

Level: Intermediate (B1)

Age: Teenagers

Time: This lesson can be divided up in various ways to suit the time you have with your students. Below are three options which you can choose from depending on the length of your class.

90 minutes – Complete **The planets**, **The space race** and **Mission to Mars**

60 minutes – Complete two of the three activities above

30 minutes – Complete one of the three activities

Summary: This lesson is divided into three sections: The planets, The space race and Mission to Mars. In the lesson, students will:

1. identify the planets;
2. play a space-race game;
3. read about Mars;
4. prepare themselves for a Mars mission.

Key skills: Describing planets, space travel, science fiction, travel information

Materials: One copy of each worksheet per student

THE PLANETS

1. Write 'The Planets' on the board and ask your class if anyone knows how many planets there are in the solar system. Ask them if they know the names of the planets in English, offering clues such as the first letter, if required. (Planets, starting from the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune; Pluto is not part of the image due to its uncertain status. There is no consensus over how to categorize Pluto: it is variously referred to as a 'planet', a 'minor planet', a 'dwarf planet' and an 'object in the Kuiper belt'.)

2. Put students in pairs. Tell them to discuss what they know about the planets, such as:

- the colour;
- the landscape;
- the origin of the name.

3. Then, hand out the The planets worksheet. Working alone, students do Exercise 1. They should read the descriptions and identify the planet in each case.

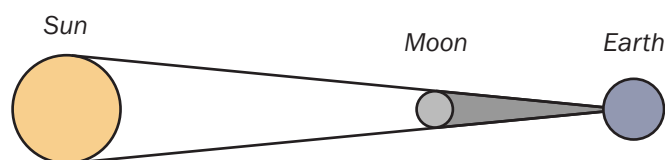
4. Get each student to swap worksheets with another student. Then, go over the answers (drawing attention to the pronunciation of the planets). Students mark each other's work and give a total out of eight. Who scored the highest?

Key: Image (left-right): Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
Text: 1. Mars; 2. Venus; 3. Neptune; 4. Mercury; 5. Uranus; 6. Earth; 7. Jupiter; 8. Saturn

5. Tell everyone to turn to Exercise 2, the quiz. Put students in pairs. Tell them they are going to test each other on what they remember about the planets. Nominate one student from each pair as A and one as B. Student A reads out questions 1 to 4 for Student B to answer, then B reads out questions 5 to 8 for A to answer. When students have finished, get them to look back at the text of Exercise 1 for the answers and work out their scores. Who did the best?

Key: 1. Mercury; 2. Earth; 3. Neptune; 4. Jupiter; 5. Uranus; 6. Venus; 7. Mars; 8. Saturn

6. Next, ask the class what a solar eclipse is (*when the Sun is partially or totally blocked*). Ask if anyone knows the positions of the Sun, Earth and Moon in a solar eclipse. If anyone feels brave enough, they can come up and draw a diagram on the board. Otherwise, draw it yourself. (The diagram below shows a total solar eclipse.)



7. Write *the zone of totality* on the board. Can your students guess what the term means? (Answer: *it is the area where it is possible to see the 100% total eclipse*)

8. Now, talk about the experience of watching an eclipse, using the questions in Exercise 3 as a guide.



What should you use to watch an eclipse? (welder's glasses, a pinhole projector, a TV!)

- Have any of the students ever seen an eclipse or used any of these methods to look at the sun?
- Many people travel the world in order to witness eclipses. How far would the students go to witness a total eclipse?
- What do they think happens during a total eclipse?
 - » What happens to the daylight?
 - » What do the animals do?
 - » What do people do?

THE SPACE RACE

1. Divide the class into two teams. Explain that each team represents a different country. Both countries have mounted space missions to Mars and there is a race to see which country will get there first from the base on the Moon. Tell students to come up with a name for their team.

2. Draw two columns on the board, each with a team name at the top, followed by the numbers 1 to 10.

Explain that the countries need to correctly answer ten space questions in order to land on Mars. Read question 1 out loud as an example. The teams have to confer and then write down their answers.

When they have written down their answers, go through them one by one as a class. If a team gets the answer right, tick off a number on the board. They are now one step closer to Mars! The game ends when the first team gets ten answers right and reaches Mars.

