Is There Life on Mars?

<informational article>

For centuries, human beings have asked themselves if there might be life on other planets. Before, we could only wonder. Now, with each satellite or probe sent into space, we've hoped to find the answer. That's because the possibility that life exists on one of Earth's celestial neighbors is too intriguing to ignore.

Among the planets that orbit, or circle around, the Sun, Mars is the most like Earth. As a result, in recent years astronomers have focused their research on that planet. In May 2008 the Mars Phoenix Lander touched down at the Martian North Pole. It immediately began to dig for ice using a special mechanical arm controlled by NASA scientists back on Earth. This mission taught scientists that underneath the reddish, sandy surface of the planet, there was evidence of frozen water on Mars. This was an important find because water is one of the most essential resources for supporting life. If there were no water on Mars, we would know that there is no life there, either. This gave scientists hope.

Another clue regarding the possibility of life resulted from the careful study of a meteorite found in Antarctica. Scientists knew that it came from Mars. Their study of it revealed a small percentage of bacteria, single-celled organisms, that had once been alive. This exciting news was reported around the world.
Now scientists had proof that life had once existed on Mars! It has taken a long time and an immense investment of money by the U.S. government for NASA scientists to learn what we now know about the “red planet.” However, we still don’t have all of the answers. That’s why research continues. Like any government agency, NASA is sometimes constrained by funding cuts, but the careful administration of its budget should ensure that money will continue to support future missions to Mars.

NASA hopes that rock and soil samples obtained from the planet during these missions will bring more discoveries. Imagine what a privilege it would be for scientists if they found proof that life still exists on Mars!
Word Meanings

For each highlighted word on pages 22–23, the meaning is given below. For practice with other meanings, see pages 27–29. For synonyms and antonyms, see page 32.

1. satellite
   (SA-tuh-lite) (n.) A satellite is a natural or manufactured object that moves in a circle around Earth or another planet. The Moon is Earth's natural satellite.
   (n.) Something that is dependent on another thing is a satellite. A small country that is controlled by a larger country is a satellite.

2. celestial
   (suh-LESS-chuhl) (adj.) Something that is celestial has to do with the heavens or what is visible in the sky from Earth.

3. orbit
   (OR-bit) (v.) When one object travels in a circle around another object, it is said to orbit that other object.
   (n.) The orbit of one object around another is the path the object takes.

4. resources
   (REE-sorss-iz) (n.) Resources provide the support that enhances the quality of life or makes life or some undertaking possible, such as water or the Internet.

5. percentage
   (pur-SEN-tij) (n.) A percentage is a part or fraction of a whole. The percentage of the day a student spends at school is a little more than one-fourth.

6. immense
   (i-MENSS) (adj.) Something that is immense is huge in size or degree.

7. investment
   (in-VEST-ment) (n.) An investment is money or time devoted to something with the expectation that you will get some benefit, such as more money, back.

8. constrained
   (kuhn-STRAYND) (adj.) Something that is constrained is confined or limited. A dog might be constrained by a fence, or an artist by a lack of art supplies.

9. administration
   (ad-mi-nuh-STRAY-shuhn) (n.) Administration is the process through which an activity is managed or supervised.
   (n.) The term of office of a president, mayor, or other elected official is an administration. The people who participate in that term are the administration.

10. privilege
    (PRIV-uh-liij) (n.) If you have a privilege, you enjoy a special right or a particular advantage.
    (v.) When you privilege someone, you grant that person a special advantage, status, or position.
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Check for Understanding

Choose the lesson word that completes each sentence. Write the word on the line provided. Some words will be used twice.

administration  immense  privilege
celestial  investment  resources
constrained  orbit  satellite
percentage

1. The scientists sent the ____________ into space to take pictures of Earth.

2. There are sixty small moons that ____________ the planet Jupiter.

3. Thousands of tiny ____________ objects twinkled in the night sky.

4. We had the ____________ of previewing the new show at the planetarium before everyone else could see it.

5. A large ____________ of the graduates from our high school go to college.

6. Carlos wasn’t sure which ____________ would earn him the most money.

7. ____________ such as clean air are critical to human life and must be protected.

8. We were awestruck by the ____________ expanse of sky visible from the top of the mountain.

9. Their plans to go to a movie were ____________ by a lack of funds.

10. Quinn was in charge of the ____________ of the fundraiser because of her experience managing large events.

11. Our band considered it a/an ____________ to be invited to march in the parade.

12. ____________ effort can bring equally great rewards.
Expand Word Meanings

Read the paragraph below to learn other meanings for some of the lesson words.

The Glenn Research Center in Ohio is a satellite of NASA. There, scientists conduct research in technology and aeronautics to advance space exploration. The Franklin D. Roosevelt administration created the center under another name in 1941. It began as an aircraft engine research laboratory. In 1991 it was renamed to honor John H. Glenn, the first American to follow an orbit around the Earth. He returned from space a national hero. Other astronauts have since gone into space, but we privilege Glenn with this honor to acknowledge his unique contributions to American history.

Apply Other Meanings

Complete each sentence with a highlighted word from the paragraph above.

1. The state university is planning to open a small ____________ campus in our community.

2. The first space shuttle was launched in April 1981, during President Reagan’s___________.

3. The ____________ of the Earth around the Sun is nearly a circle.

4. Some people felt that if the entire debate club attended the competition, it would ____________ those who hadn’t come to meetings or contributed to the team’s success.

