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• Reading Comprehension

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EASY-MARKING™ ANSWER KEY

22

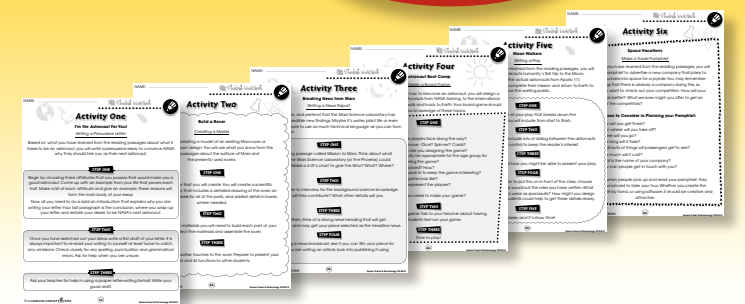
MINI POSTERS

24

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Blasting Off

1. Activate your prior knowledge: Think about what you know about space shuttles. In your response notebook, make a list of ten things you know. These can be words, phrases, sketches, etc.
2. Complete each sentence with a word from the list. Use a dictionary to help you.

shuttle spacecraft satellites atmosphere orbiter transmit

- a) There is a huge blanket of gas surrounding the Earth called a(n) _____. It protects us from the Sun's radiation and bits of rock and metal hurling past in outer space.
- b) Marco and Henry were playing Capture the Flag in their neighborhood. Marco used his walkie-talkie to _____ a signal to his teammate around the corner.
- c) When Samantha asked her mother for a ride to the mall, her mother complained that she was tired of being used like a _____ service.
- d) Something that travels around and around another object on the same path could be called an _____.
- e) The massive _____ looked as light as a balloon as it approached Mars for a landing.
- f) Many people now use _____ to help them navigate in the wilderness. Global Positioning Systems (GPS) do the job that compasses used to do in showing people where they are located.

3. Adding a prefix to a word can often change its meaning to the exact opposite meaning. For example, *happy* > *unhappy*. Here are some prefixes that mean "not":

dis- un- im- in- il- -ir

Complete the chart below, adding the correct prefix to change the meaning of the word.

Prefix	Word
a)	possible
b)	regular
c)	considerate
d)	legal
e)	agree
f)	manned



Blasting Off

You have likely seen images of a space shuttle getting ready for take-off and then blasting off into outer space. That object that looks like a large airplane standing up is called a **space shuttle**. A space shuttle is just one example of a **spacecraft**. A spacecraft is a device that is designed and created to travel around in outer space. They can be **manned** (people on board) or **unmanned** (no people on board).



A space shuttle is a reusable, manned spacecraft. NASA's space shuttle is called the **Space Transportation System**. It is made up of four parts: two solid rocket boosters, an external fuel tank and an orbiter. After lift off, the orbiter breaks off from the rockets boosters and the fuel tank to continue in orbit around Earth. A space shuttle mission usually lasts up to two weeks. Then, the orbiter re-enters the Earth's atmosphere. Once it hits this air, it glides like an airplane in for a landing.

There are eight different types of spacecraft, and in this section you will learn about six of them. The first type of spacecraft is a **flyby spacecraft**. A flyby spacecraft does not go into the orbit of a planet being studied. Instead, it just flies by and takes some photos to send back to Earth.

MAKE AN INFERENCE: Even when we are not sure what a word is, the word itself may give us clues to its meaning. You are about to read about **ORBITER** Spacecraft. Based on what you just read and what you know about the word **ORBITER**, make an inference about what this spacecraft may do.

An **orbiter spacecraft** actually enters the orbit of another planet to circle it and gather more in-depth information about the planet, and then sends it back to Earth. An **atmospheric subsystem** is like an orbiter spacecraft. It also enters the orbit of another planet, but while it is there, a module separates from the mother craft to go enter the planet's atmosphere. It is designed for short missions to gather data about the atmosphere. The module sends data back to the mother craft which stores it to send back to Earth.