If the questions are too difficult you can adapt them or offer clues. If you need more questions you can add grammar or vocabulary related questions related to what you have been studying in class.

Key:

1. Yuri Gagarin
2. false – the music included was by the Beatles
3. 4.5 billion years old
4. Mir
5. three times
6. Star Wars
7. 25 December, 2003
8. Arthur C. Clarke
9. Venus

10. The War of the Worlds was broadcast on the radio. It was so realistic that some people thought it was really happening.

11. the distance light travels in one year

12. a group of people who want to be the first to live on another planet

13. it was the first space meeting of Russians and Americans

14. unidentified flying object

15. Close Encounters of the Third Kind

MISSION TO MARS

1. Write the questions below on the board. Elicit answers to the questions or best guesses. Write your students' guesses on the board.

1. How long does it take to get to Mars?
2. How cold can it get at night on Mars?
3. What should you see while you're there?
4. When will we be going there?

2. Now, tell students that they have to race to find the real answers. Hand out the Mission to Mars worksheet. Students should read the text in Exercise 1 to find the answers and shout out when they think they've found all four.

Key:

1. between six and eight months
2. minus 143C
3. go to the top of Olympus Mons, and visit the moons Phobos and Deimos
4. Obama says humans will orbit the planet by the mid-2030s and land on it soon after

3. Do your students think it is possible that the first manned mission to Mars will really happen in the 2030s? Do they think they could be part of that mission? Tell them to answer the questions in Exercise 2. They need to answer at least seven questions correctly in order to become a candidate for the Mars mission. Ask students to fold the page to hide the text from Exercise 1 (this contains the answers!) before they begin.

4. Check the answers with the class and announce the candidates for the Mars mission.

Key:

1. Mars was closer to Earth than it had been for 700 years
2. carbon dioxide
3. longer
4. weaker
5. rainy – it hasn't rained for a long time
6. no, it won't
7. two: Phobos and Deimos
8. 0% – there aren't any oceans on Mars
9. 1964
10. (possible answers) Capricorn One, Total Recall, Mars Attacks!, John Carter, Mars Needs Moms, The War of the Worlds (a 2005 film)

HOMEWORK TASK

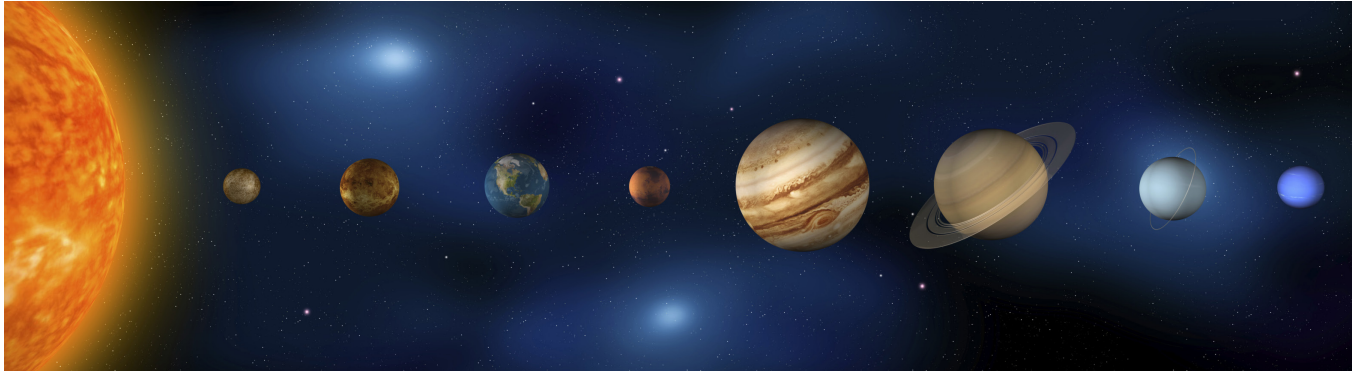
Students choose one of the following two tasks to complete for homework.

Design an advertisement – Holidays on Mars are going to be big business in the future, so it's best to be prepared now. Your students have to design a magazine advertisement for a travel company that is organizing tourist breaks to the Red Planet.

Design an information leaflet for visitors from Mars – The students have read a guide for humans going to Mars. Now, it's their turn to write a guide for Martians coming to Earth.



