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LESSON 11

# Before We Read

## MY LEARNING GOALS

**I can**

- ○ discuss what I know about space exploration.
- ○ make predictions.

# Mission to Mars

Mars is nicknamed the "Red Planet." It is the fourth planet from the sun; it is the seventh largest in the solar system. The first spacecraft visited Mars in 1965. Since then, scientists have learned that Mars has the largest mountain in the solar system. There are many inactive volcanoes on Mars, too. The most exciting thing about Mars is that some scientists think humans could live there someday.

# Predicting

**Predicting** is one way to better understand what you are reading as you go along. When you are predicting, you are combining clues from the passage with what you already know to guess what's going to happen. You can make predictions about people and what they will do or about future events.

| clues from the passage | + | what you already know | = | prediction |
|---|---|---|---|---|

**Read the text on page 149 again. Can you predict what the main passage will be about?**

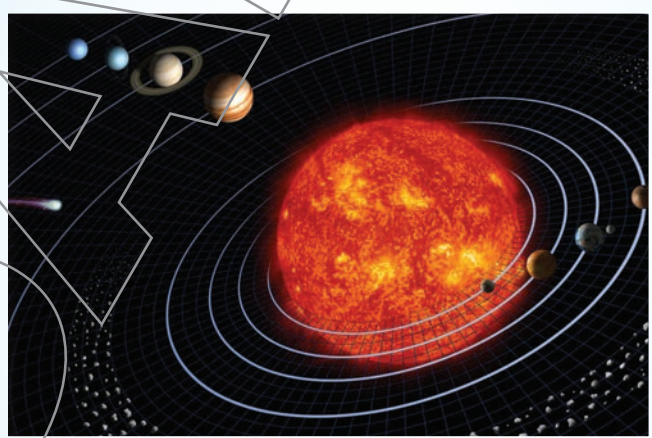
## Clues

- Title says "Mission to Mars."
- Text tells a little about what Mars is like.
- Text says scientists think humans could live there.

## Prediction

The passage will be about _____

_____.



READING

# Let's Read

**MY LEARNING GOALS**

**I can**

- ○ read and understand an informational text.
- ○ tell about proposed missions to Mars.

## Which Way to Mars?

A settlement on Mars could be a real possibility in the near future. Why go to Mars? Just as Christopher Columbus and Lewis and Clark did long ago, there is interest in exploring new lands.

It won't be easy to get people to Mars. The "Red Planet" is far away from Earth. It would take years for spaceships to go there and come back. There is another problem. A trip to Mars will be very expensive.

What makes it so expensive? A spacecraft is heavy. The fuel it needs costs a lot of money. Lighter spacecrafts need less fuel. Scientists have been researching ways to make spacecrafts lighter so that travel to Mars won't cost so much.

Circle another name for the planet Mars.

What place would you like to explore?

I would like to explore _____.

# Let's Read

## What Is the Best Plan?

One scientist, Robert Zubrin, proposed a plan he calls "Mars Direct." It would cost less than most other plans and would also be safer. Zubrin says that we already have the technology we need to get to Mars. Here's how his plan would work.

In the first year, the United States and its international partners would launch a rocket from Earth. The rocket would fly into space carrying an ERV, or Earth Return Vehicle. High above Earth, the rocket will "throw" the ERV to Mars. The ERV is the key to the Mars Direct plan.

There will be no people on the ERV. Instead, it will carry all the things necessary for people to live on Mars. After the ERV lands on Mars, scientists on Earth will control it. They will use the ERV to set up a camp for the humans. Equipment in the ERV will be able to make oxygen and water. The equipment will also be able to produce the fuel needed for the return trip to Earth. After 13 months, the ERV will be completely fueled and ready to transport the astronauts back to Earth.

The Mars Direct base might look like this.

Highlight two reasons why Robert Zubrin's plan is good.

