

# JOBS IN SPACE

Every crew member does an important task to help the team! If you went on a mission to Mars, which job would you want to do?



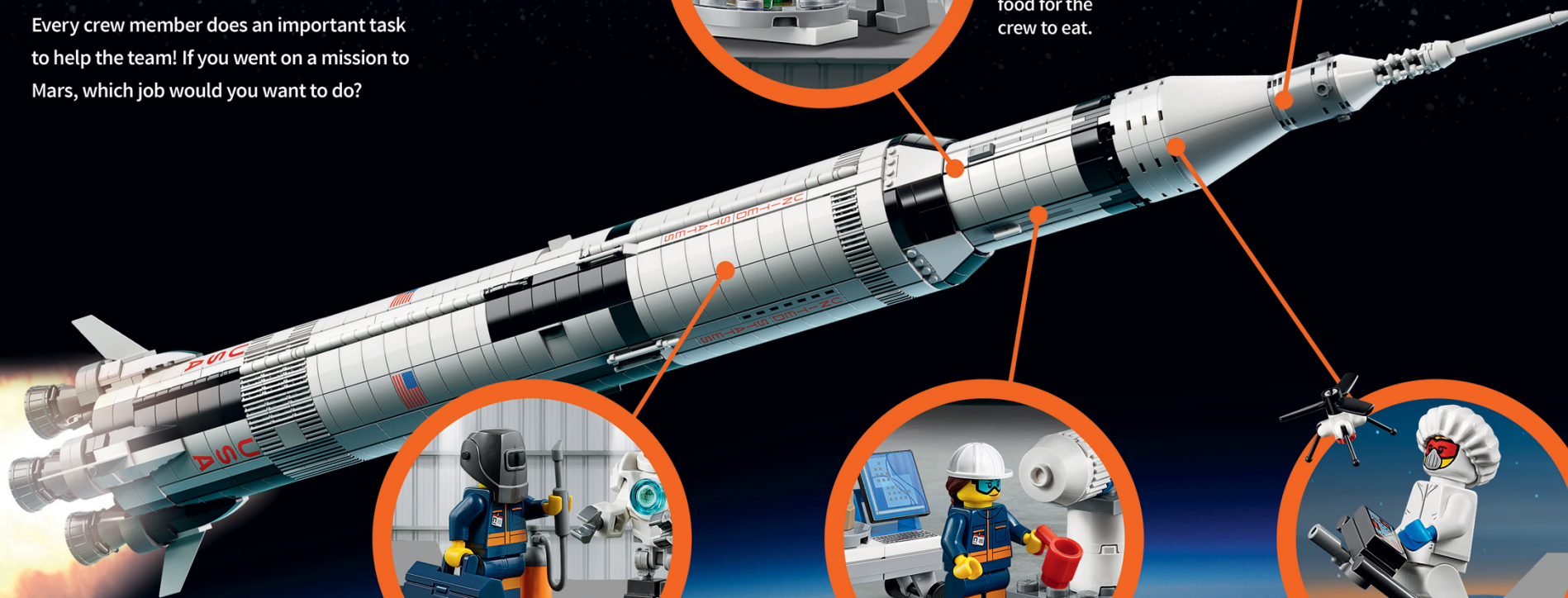
## SCIENTIST

This scientist is a plant expert who grows food for the crew to eat.



## ASTRONAUT

Astronauts fly the spaceship and explore other planets. They train for many years to do this important job.



## WELDER

A welder uses a special torch to repair broken parts on robots and the spaceship.



## ROCKET ENGINEER

These workers make sure that the rocket engine keeps running.



## DRONE PILOT

On Mars, a machine called a drone can see areas that humans can't reach. A pilot operates it with a controller.

## A JOB FOR EVERYONE!

There are lots of other jobs for people who travel to Mars in the future. You could be a doctor, farmer, engineer, teacher, or surveyor in space!



# PASSPORT TO SPACE

## Space Adventurers

Teach students about jobs in space—and let them imagine their own out-of-this-world career.



### Objective

Students will read nonfiction text about space careers and answer questions using evidence from the text.