Blasting Off

1. Fill in each blank with a word from the list.

orbiter flyby lander atmospheric subsystem
rover penetrator shuttle satellite

To learn more about a planet, it makes sense to make a few trips, getting closer each time until you know it is safe to land. First, you will need to do a _____ to get a quick look at the planet. The next step might be to try to move around the planet a few times to get a closer look. You could use a(n) _____ spacecraft for this. It is important to learn more about the type of air that surrounds the planet to see if it is safe for future missions. A(n) _____ would help gather that information. You may decide that you would like to gather data about the surface of the planet. To do this you would need a _____ to roam around and take pictures. If you were lucky enough, you might even get to go along for the ride! You couldn't stay forever, so if you wanted a spacecraft to stay for a while and get a good look around, it would be best to send an unmanned one, like the _____. Some spacecraft are designed for crash landings, like the _____. Another type of spacecraft that is used to send lots of signals back to Earth for everyday uses like phones and television are _____. Perhaps one day you will be able to board a _____ to go out and see the different types of spacecraft for yourself.

- a) **Cross out** the spacecraft that do not make contact with the surface of planets and comets.

orbiter lander rover flyby penetrator

- b) **Circle** the objects that are a part of the Space Shuttle Transportation System.

satellite orbiter fuel tank rover rocketbooster

Blasting Off

3. Answer each question with a complete sentence.

- a) Why are there so many different types of spacecraft?

- b) What conclusion might you make if you saw a star move and why?

- c) If you were asked to man a spacecraft to explore mysterious Pluto, which craft would you take and why?

Research & Extension

1. Not all shuttle launches and re-entry go as planned. There have been tragic accidents as well as astonishing successes. Research what happened when the Columbia tried to take off on February 1st, 2003. Write a brief summary report of the incident. Be sure to include why the tragedy occurred. Include a diagram.
2. On the next page you will find a table titled, *A Closer Look at Spacecrafts*. Conduct research on the Internet to complete the table with the missing information. You may wish to include a photo of each example that you find.
3. Mars Exploration Rover, Opportunity, has provided us with extraordinary images and data about this planet. Use the Internet to research more information about Opportunity, and where it is now. Create a poster to teach other people about this rover and its job.
4. Write a short story about a mission aboard a spacecraft of your choice. Be sure to include accurate information about the spacecraft and its function. Follow the writing process (brainstorm, rough draft, revise, rewrite, edit, final draft) to create a great final copy.



Plan It!

ASTRONAUT SCHOOL

It takes a lot of training to be an astronaut. Now that you know more about what an astronaut does, plan a series of training exercises that an astronaut could do to prepare for a trip to the International Space Station. These should be activities that your classmates could do in a gym class with the equipment that is available.

A visit to the following website might give you some ideas:

<http://edspace.nasa.gov/astroschool/>

Your Astronaut School gym class should include warm-up activities, a main challenge, obstacle course or game, and a cool-down activity. Be sure to think of creative names for all of the activities and equipment. Ask your teacher if you can teach a class for a day.

Warm-up: _____

Main activity: _____

Cool down: _____



Crossword Puzzle!

