in the atmosphere, frozen water at the poles, and dry riverbeds. Where did the water go? Is it under the surface of Mars?

Language Detective

Most is a superlative adjective. What does it compare?

In 1984, scientists found a **meteorite** on Earth. Some thought the meteorite was from Mars. Some scientists thought there were **fossilized** bacteria in the rock. Bacteria are one of the most likely forms of life on Mars. Other scientists disagreed.

FACE ON MARS!

In 1976, the *Viking 1* craft sent photographs back to Earth. One image looked like a human face! However, better images of the same place were taken during the 1990s and 2000s. The newer images show that there is no face.



The 1976 photograph seems to show a human face on Mars.



A better photo from 2001 shows that there is no face on Mars.

Scientists are planning more missions to Mars. They want to explore the atmosphere and learn about the climate and geology on Mars. They also want to look for evidence of life on Mars now or in the past.

Scientists also have plans for people to explore Mars. People would need special transportation, protective suits, and places to live on Mars. Some people think that humans might live on Mars in the future.

STOP AND CHECK

Why is Earth in the Goldilocks zone?

These are the clothing and equipment that an artist imagines humans might use on Mars in the future.

CONCLUSION

People have always been interested in observing and learning about plants, animals, weather, and land.

Although we have learned a lot about Mars, we are still interested in observing and learning more. People might explore, adapt, and colonize Mars in the future.

A futuristic Mars rover is shown on a red, rocky planet surface. In the foreground, an astronaut in a white spacesuit with an American flag patch is looking at a handheld device. Another astronaut is visible in the background near the rover. The scene is set against a bright orange sky.

vehicle

spacesuit

Respond to Reading

Summarize

Use important details from *Mars* to summarize how knowledge about Mars has changed over time. Your graphic organizer may help you.

Cause → Effect
→
→
→
→

Text Evidence

1. How can you tell that *Mars* is an expository text? What are some text features that help you know this?

GENRE

2. Reread page 8. What made people think that Martians built canals on Mars? How did new information affect this idea? **CAUSE AND EFFECT**
3. The Greek root *tele* means “far,” and the root *scop* means “to look at or observe.” Use this information and context clues to define the word *telescopes* on page 2. **GREEK ROOTS**
4. Write about how better technology helped people change their ideas about Mars over time. Include details from the text in your answer.

WRITE ABOUT READING

Compare Texts

Read about how understanding science helps a boy enjoy life on Mars.

ZACH THE MARTIAN


It is hard to be the new kid in school. It's even harder to be the new kid on the planet!

The teacher told the class, "Zach's mom is Earth's new ambassador to Mars." Everyone stared at Zach. He felt like an alien.

Although Zach was a normal height on Earth, he was short on Mars. The Mars kids were tall because of the planet's low gravity. Zach was too short to play basketball with his classmates.

It had taken Zach two weeks to learn to walk in low gravity. He could not control his movements. He threw the basketball, and it hit a teammate.





The teacher explained, “The gravity on Earth is stronger than on Mars, so Zach has stronger muscles than we do. Zach will learn to be gentler.”

Zach wished he could go outside, but he couldn't. The colony was covered by a giant dome.

A girl asked Zach, “Are you okay?” Zach had hit her with the basketball. Her name was Gemma.

“I should be asking you that,” Zach said.