### Time

40 minutes

### Materials

Super Space Careers  
reading passage  
What's Your Space Job?  
activity sheet

### Directions

- 1 Project (or print and distribute) image of an astronaut-controlled robotic arm found at [go.nasa.gov/2Zovt1M](http://go.nasa.gov/2Zovt1M).
- 2 Ask: *Can you guess where this picture was taken?* (From the International Space Station [ISS] in orbit.) Ask how they think the spacecraft got into orbit. Explain that the parts or modules of the ISS were sent up on rockets and assembled in space.
- 3 Initiate a class discussion about who might be inside the ISS operating the equipment (a team of astronauts).
- 4 Point out the robotic arm. Explain that the cargo craft was sent into space to bring supplies. The robotic arm was used to capture the cargo craft and keep it near the ISS. Ask: *Why do you think the crew didn't go outside to capture the craft?* (Spacewalks are dangerous and it's safer to use the robotic arm.)
- 5 Tell students they're going to read a passage to learn about careers in space. Distribute the passage and activity sheet to the class.
- 6 After students have finished, review answers as a class. Then provide time for students to make their own ISS ID cards. They should draw themselves on the front, label the ID with their job, and describe their skills and tasks on the back of the card. **Then, check out our other space-inspired lessons online!**

## CHANCE TO SEND A KID TO SPACE CAMP®!

As part of its Let's Go initiative, LEGO is sending 50 kids from



Title I schools to Space Camp® in summer 2020! Nominate your students for this amazing experience at [scholastic.com/explorespace](http://scholastic.com/explorespace).

**Nominating teachers of the 50 winners receive \$200!**



CONTEST: NO PURCHASE NECESSARY TO ENTER OR WIN. Void where prohibited. Open only to teachers in a Title I public school in the 50 United States (or the District of Columbia), who are 18+ and who teach students ages 6–11 who are enrolled as of the time of the teacher's entry. The teachers and students must be residents of the United States. Deadline: Entries must be submitted between 12:01 a.m. ET on August 30, 2019, and 11:59 p.m. ET on October 18, 2019. Winning students and at least one accompanying parent/legal guardian will receive a trip to Space Camp in Huntsville, Alabama. Students must be at least 7 years old to attend Space Camp. Approximate retail value of each winning prize package shall not exceed \$5,500. Nominating teachers of winning students will each receive \$200. Visit [scholastic.com/explorespace/officialrules](http://scholastic.com/explorespace/officialrules) for complete Official Rules and restrictions.

# Super Space Careers

Do you think it would be awesome to work in outer space someday? By the time you're grown up, there will be missions to space stations, the moon, and Mars. Read on to learn about the real-life skills you might need for a job in space!

**ROCKET ENGINEERS** design rockets and other spacecraft.

**Science they use:** Rocket engineers create rockets that can escape Earth's gravity (that's the force that pulls objects down). Rockets work using a process called **propulsion** to fly into outer space. If you've ever let go of a balloon you've blown up, you've seen propulsion at work. Air escaping from the end of the balloon moves it forward in the opposite direction. A rocket basically does the same thing to fly into space.

**Problems they solve:** Rocket engineers have to design spacecraft that doesn't carry extra weight or air resistance and is safe and effective.

**Skills:** Working with advanced computers; coding; writing reports; geometry and physics; teamwork.

**ASTRONAUTS** travel into space to complete missions.

**Science they use:** Astronauts use science and engineering skills



to conduct experiments while they're in space. But they spend most of their time on Earth, training or helping

other astronauts from the ground.

**Problems they solve:** During training, they must learn how to survive and work in space. They use special equipment called **simulators** that make it feel like they're in space.

**Skills:** Engineering and operating spacecraft; calculus and algebra; physical fitness; collaboration.

**ROBOTICS ENGINEERS** design, test, and build robots.

**Science they use:**

These engineers create robots (machines

that do dangerous or hard jobs) and computer software to perform important tasks in outer space.

**Problems they solve:** Robotics engineers make it easier for astronauts to explore parts of space that aren't safe for humans. They also solve other space challenges, like creating a robotic arm to help an astronaut lift heavy equipment.

**Skills:** Working with computer design programs; coding; algebra and calculus; critical thinking; problem-solving.



Name \_\_\_\_\_

# What's Your Space Job?

Read "Super Space Careers," then use information from the text to fill in the chart below.