Word List

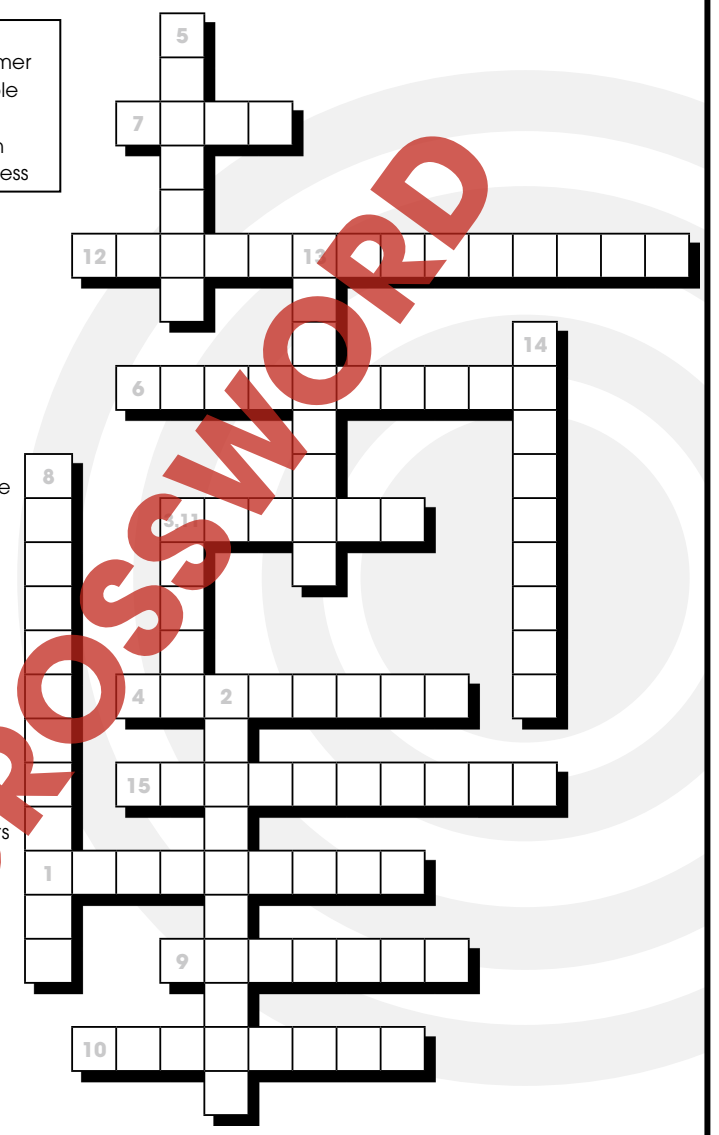
Assemble · Astronaut · Astronomer
Crew · Disintegrate · Hospitable
Launch · Lunar · Monitor
Satellites · Telescope · Terrain
Training · Transmit · Weightlessness

Across

- A scientist trained to make flights in space
- To send (as in a signal)
- Describes conditions that will support life
- Term given to the members who work together on a shuttle
- To watch or observe
- To put parts together
- A _____ pad is where shuttles take off from
- The result of being in zero-gravity
- Objects that orbit around another object

Down

- A scientist who studies the stars and planets
- Relating to the moon
- A tract or expanse of land
- To break up into parts
- The instruction or lessons needed to prepare for a task
- A magnification tool used to see objects that are far away



Comprehension Quiz

2. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- Astronauts at the International Space Station get to watch more than a dozen sunrises and sunsets each day.
TRUE **FALSE**
- Since the ISS is so large and heavy, special launchers were designed to get the unit into space.
TRUE **FALSE**
- Crews of the ISS rotate in and out about once per year.
TRUE **FALSE**
- Microgravity provides us an opportunity to conduct experiments that we couldn't do here on Earth.
TRUE **FALSE**
- Since astronauts need to keep up their strength, they work very short days, and get lots of sleep.
TRUE **FALSE**

3. Answer each question with a complete sentence.

- Why is an astronaut an "extraordinary" person?

- Explain the context of the phrase, "The Eagle has landed."

- Give an example from this book that proves "If at first you don't succeed, try, try again."

- Why do so many astronauts and scientists seem so interested in finding evidence of water on other planets and moons?

- Why is the cooperation of many countries needed on a project like the ISS?

Shuttle Atlantis Docked on the MIR Space Station



Image courtesy of NASA

NAME: _____

After You Read 



Blasting Off

3. Answer each question with a complete sentence.

a) Why are there so many different types of spacecraft?

b) What conclusion might you make if you saw a star move and why?

c) If you were asked to man a spacecraft to explore mysterious Pluto, which craft would you take and why?