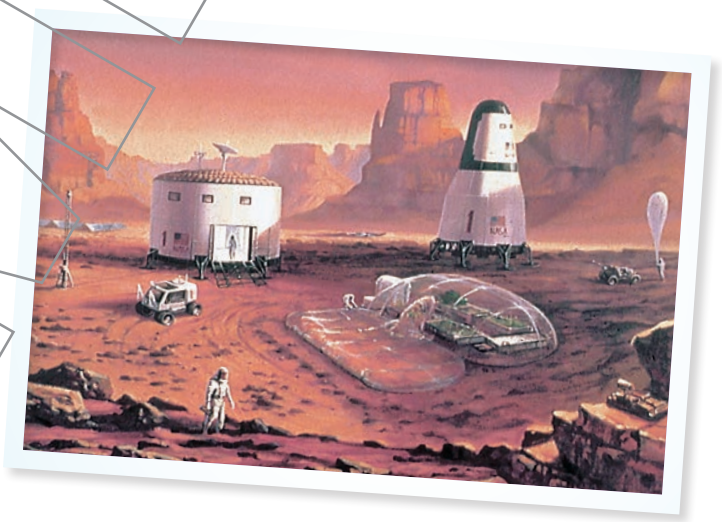
Why is the ERV an important part of Robert Zubrin's plan?

The ERV _____. It is important because _____.

## Will Mars Be Safe for Humans?

Two years later, two more rockets will be launched from Earth. One will transport another ERV. The other will carry a crew of four people and a special house for them to live in. The people will bring enough food and supplies to last three years. They will also bring a ground rover they can drive on Mars. Based on calculations involving the rotation of Mars, the path that the spacecraft will travel, and the spacecraft's speed, the astronauts' ship should land near the original ERV. Scientists land the second ERV at a new location in order to open up more of Mars for future exploration. It also serves as a back up in case something goes wrong with the original ERV.

According to Zubrin, people will be safe on Mars. The ERVs will make oxygen for them to breathe. The ERVs will also make water for them to drink. The special house will have a kitchen, bedrooms, bathrooms, and even an exercise room. There will be a lab for experiments and a library for reading and studying. In addition, the habitat unit will also be capable of producing artificial gravity, which will allow the astronauts to walk around in the habitat as they would on Earth.



Circle the word that means "made by humans, not nature."

What do you think it would be like to live in the special habitat on Mars?

I think it would be _____ because _____.

READING

# Let's Read

The ambitious goal of landing humans on Mars will require crew members to travel about two and a half years to spend 18 months on the planet's cold, barren surface. Crew members will use their ground rovers to survey the planet and perform experiments. They will also prepare the planet for the next Mars mission. When their time is up, they will use the ERV to return to Earth. The habitat and the other ERV will remain on Mars, waiting for the arrival of the next crew.

Many scientists believe that people will live on Mars in the future. Robert Zubrin feels so strongly about Mars exploration that he has helped establish the Mars Desert Research Station in Utah, where researchers, engineers, and students work in the remote wilderness. These simulated Mars missions provide the chance to perform field studies like those that would be done on Mars. Through this research, Zubrin's group learns how to better prepare manned missions to Mars.

**Scientist hope to find a way to grow fruits and vegetables on Mars.**

Highlight what Robert Zubrin is doing now to prepare for future missions to Mars.

What ambitious goal do you have for your future?

My goal is to _____.

# Show What You Know

**Fill in clues and then make a prediction in the prediction paths.**

**Clue**

Lighter spacecraft need less fuel.

**Clue**

**Clue**

**Prediction**

**Clue**

One scientist has a plan he calls "Mars Direct."

**Clue**

**Clue**

**Prediction**

# What Did You Learn?

**Think about what you learned from the passage. Then circle the letter of the correct answer.**

1. This passage is mostly about _____.
   - **A** the climate on Mars
   - **B** one man's plan for exploring Mars
   - **C** why people don't live on Mars now
   - **D** how to make oxygen and water on Mars

2. What does ERV stand for?
   - **A** Earth Roaming Van
   - **B** Early Research Vehicle
   - **C** Earth Return Vehicle
   - **D** Extra Rocket Vest

3. You can decide from the passage that _____.
   - **A** Robert Zubrin is the only scientist interested in Mars
   - **B** Robert Zubrin is already building Mars colonies
   - **C** there is no oxygen or water on Mars
   - **D** space travel is fairly inexpensive

4. In Robert Zubrin's plan, what would happen right after the first ERV lands on Mars?
   - **A** The ERV starts to produce fuel.
   - **B** Astronauts begin doing research.
   - **C** Researchers go to the Mars Desert Research Station.
   - **D** Four crewmembers leave Earth to travel to Mars.