## Define these jobs

## Problems they solve

### Rocket Engineer


### Robotics Engineer


### Astronaut


Write answers to these questions on the back of this page.

1. Which job interests you the most? Why?
2. What skills will you need?
3. What could you do to start practicing those skills?





# Out-of-This-World Informational Texts

Introduce your students to the future of space travel as they analyze reading passages and space vocabulary.



## Objective

Students use text features and visual information to learn about a spaceship's interior, and infer the meaning of space-related vocabulary words.

## Standards (CCSS)

**Gr 2–4: RI.7:** Use diagrams to explain text

**Gr 2–5: RI.1:** Use text details to answer questions

**RI.5:** Use text features and/or structure

**L.4:** Determine the meaning of unknown words

## Time

**Part A:** 40 minutes

**Part B:** 40 minutes

## Materials

Take a Tour of a Spaceship reading passage

► Passage A: Gr. 2–3

► Passage B: Gr. 4–5

What's in a Spaceship activity sheet (Gr. 2–3)

Use Diagrams to Explore Space activity sheet (Gr. 4–5)

Exploring Mars reading passage

► Passage A: Gr. 2–3

► Passage B: Gr. 4–5



## Part A

### Exploring the Inside of a Spaceship

**1** Hook students by asking how they would survive if they were able to travel to space. Where would they sleep? How would they stay clean in space?

**2** Explain that students will read an informational article about the interior of a spaceship.

**3** Distribute the Take a Tour of a Spaceship reading passage for students' grade level and preview its structure.

#### **4** Grades 2–3:

- Review the text features that help students understand informational texts, including headings, bold words, and captions.
- Have students act out different text features as a class (e.g., jumping and waving to represent the prominence of a heading).

#### **Grades 4–5:**

- Describe in words a device with many parts, like a washing machine or a hairdryer. Ask students if they understand what you're describing. Show a picture and ask again. Emphasize that visuals and diagrams can be important for comprehension.

**5** Distribute the activity sheet for students' grade level.

**6** Have students read the article and complete the activity sheet to guide their analysis of the text.

## Part B

### Building Vocabulary on Mars

**1** Ask students to imagine they have landed on Mars. What do they think they'll see? How will they feel? What would they need to survive? Explain that they will be investigating facts about Mars and learning new vocabulary.

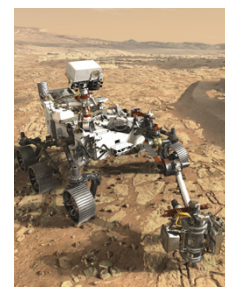
**2** Distribute the Exploring Mars reading passage for students' grade level. Read the article as a class, stopping to infer the meaning of the space vocabulary words.

**3** Discuss what students learned about life on Mars from reading the article. Ask: *Would you want to visit Mars? Why or why not?*

**4** Guide students in creating a vocabulary graphic organizer for a selection of the bold words in the passage. Include the definition, an example, a non-example, and a drawing (Frayer model organizer). If you have time, challenge students to find creative ways to act out the words.

**5** Ask questions using the space-related vocabulary words (e.g., When would you use a sensor?).

**6** Have students select two space vocabulary words from the list and write a sentence using both. You can challenge students to include a certain mood in their space sentence: exciting, silly, scary, etc.



## EXTENSION

**SPACE FICTION** Challenge students to use what they learned to write a story featuring at least two space vocabulary words, two parts of a spaceship, and two space careers!

**PASSPORT TO  
SPACE**

# Take a Tour of a Spaceship

What's it like to live inside a rocket that is zooming high above the Earth? Read on to find out!

**R**ockets once took astronauts to the moon. Now the U.S. is preparing to go back to the moon, and even to Mars. How will astronauts live, work, and sleep in a small **spacecraft** among the stars?

## What's inside a spacecraft?

**HATCH** Astronauts wiggle into the spacecraft through an opening at the top, called a hatch.

**FOLDAWAY SEATS** Astronauts lie on their backs with seatbelts during bumpy **blastoff**. The commander and pilot sit in front. The seats fold away after so they have more room.