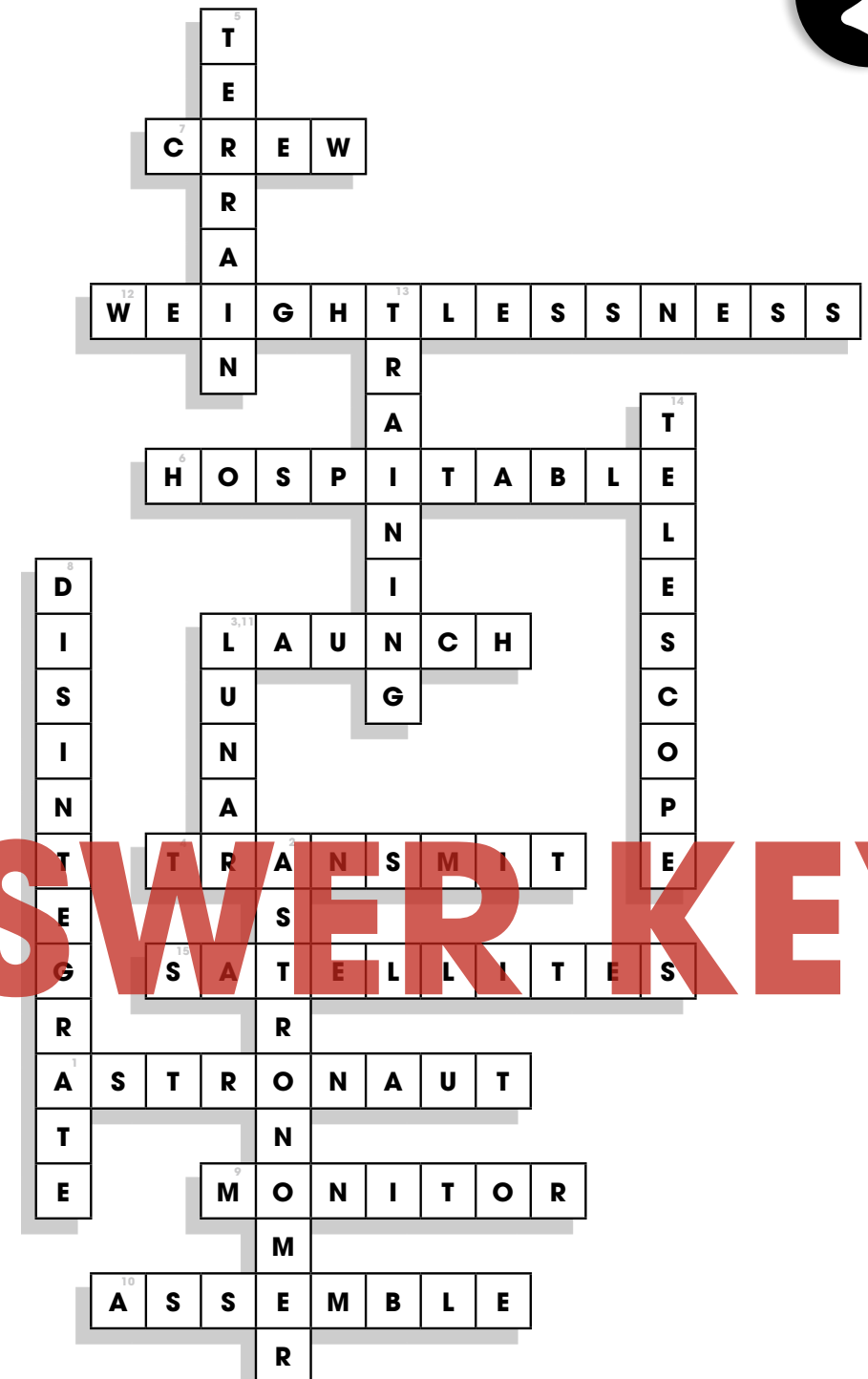
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3.

- a) because there are so many different jobs
- b) a satellite because stars don't move and satellites are visible from Earth
- c) answers will vary but should offer an approach strategy and not just landing

Crossword Puzzle!



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EASY MARKING ANSWER KEY