THE PLANETS



1. How well do you know your planets?

Try and identify Earth, Jupiter, Mars, Mercury, Neptune, Saturn, Uranus and Venus from the texts. Then, match the name of each planet with the corresponding planet in the illustration above.

1. This planet was named after the Roman god of war. It is often called the Red Planet because of its colour. There are canyons, volcanic mountains, frozen water and ice caps on this planet.
2. This planet is the only planet named after a woman – the goddess of love. Lightning flashes and thunder roars day and night. This planet is the most easily identifiable object in the night sky after the Moon.
3. Because of its pale blue colour, this planet was named after the Roman god of water. It was originally thought to have two moons, but astronomers have now discovered four new moons. Like Jupiter and Saturn, it radiates more energy than it receives from the Sun.
4. It is the fastest-moving planet and the closest to the Sun. It was named after the speedy messenger of the Roman gods. It has no moons and no atmosphere. It travels around the Sun in 88 Earth days and its surface temperature can rise to over 400 degrees centigrade.
5. This planet travels around the Sun in 84 Earth years. It is blue-green and has black rings around it, which are thought to be made of rock. This planet is unusual because it lies on its side. It was named after the Roman god who was the father of Saturn and the grandfather of Jupiter.
6. In Latin, it is called *Terra Mater*. It is the only planet known to sustain life. This planet is covered more by water than land (70% water). It travels around the Sun in 365 days.
7. It is called the King of the Planets and was named after the king of the Roman gods. It is the largest planet and weighs more than all the other planets put together. It has at least 17 moons and has a red spot that is a hurricane-like storm larger than the Pacific Ocean.
8. This planet was named after the Roman god of farming. It is famous for its seven main rings made of icy particles, some as large as buildings. It is the second largest planet and yellow in colour. It takes 29.46 Earth years to circle the Sun.

2. Quiz**Student A****Can you remember?****Which planet ...**

1. ... has a temperature that can rise to more than 400 degrees centigrade?
2. ... is the only planet known to have life?
3. ... was named after the Roman god of water because of its colour?
4. ... is the largest planet?

Student B**Can you remember?****Which planet ...**

5. ... lies on its side and has black rings around it?
6. ... has thunder and lightning during the day and night?
7. ... has canyons, volcanic mountains and ice caps?
8. ... is yellow?

3. Solar eclipses

- *What should you use to watch an eclipse?*
- *Have you ever seen an eclipse or used any of these methods to look at the sun?*
- *Many people travel the world in order to witness eclipses. How far would you go to witness a total eclipse?*
- *What do you think happens during a total eclipse?*
 - » *What happens to the daylight?*
 - » *What do the animals do?*
 - » *What do people do?*

THE SPACE RACE

1. Who was the first man in space?
2. True or false? – *Voyager 2* took a message into space that included music by the Rolling Stones.
3. How old is the Moon?
 - a) 4.5 million years old
 - b) 4.5 billion years old
 - c) 45 billion years old
4. What was the name of the famous Russian space station?
5. On 20 February, 1962, John Glenn orbited Earth for 4 hours 55 minutes. How many times did he orbit Earth in that time?
6. Luke Skywalker is a character from which space movie?
7. When did *Beagle 2* land on Mars?
8. Who wrote the books *2001: A Space Odyssey* and *2010: Odyssey Two*?
9. What was the first planet visited by a spacecraft from Earth in 1962?
10. On 30 October, 1938, some people in the United States thought the country had been invaded by aliens from space. Why?
11. It would take 100,000 light years to travel from one end of our galaxy to the other. What is a light year?



12. What is the L5 Society? Is it a group of people who want to be the first to live on another planet, a group of people who claim to have seen beings from another planet or a club for astronauts who have travelled in space?
13. Two spacecraft met in space in July 1975. What was special about the meeting?
14. What does *UFO* stand for?
15. Steven Spielberg directed *E.T.*, one of the most famous science-fiction movies of all time. What other movie did he direct about Earth being visited by creatures from space?

MISSION TO MARS

1. Would you be prepared to go on a mission to Mars? Test how prepared you are to join a mission by reading the text below.

How long does it take to get there?

Sometimes Mars is very far from us and sometimes it is closer, but the average distance between the two planets is 225 million km. The journey takes between six and eight months, travelling at speeds of 59,300 miles an hour. The year 2003 was a good time to visit Mars because the planet was closer to Earth than it had been in 700 years.