LISTENING

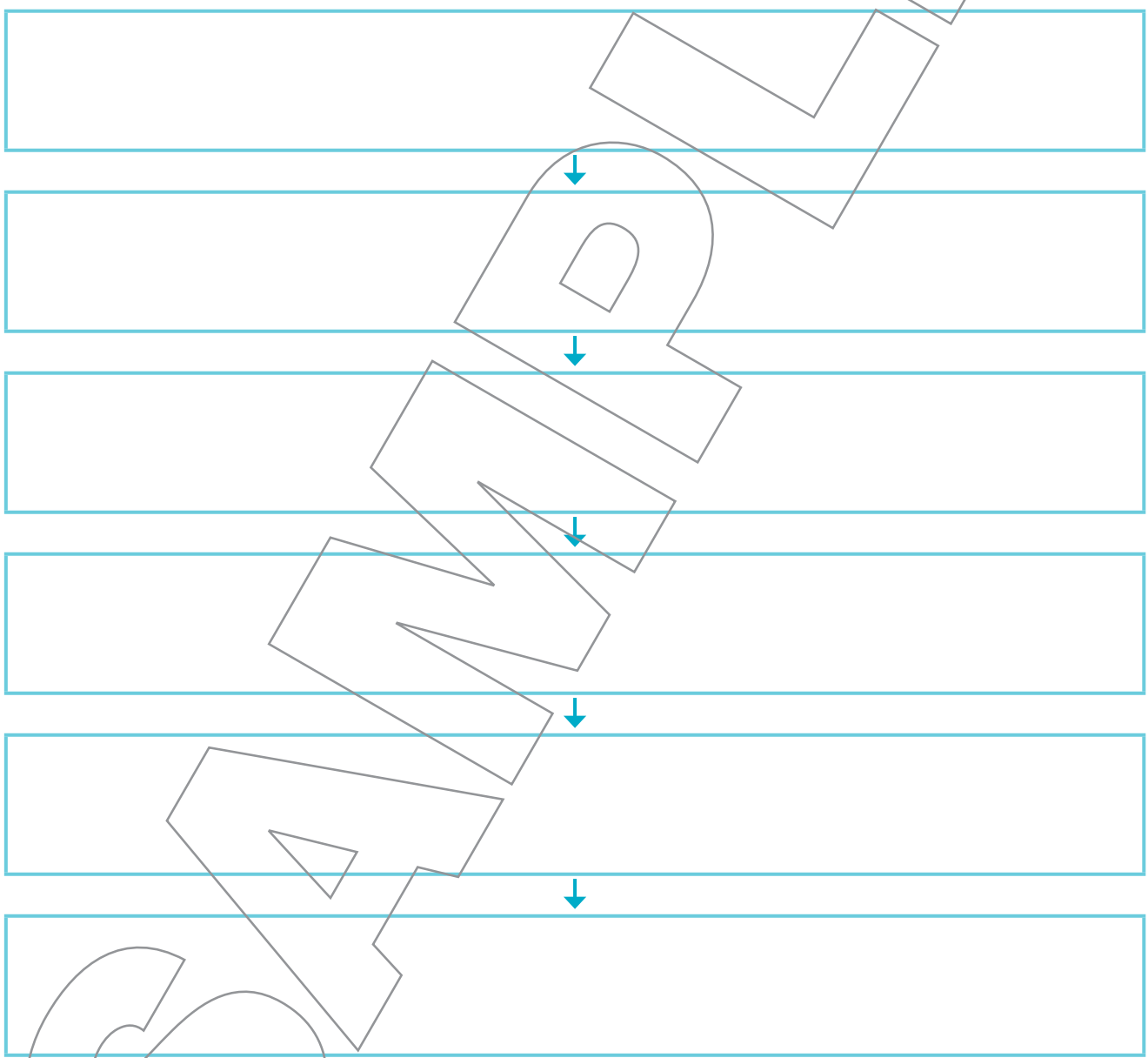
# Listen and Discuss

## MY LEARNING GOALS

I can

- ○ listen to and understand a conversation about exploring Mars.
- ○ use language to describe sequence.

