



TEACHER GUIDE

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STUDENT HANDOUTS

• Reading Comprehension

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2. <i>Looking Into Space</i>	
3. <i>Blasting Off</i>	

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5. <i>A Trip to the Moon</i>	
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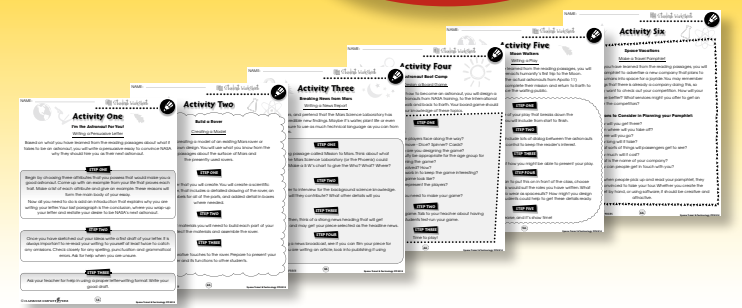
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- Enter pass code CC4514D for Activity Pages.





Mission to Mars

- 1. Activate Your Prior Knowledge:** Visualize what a Martian looks like. Draw a sketch in your notebook. Where does the information you used to create this image come from? Write a brief response of why you think a Martian might look like this.
- An antonym of a word is the opposite meaning. For example, sad is an antonym for happy. For each of the words given below, give an appropriate antonym. You may wish to use a dictionary to help you.

	Word	Antonym
a)	success	
b)	excite	
c)	extreme	
d)	important	
e)	hospitable	

- 3.** Choose a prefix or a suffix from the bubble below that you could add to each of the words above to make a new form of the word. Write the new word, and tell how the meaning is changed.

- a) _____ : _____
- b) _____ : _____
- c) _____ : _____
- d) _____ : _____
- e) _____ : _____

in-
-ly
-ing
-d
un-
-ful



Mission to Mars

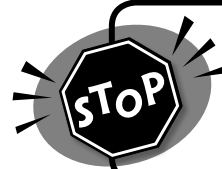
In January of 2003, two **Mars Exploration Rovers**, called **Spirit** and **Opportunity**, landed successfully on opposite sides of the planet. This exciting event was the final step in a number of earlier successes and failures at trying to get to Mars.



Image courtesy of NASA

In the section **Blasting Off**, you read about the different types of **spacecraft** that are sent to explore a new planet. In 1964, the **Mariner 4** made the first successful flyby. After two more successful flyby missions, an orbiter/lander was sent in 1971. In 1975, the **Viking 1 and 2** orbited and landed on Mars to send more information back to Earth. It wasn't until 1996 that we were able to take the next step of sending a rover called **Pathfinder**. This sounds like we have had great luck—but there were twenty-four failed missions between 1960 and 2003.

RETELL: Make a timeline of the missions to Mars outlined above.



Spirit and Opportunity were sent to Mars to collect more in-depth information about the **terrain** and **atmosphere** of Mars. These rovers are like little science **laboratories** on wheels. They drive around and take data to send back to Earth so that we can understand what things are like on Mars. Each rover weighs over 400 pounds. Scientists only expected them to last for about ninety days, but after two and a half years, they continued to gather useful information.

One of the most important things the Mars Exploration Rovers have taught us is that there might have once been life on Mars. Today, we consider Mars an **extreme planet**. It is rocky, cold, lifeless and home to one of the largest volcanoes in the solar system! However, by collecting samples and looking more closely at the rocky areas, the rovers have given us evidence that there may have once been water on Mars. There may have also been an environment that could have supported life. This is called a **hospitable** environment. For now, we can only imagine what type of life forms might have been there!



Mission to Mars

- 1. Use the words in the box to answer each question.**

atmosphere water hospitable volcano
flyby orbiter/lander terrain

- _____ a) Which type of spacecraft was the first successful mission to Mars?
- _____ b) What type of spacecraft would the Vikings 1 and 2 have been?
- _____ c) What two things about Mars were the Spirit and Opportunity gathering information about?
- _____ d) What object did the Spirit and Opportunity discover on Mars that is the biggest one in the solar system?
- _____ e) What do the rocks on Mars show us that there once might have been there?
- _____ f) What type of environment do scientists now wonder that there might have been on Mars?

- 2. Number the events from 1 to 5 in the order they occur in...**

- _____ a) The *Pathfinder* lands successfully on Mars.
- _____ b) The first successful flyby mission is sent to Mars.
- _____ c) *Opportunity* and *Spirit* land on opposite sides of Mars to begin their exploration of the planet's environment.
- _____ d) Viking 1 and 2 orbit Mars and land to send back images and data about the planet.
- _____ e) The first failed mission to Mars is attempted. It is the first of twenty-four following failures.