Why is the planet called Mars?

The Greeks named the planet Ares for their god of battle. Mars, the name we use today, was the Roman god of war.

What's the atmosphere like?

There is very little oxygen on Mars. The atmosphere is much thinner than Earth's and is 95 per cent carbon dioxide. There is only 0.13 per cent oxygen, so take your own air supply when you go. The atmosphere also contains nitrogen, argon, neon, krypton, neon, carbon monoxide, water vapour and ozone.

How long is a Martian day?

A Martian day is longer than an Earth day and lasts 24 hours, 37 minutes. Martian days are called sols and the planet takes 668.60 sols (or 687 Earth days) to travel around the Sun. This means that winter can last for six months. Gravity is weaker than on Earth.

What's the weather like?

Mars is a planet of extremes. The north has a better climate, but watch out for Martian summers. These can be windy and full of dust storms, which last for several days. The daytime temperature can reach 17 degrees Celsius but can drop to minus 143 Celsius at night. You don't need to take an umbrella, though, as it hasn't rained for a long time.

Can I phone home?

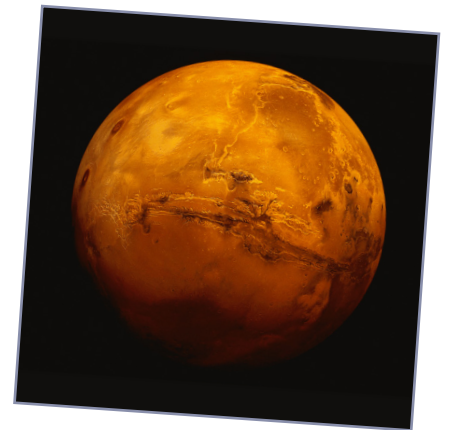
Your mobile won't work on Mars. Communications can be slow, with messages taking about 11 minutes to reach Earth when travelling at the speed of light.

What should I see while I'm there?

Make sure you go to the top of Olympus Mons for a spectacular view. It's the highest mountain in the solar system, approximately three times the height of Everest. You should also visit the moons Phobos and Deimos (Fear and Panic). Since the 1950s, some people have claimed that Deimos is a giant spaceship inhabited by aliens. One US newspaper claimed that Elvis Presley was alive and well, and living on Deimos as a guest of the aliens.

How old is it?

Mars is about 5 billion years old. It's much smaller than Earth, but, because it has no oceans, the total land area is about the same as Earth's. The first close-up photographs of Mars were taken by Mariner 4 on 14 July, 1964. The whole world was disappointed when they saw the pictures and realized that there was no water, no vegetation and no Martians with big heads. However, on 25 July, 1976, *Viking 1 Orbiter* sent back a photo showing a hill that was shaped like a face. It became known as 'the first actual photo of a Martian'.



What films have been made about Mars?

Mars is a popular subject for films. The most famous are *Capricorn One* (1977), *Total Recall* (1990) and Tim Burton's *Mars Attacks!* (1996). More recent movies are *John Carter* (2012) and *Mars Needs Moms* (2011). On 30 October, 1938, Orson Welles broadcast his famous radio version of *The War of the Worlds* in which Martians landed at a place called Grover's Mill. With fake live reports and news broadcasts, Welles managed to spread panic across the United States.

When will we be going to Mars?

In 2010, US President Barack Obama said, 'By the mid-2030s, I believe we can send humans to orbit Mars and return them safely to Earth. And a landing on Mars will follow. And I expect to be around to see it.'

2. How much do you know about Mars?

1. Why was 2003 a good year to visit Mars?
2. Ninety-five per cent of Mars's atmosphere is made up of one gas. Which one?
3. Are Martian days longer or shorter than Earth days?
4. Is gravity stronger or weaker on Mars than it is on Earth?
5. Which of the following does *not* describe the weather on Mars? – *windy, cold at night, stormy, rainy*
6. Will your phone work on Mars?
7. How many moons does Mars have?
8. What percentage of Mars's surface is covered by oceans?
9. The first close-up photos of Mars were taken by *Mariner 4* on 14 July of which year? – 1964, 1978, 1982 or 1998?
10. Name two films about Mars or Martians.