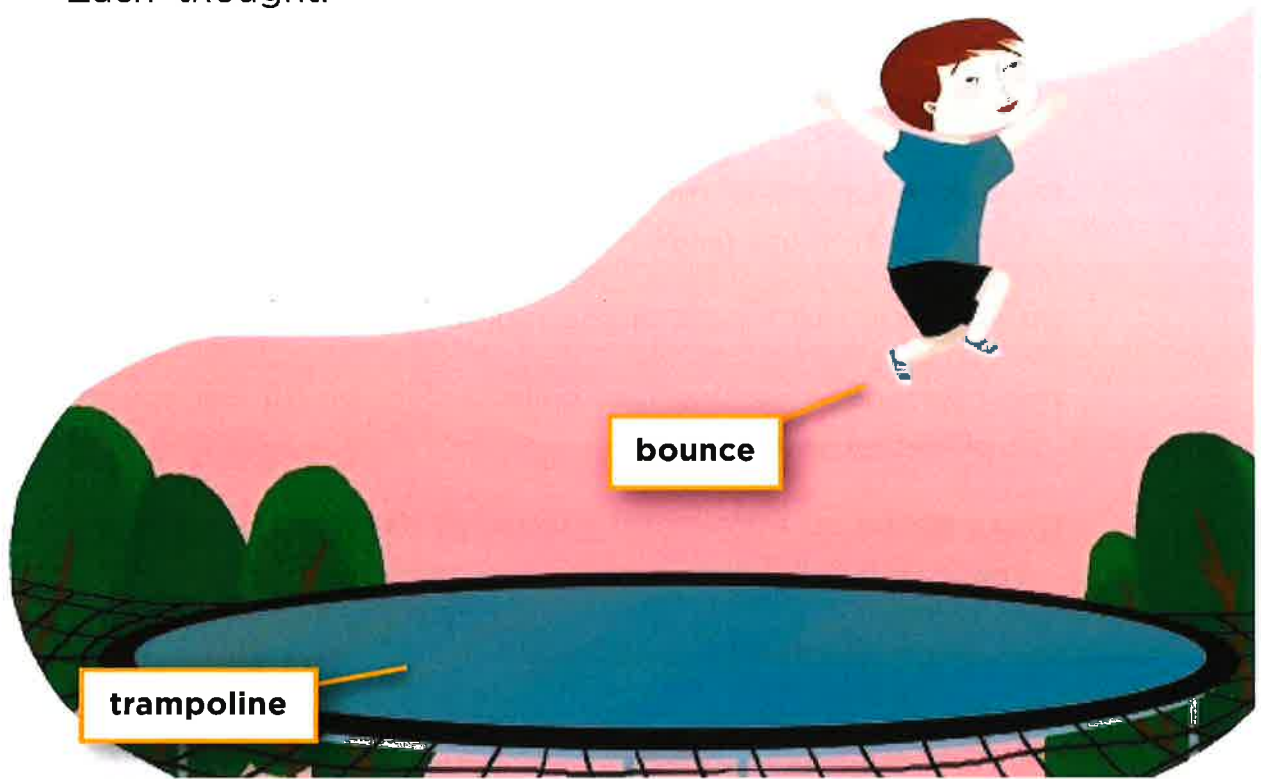
Gemma smiled. “I feel fine. It must be hard moving to Mars. Mars isn't so bad really. This afternoon, our class is working in the gardens.”

Zach was surprised when his class went into a large greenhouse full of fresh fruits and vegetables.

Gemma said, “See. We are getting better at growing food and recycling water and air.”

After class, Gemma took Zach to a trampoline. Gemma got on first. She flipped and performed somersaults. Zach climbed on the trampoline, too. Zach's strong muscles and the low gravity on Mars made Zach bounce higher and higher. He felt like a superhero.

"Maybe it is okay to be a Martian," Zach thought.



Make Connections

In *Zach the Martian*, what kinds of things have people learned to do better by living on Mars?

ESSENTIAL QUESTION

How would living on Mars, like the characters in *Zach the Martian* do, help to answer some of the unanswered questions in *Mars*? **TEXT TO TEXT**

Glossary

astronomers people who observe outer space (*page 2*)

atmosphere the layer of gas surrounding a planet (*page 4*)

elliptical shaped like an oval (*page 6*)

evidence something that helps prove something else is true
(*page 5*)

fossilized changed into a fossil, or a preserved trace of a
living thing from long ago (*page 15*)

landers space vehicles designed to land on a planet
(*page 11*)

meteorite a piece of rock or metal that has fallen to Earth
from outer space (*page 15*)

polar relating to a pole or the region around it (*page 7*)

rover wheeled machine that collects data on the surface of
a planet (*page 11*)

space probe an unmanned spacecraft designed to explore
space and send data back to Earth (*page 10*)

theories ideas that have not been proven (*page 5*)

vapor gaseous particles suspended in the air (*page 14*)

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Focus on Science

Purpose To give students a chance to see Mars for themselves

Procedure

Step 1

With a partner, find out when you can observe Mars from where you live.

Step 2

Talk to an adult at home and choose a night when you can go out to observe Mars together.

Step 3

Take a notebook with you. Where is Mars in the sky? How does it look different from the stars? Write down your observations in your notebook.

Step 4

Share your observations with the rest of your class.

Conclusion What did you notice about Mars? How is Mars similar to or different from stars and the moon? If there is a planetarium or observatory near where you live, visit it and look at Mars through a telescope. How is your observation of Mars through a telescope at a planetarium or observatory similar to or different from observations of Mars you made on your own?

Literature Circles

Nonfiction

Thinkmark

The Topic

What is *Mars* mostly about?

Vocabulary

What new words did you learn in the text?

What helped you understand what the new words mean?

Author's Purpose

Why do you think the author wrote *Mars*?

Conclusions

What conclusions can you draw about how and why knowledge changes over time?

Make Connections

When have you learned something new that caused you to think differently?

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