**Listen to a conversation between friends about exploring Mars. While you listen the second time, take notes on the sequence chart below.**

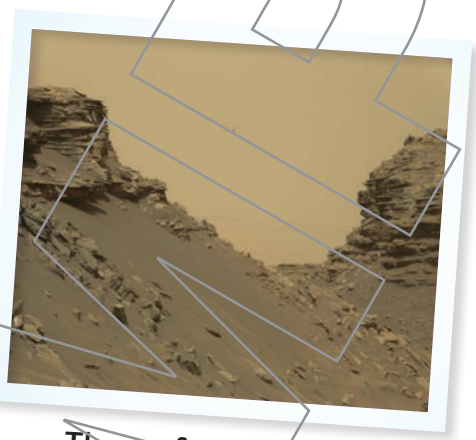


SPEAKING

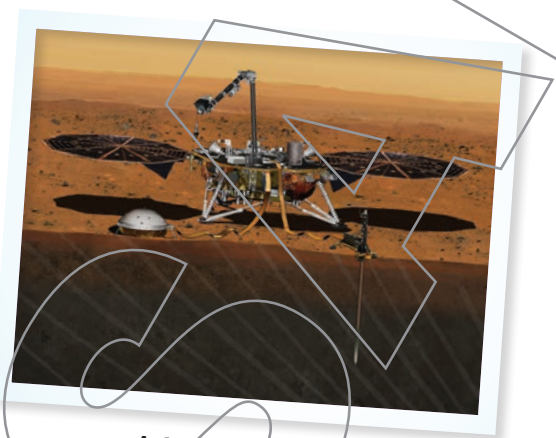
# Listen and Discuss

How are scientists exploring Mars?

A Mars rover



The surface of Mars



A Mars lander

...

**MY LEARNING GOALS**

**I can**

- ○ identify antonyms.
- ○ use antonyms in sentences.

# Antonyms

**Antonyms** are words that have opposite meanings. *Heavy* and *light* are antonyms.

A spacecraft is *heavy.*

A model airplane is *light.*

**Read these sentences from the passage. Then write an antonym for the word in parentheses.**

1. A trip to Mars will be very _____ (cheap).
2. Many scientists believe that people will live on Mars in the _____ (past).
3. Scientists land the second ERV at a _____ (old) location.
4. According to Zubrin, people will be _____ (unprotected) on Mars.
5. It would cost _____ (more) than most other plans and would also be safer.

# Learning About Language

**The words in the left column appear in the passage you read. The words in the right column are antonyms for these words. Draw a line from each word in the left column to its antonym in the right column.**

| | | |
|---|---|---|
| **1.** | bring | last |
| **2.** | special | destroy |
| **3.** | make | below |
| **4.** | live | take |
| **5.** | above | die |
| **6.** | first | ordinary |
| **7.** | easy | far |
| **8.** | near | hard |

**For each word below, think of an antonym and write it on the line.**

**1.** rare _____

**2.** quiet _____

**3.** problem _____

**4.** thick _____

**5.** poor _____

**6.** polite _____

WRITING

# Write About It

**MY LEARNING GOALS**

I can

- ○ write about Mars exploration.
- ○ make my writing better with help from my classmates and teacher.

Events happen in order, or **sequence.** A time line helps you show the order of events. Write a paragraph telling about Mars exploration, in the past, now, and in the future.

## Plan My Writing

**Use this time line to plan your writing. Then use this information to write your paragraph about Mars exploration. Include the possible steps for sending humans on a mission to Mars.**

2004

2012

2018

2030s Human exploration of Mars

1.

2.

3.

WRITING

# Write About It

Humans have been fascinated with Mars for a long time. In 2004, _____

_____.

The Mars rovers _____

_____.

Scientists learned _____

_____.

In 2012, _____

_____.

This mission _____

_____.

In 2018, _____

_____.

By 2030, _____

_____.

One plan to send humans to Mars starts with _____

_____

_____.

Then _____

_____.

Finally, _____

_____.