5. During the current mayor’s ____________, our city has seen many positive changes.

6. From 1952 to 1990, Poland was a ____________ nation of the Soviet Union.

7. The guidelines for the award ____________ projects that support early childhood education.

8. We can tell that the Moon moves in its ____________ around the Earth because it changes position in the sky throughout the night.

9. The city office was a ____________ of the largest medical center in the state.

10. At the beginning of her ____________, everyone had high expectations of the new director of education.
Word Associations

Use what you know about the lesson word in italics to answer each question. Circle the letter next to the phrase that best answers the question. Be prepared to explain your answers.

1. What might make you feel most *constrained*?
   a. too many rules
   b. lots of freedom
   c. a great deal of knowledge

2. Which would you consider a *privilege*?
   a. having to wash the dishes
   b. babysitting a difficult child
   c. meeting one of your heroes

3. Where might you find a *satellite*?
   a. in the air
   b. in outer space
   c. under the ocean

4. Which is NOT a *celestial* object?
   a. Earth’s moon
   b. a small planet
   c. a tall tree

5. If you spend a *percentage* of your time doing something, how much time are you doing it?
   a. all of the time
   b. some of the time
   c. none of the time

6. Which is considered the wisest *investment* in your future?
   a. a start-up business
   b. a lottery ticket
   c. a college education

7. Which of the following is part of an American president’s *administration*?
   a. the U.S. government
   b. the voters
   c. the vice president

8. In which pattern does an object travel in order to have an *orbit*?
   a. a diamond pattern
   b. a circular pattern
   c. a varying pattern

9. Which *resources* would be most useful in solving a mystery?
   a. wealth and power
   b. reason and observation
   c. skill and balance

10. Which structure would you describe as *immense*?
    a. a sports stadium
    b. an expensive car
    c. a friendly cafe
Check Again

Use what you know about the lesson word in italics to complete each sentence. Be sure your sentences make sense.

1. A weather satellite circles Earth and gathers ____________________________

2. I considered it a privilege to be able to ____________________________

3. It took all of our resources to ____________________________

4. A great percentage of the members of that community ____________________________

5. There is an immense difference between ____________________________

6. When people make a financial investment, they expect ____________________________

7. Objects that orbit in space ____________________________

8. When the current administration runs for reelection next year, the governor will benefit from the fact that ____________________________

9. The law requires that dogs be constrained by ____________________________

10. Celestial objects appear in the night sky as ____________________________

Challenge Yourself

Follow the directions to write sentences with the lesson words in italics. Be sure your sentences make sense both grammatically and in meaning.

1. Write a sentence using the word immense.

2. Write a sentence in which the final word is resources.

3. Write an eight-word sentence using the word orbit in the sixth position.
**Word-Solving Strategies: Context Clues**

**Embedded Definitions**

Sometimes an author helps the reader out with a difficult word by providing a definition that is embedded in the text. Read this sentence from "Is There Life on Mars?"

Among the planets that orbit, or circle around, the Sun, Mars is the most like Earth.

The word **orbit** is followed by a phrase that defines the word directly in the text: **circle around**. Embedded definitions are sometimes, but not always, set off by commas.

**Practice**

A. Write a highlighted word and its embedded definition in the first two boxes. Then write the meaning of the word in the third box.

The idea of life on Mars has fascinated people for a long time. In 1950, Ray Bradbury wrote a series of vignettes, or short stories, called "The Martian Chronicles." The stories tell about humans who escape an Earth that has been devastated—completely ruined by atomic warfare. The humans attempt to colonize Mars. They deal with the hostile Martian climate and with unfriendly aboriginal Martians, who were the first beings to live there.

B. Write a sentence for each of the highlighted words from the paragraph above. You will use one word twice. Use embedded definitions.

1. __________________________________________
2. __________________________________________
3. __________________________________________
4. __________________________________________
Practice for Tests

Fill in the bubble next to the answer that best completes the sentence or answers the question.

1. Read this sentence.
The seatbelts kept the students constrained on the school bus.

Constrained means:
○ A separated
○ B under control
○ C restricted
○ D in pairs

2. Objects orbit a planet when they:
○ A hit it
○ B fall to Earth
○ C leave the atmosphere
○ D circle it

3. Which office is NOT a satellite of a company or organization?
○ A local branch office
○ B state information center
○ C national headquarters
○ D regional mail center

4. A word associated with celestial is:
○ A heavenly
○ B earthly
○ C aliens
○ D astronaut

5. If you make an investment, you expect:
○ A to waste your time
○ B to get fame and fortune
○ C to receive some benefit
○ D to lose your money

6. Read this sentence.
It was a privilege to be invited to speak at the assembly.

Privilege means:
○ A serious task
○ B difficult experience
○ C unwanted assignment
○ D special honor

7. The administration of a hospital might:
○ A perform physical exams
○ B hire hospital employees
○ C drive an ambulance
○ D serve patients food

8. The opposite of immense is:
○ A miniature
○ B enormous
○ C average
○ D tremendous

9. A word related in meaning to percentage is:
○ A average
○ B whole
○ C fraction
○ D dimension

10. Resources enable a person to:
○ A trick others
○ B predict the future
○ C quote from memory
○ D accomplish things