Mission to Mars

- 3. Answer each question with a complete sentence.**

- a) Why do you think the Mariner 4 was sent to Mars before the *Pathfinder* and the rovers?
- _____
- b) How are the rovers like little science laboratories on wheels?
- _____
- c) Why do we consider Mars to be an *extreme* planet?
- _____

Research & Extension

- If you could re-design the Mars rovers, what features would you add to them? What additional purposes would you want them to fulfill and why? Find a photo of one of the rovers and cut it out. Add your own design changes to it by either sketching onto the photo, or by tracing the photo and adding to it. Either way, try to make your sketch look as realistic as possible. Plan a presentation that will explain to viewers what your rover will do and why you thought it was an important feature to add.
- Research the ground that the rovers have covered already. Prepare a model (a beach ball, balloon or some other object could be used) to show the points of landing for Spirit and Opportunity, and the land they have covered since landing. Draw their routes right onto the model. Be sure to use different colors for each rover. Add to the model any points of interest or features of Mars they have discovered. Next, sketch out where they plan to go next, and try to draw that in as well. Prepare a presentation to discuss the route that the rovers have taken and what they have found.

WEB CONNECTION



To play some Mars games, try: http://mars.jpl.nasa.gov/funzone_flash.html
Take a Mars Adventure at: http://spaceplace.nasa.gov/en/kids/mars_rocket.shtml
Learn more about the rovers and see where they are now at:
<http://marsrovers.nasa.gov/home/>



Did they actually put a Man on the Moon?... Or was the whole thing one big hoax? You be the judge in...

The Apollo 11 Conspiracy Theory

What the conspiracy theorists say...	What NASA says...	I agree with...

MY ESSAY

My introduction needs to explain what my essay will be about, and just state what my opinion is. I'll be sure to include the following points:

The three strongest points that I will use in my argument (one per paragraph):

- _____
- _____
- _____

In my conclusion, I want to restate my opinion and wrap up the essay.

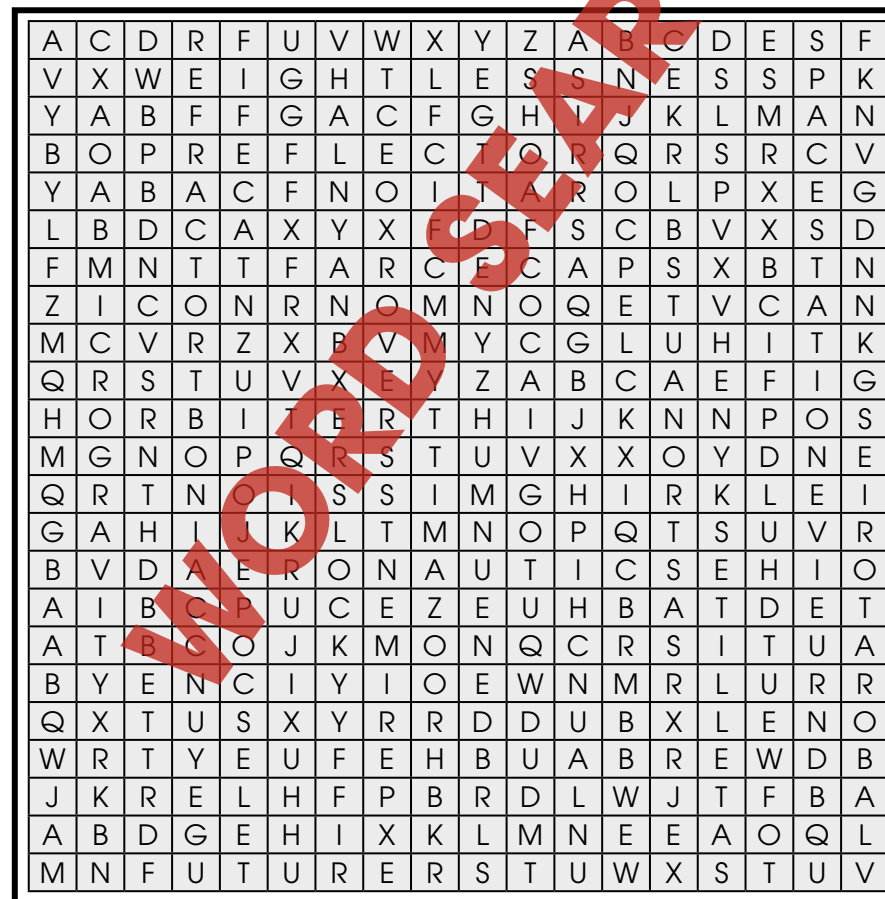
Remember to write using proper paragraphs and to use linking words.



Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

- astronauts
- spacecraft
- microgravity
- aeronautics
- flyby
- module
- weightlessness
- orbiter
- laboratories
- mission
- lander
- experiments
- telescope
- rover
- future
- refractor
- satellites
- exploration
- reflector
- space station
- launch



Comprehension Quiz

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1. Put a check mark (✓) next to the answer that is most correct.

a) Which of the following is NOT part of astronaut training?

- A studying space
- B flight training
- C astrology
- D aeronautics

b) Which of the following is a type of telescope?

- A refractor
- B retractor
- C refresher
- D reducer

c) Which one of the following statements about spacecraft is true?