**CONTROL PANEL** By touching a computer screen, astronauts help drive the spacecraft and talk to Earth.

**SLEEPING BAGS** Astronauts sleep inside sleeping bags attached to the wall. This stops them from floating into each other while they snooze! In space, they can sleep straight up or upside down because they are floating in almost no **gravity**.



Astronauts working in the small space inside a test spacecraft

**PERSONAL HYGIENE KIT** It includes a hairbrush (even though your hair will stick straight up in space) and a toothbrush. Water comes out of a hose in bubbles that astronauts catch with their mouths!

**SPACE TOILET** Behind a privacy curtain is a small toilet. It uses a hose with a funnel to collect liquid.

**TRASH CANS** Astronauts have chores in space, and that includes taking out the garbage. They use wet wipes to clean themselves and the ship.

**VIDEO CAMERA** So astronauts can chat with their family and friends!





Name \_\_\_\_\_



# What's in a Spaceship?

What new information did you learn about life inside a spaceship? Use the text to help you answer these questions.

- 1 What chores do astronauts do on a spaceship? Use details from the text in your answer.

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- 2 How do astronauts sleep in space?

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► What **heading** could you use to find this answer?

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- 3 Write down one of the **bold words** about space in the passage.

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► What do you think this word means?

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- 4 What did you learn from the **image** and **caption** in the passage?

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- 5 Compare how astronauts take care of themselves in space with how people take care of themselves on Earth.

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**PASSPORT TO  
SPACE**

# Exploring Mars

What's it really like on the Red Planet? With the help of advanced robots, we'll find out soon!

Is there life on Mars? Could people actually live there one day? These are questions that America's space program, called NASA, wants to answer. NASA will send a new **rover** all the way to Mars to explore, an important step before sending humans. In 2020, Mars and Earth will be close to each other as they **orbit** the Sun. NASA's rover, called Mars 2020, will **launch** in July 2020, but won't land on Mars until February 2021!

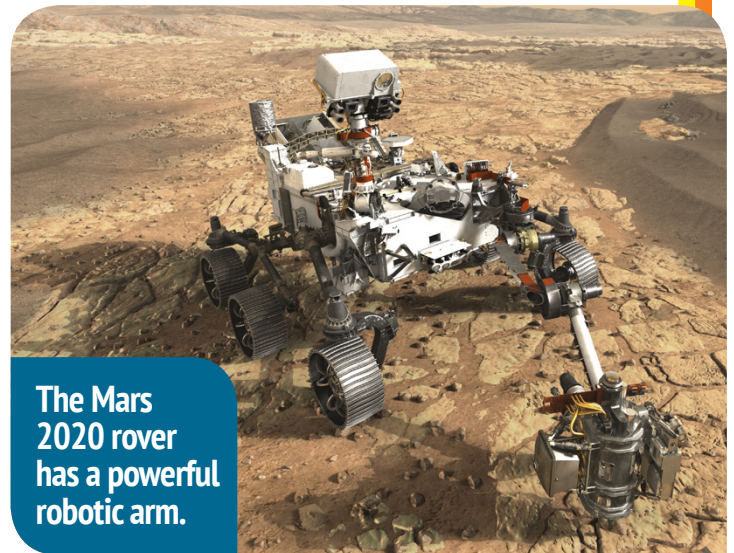
## Meet the Red Planet

Why is Mars also called the Red Planet? It is covered in rusty red dust. When the dust blows into the planet's air, the sky looks pink!

## What a Rover Looks Like

The Mars 2020 rover is about the size of a car. This rover is strong, which is important. (An older spacecraft got its **probe** stuck while trying to dig into Martian soil.)

Mars 2020 has six tough wheels to take it over Mars' rough, dry land, which is covered with craters (giant holes) and old volcanoes. Its **robotic arm** is the best ever built for a rover. It can work



The Mars 2020 rover has a powerful robotic arm.

in the heavy dust and extreme cold on Mars. The arm also has a drill to dig for soil samples.

The rover has many other tools, such as an advanced camera. It uses **sensors** to test temperature and wind speed. The rover even has a high-tech X-ray tool to figure out what the rocks on Mars are made of.

## What's Next?

NASA is also testing its newest spacecraft, called Orion, to take humans to the moon and to Mars in the 2030s. Maybe one day when you're older, you will be one of the people to visit Mars!