

Teacher Resource

Mars Rovers

Focus Questions

1. Discuss the BTN *Mars Rovers* story with another student.
2. Which three countries are sending rovers to Mars in July?
3. Why is July 2020 a good time to launch a rover to Mars?
4. What will the United Arab Emirates' mission to Mars study?
5. This will be China's first attempt to land on Mars. True or false?
6. What will NASA's rover collect when it goes to Mars?
7. What year did the Mariner mission to Mars happen?
8. What does Mars look like? Describe and illustrate.
9. Complete the following sentence. NASA has found organic molecules on Mars which are the building blocks of _____.
10. Why is it hard to land on Mars?

Activity

Class Discussion

Discuss the BTN *Mars Rovers* story as a class. Ask students to record what they know about Mars. What questions do they have? Use the following questions to help guide discussion:

- Why is it called the Red Planet?
- How similar are Mars and Earth?
- Why do you think scientists want to explore Mars?
- What might be some of the challenges of exploring it?
- Think of three unanswered questions you have about Mars. Share them with the class.



Challenge: How would you describe Mars to a friend who didn't know anything about the planet?

Activity

Glossary

Students will develop a glossary of words and terms that relate to Mars. Below are some words to get them started.

Solar system	Atmosphere	Mission
Terrestrial	Orbit	Planet

Key Learning

Students will develop a deeper understanding of Mars and the rovers sent to explore the planet. They will investigate what life would be like on Mars.

Curriculum

Science - Year 5

The Earth is part of a system of planets orbiting around a star (the sun).

Scientific knowledge is used to solve problems and inform personal and community decisions.

Science – Years 5 & 6

With guidance, pose clarifying questions and make predictions about scientific investigations.

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions.

Science – Year 7

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available.

Activity

Mars and Earth

How does Mars compare to Earth? Students will research the information in the table below to find out about the similarities and differences.

	<i>Earth</i>	<i>Mars</i>
Average temperature (° Celsius)		
Number of moons		
Approximate year length (in Earth units)		
Approximate day length (in Earth units)		
Distance from the Sun		
Diameter		

Activity

Mars Research

Students will be exploring Mars in more detail. They can develop their own key questions to investigate or respond to one or more of the questions below. Students can complete the following KWLH organiser to explore their knowledge and consider what they would like to know and learn.

<i>What do I <u>k</u>now?</i>	<i>What do I <u>w</u>ant to know?</i>	<i>What have I <u>l</u>earnt?</i>	<i><u>H</u>ow will I find out?</i>

Here are some possible questions for students to research:

- Mars has a thin atmosphere. What does that mean?
- What are the geological features of Mars?
- Was there ever life on Mars?
- Find out more about Mars, including its surface, atmosphere and climate. How does Mars compare to Earth?
- What have space missions discovered about Mars?
- Should we be putting humans on Mars? Explore the pros and cons.
- In Roman mythology, who was Mars?

Activity

Meet Perseverance

Students will find out more about the Mars rover Perseverance and learn about the goals of the [Mars 2020 mission](#). Watch this short [NASA video](#) to learn more about the mission and the rover's capabilities. Students can then respond to the following questions.

- What are the two new objectives of the mission?
- How is the Mars 2020 mission similar to the Curiosity mission?
- What will new landing technologies mean for this mission?
- What do the three landing sites have in common?
- There are instruments on board the rover that are designed to seek evidence of _____.
- Why is it important to collect samples from Mars?

Ask students to choose one of the [science goals](#) to explore in more detail.



**SCIENCE GOAL 1:
Determine
Whether Life Ever
Arose on Mars**



**SCIENCE GOAL 2:
Characterize the
Climate of Mars**



**SCIENCE GOAL 3:
Characterize the
Geology of Mars**



**SCIENCE GOAL 4:
Prepare for
Human
Exploration**

Mars Exploration Rovers

Students will look at what previous Mars exploration rovers have discovered. What have been the top science findings on the missions? Go to the [NASA website](#) and choose one of the findings to explore in more detail. Students can share what they have discovered with another student.