- A A flyby mission is a manned mission.
- B An orbiter spacecraft probes into the planet's surface.
- C Lander spacecraft are always manned missions.
- D Rover spacecraft are steered from Earth.

d) Which one of the following statements about satellites is true?

- A A satellite is an object that orbits around a planet.
- B The Earth is a satellite of the moon.
- C Satellites are always man-made.
- D none of the above are true

e) Which of the following is NOT a function of a satellite?

- A To send and receive internet and cell phone signals.
- B To send supplies to the International Space Station.
- C To broadcast radio and television.
- D To observe weather patterns.

Construction of the International Space Station



Image courtesy of NASA



After You Read

NAME: _____

Mission to Mars

3. Answer each question with a complete sentence.

a) Why do you think the Mariner 4 was sent to Mars before the Pathfinder and the rovers?

b) How are the rovers like little science laboratories on wheels?

c) Why do we consider Mars to be an *extreme* planet?

Research & Extension

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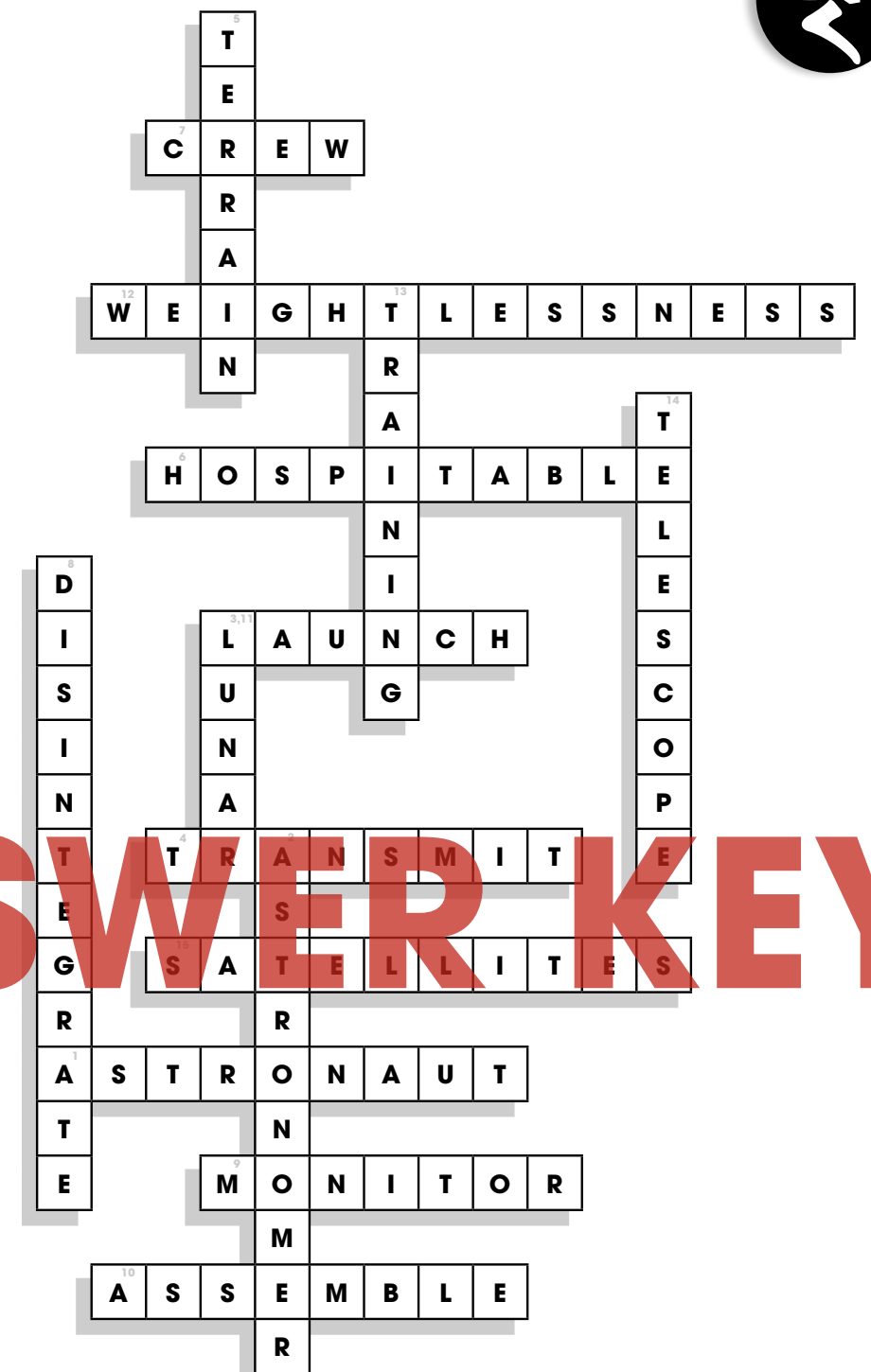
3.

a) to get a look, and gather info from afar to see if it's safe to get closer

b) they can collect samples and take photos to send back to Earth

c) conditions: rocky, cold, lifeless

Crossword Puzzle!



EASY MARKING ANSWER KEY

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