Salty Water



**Warmer
Climate**



Watery Past



**Ancient
Volcano**



**Past Flowing
Waters**



**Right
Conditions for
Life**

Look at the [different instruments](#) on the Mars Exploration Rovers and choose one to explore in more detail. Record information about the instrument:

- Main job of the instrument
- Location on the rover
- Size and weight
- Draw a picture of the instrument

Activity

Images of Mars

Students look at the photographs of the surface of Mars and respond to the following questions:

- Describe the image. What can you see?
- What does the image tell you about Mars?
- How is it similar to Earth?
- Imagine you are a scientist examining the surface of Mars. Explain using scientific words and terms. In your description include one or more of the following terms: Martian, Red Planet, orbit, terrain, rocky, atmosphere, mission.
- What was surprising about the image?
- What questions do you have about the image?



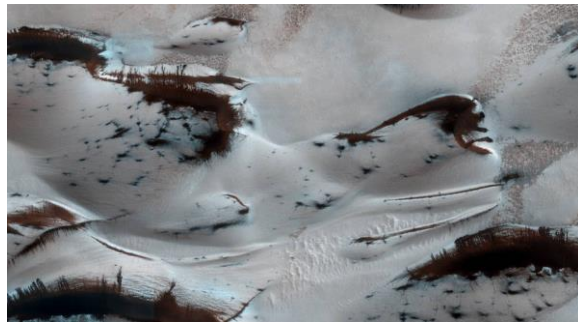
[Link to image](#)



[Link to image](#)



[Link to image](#)



[Link to image](#)

Activity

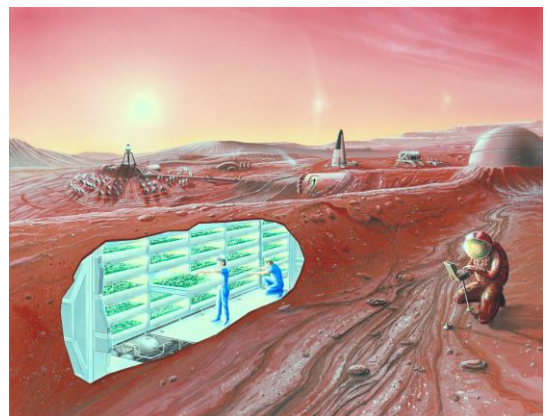
Life on Mars

Students will investigate what it would be like to live on Mars and what would be needed to sustain human life. Begin with a class brainstorm using the following questions to guide discussion:

- *What do you think it would be like to live on Mars?*
- *What are the benefits of having a space settlement on Mars?*
- *When planning for life on Mars what are some important things to think about?*

Students will then need to research conditions on Mars, so they can plan and design a settlement on Mars that will sustain human life. The following questions can help guide students' research:

- What are the conditions like on Mars?



- What needs to be considered when planning a colony on Mars? For example:
 - Water supply
 - Atmosphere (air supply)
 - Temperature
 - Food production
 - Gravity
 - Waste management
- What materials could be used to build a space settlement?

Activity

Mars Quiz

Mars Quiz Questions	True	False
1. Mars is the 5 th planet from the sun.		
2. Mars is approximately twice the size of Earth.		
3. Mars is known as the Red Planet because of its reddish, mercury-rich soil.		
4. Mars has 2 moons.		
5. The average temperature on Mars is about -63 °C		
6. The atmosphere on Mars is 80% carbon dioxide.		
7. Scientists have found evidence of water on Mars.		
8. The largest known volcano in the solar system is on Mars.		
9. The Mars rover Perseverance was named by a NASA astronaut.		
10. Mars was named after the Roman god of fire		

Answers: 1 False, Mars is the 4th planet, 2 False, 3 False, there is iron oxide on Mars' surface, 4 True, 5 True, 6 False, carbon dioxide makes up 95% of the atmosphere, 7 True, 8 True, 9 False It was named by a 13-year-old, 10 False, it was named after the god of war.

Useful Websites

School Kid Names Mars Rover – BTN Newsbreak

<https://www.abc.net.au/btn/newsbreak/btn-newsbreak-20200306/12034956>

Mars Exploration Program – NASA

<https://mars.nasa.gov/#>

Mars: The Red Planet - NASA

<https://solarsystem.nasa.gov/planets/mars/overview/>

Mars Mission – BTN

<https://www.abc.net.au/btn/classroom/mars-mission/10532102>

Curious Kids: What are some of the challenges of Mars travel? – ABC Education

<https://education.abc.net.au/newsandarticles/blog/-/b/3086168/curious-kids-what-are-some-of-the-challenges-of-mars-travel>