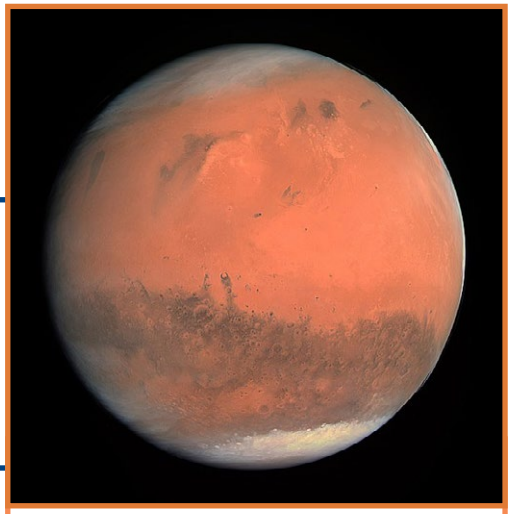
Mars: The Red Planet

Mars is the fourth planet from the Sun and is the second smallest planet in our solar system. Mars is sometimes called 'the Red Planet' because of its colour. The atmosphere on Mars does not have enough oxygen for us to breathe.



A "true colour" photograph of Mars taken by the OSIRIS instrument on the European Space Agency (ESA) Rosetta spacecraft in February 2007.

Did You Know...?

- Mars was named after the Roman god of war. The month of March is also named after him.
- A Mars day is called a 'sol'.

Missions to Mars

It is important to launch a mission to Mars at the right time because Earth and Mars are always moving. Sometimes, Mars is closer to Earth than at other times. Choosing the shortest distance is a good idea because the journey will need less fuel.

Why Mars?

Mars is the safest planet to travel to because:

- its soil contains a little water;
- it gets enough sunlight to use solar power;
- there is some gravity to help us to walk;
- a day on Mars is almost the same length as on Earth.

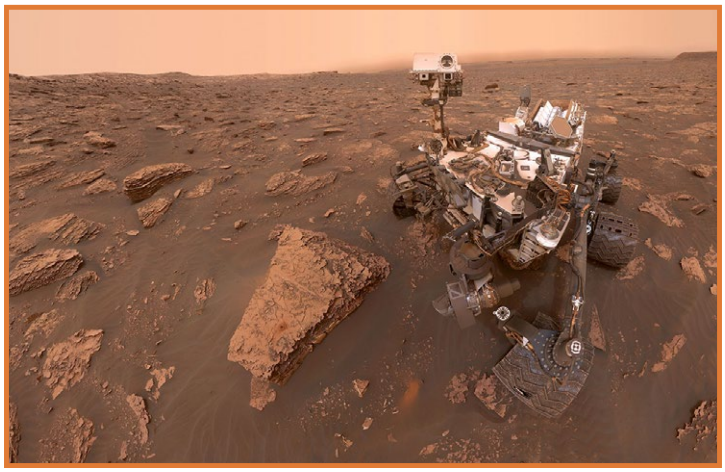
Mars Quick Facts	
Size:	6,779km
Moons:	2
Length of year:	687 days
Length of day:	24 hours 37 minutes
Temperature:	between -140°C and 30°C
Atmosphere:	95% carbon dioxide

Humans want to find out if there might be life on other planets and scientists believe that Mars is the best planet for life, apart from Earth.

The Mars Rover

The Curiosity rover is a robotic car which is exploring the surface of Mars right now. It was launched on 26th November 2011 and landed on 6th August 2012. The main goals of the rover are to:

- study the planet's climate and what it is made of;
- search for water;
- find out whether Mars could have ever supported life.



A self-portrait taken by NASA's Curiosity rover.

Read the KS2 Twinkl Originals story '**Jazz Harper: Space Explorer**' to learn all about life on Mars!

Mars: The Red Planet **Questions**

1. Tick the correct response.
   We cannot breathe on Mars because the atmosphere does not have enough:

   - ○ air
   - ○ carbon dioxide
   - ○ atmosphere
   - ○ oxygen

2. Find and copy the correct word to complete the sentence.
   Mars is named after the Roman god of _____.

3. Which of these are reasons why Mars is a good place to explore? Tick **two**.

   - ○ Mars gets enough sunlight to use solar power.
   - ○ A day on Mars is very short.
   - ○ There is no gravity on Mars.
   - ○ There is a little water in the soil on Mars.

4. Tick the correct response.
   The Curiosity rover was launched on:

   - ○ 26th November 2011
   - ○ 28th November 2011
   - ○ 6th August 2012
   - ○ 16th August 2012

5. How many moons does Mars have?

   _____

6. What is a day called on Mars and how long is it?

   _____

   _____

7. What is the Curiosity rover trying to find out?

   _____

   _____

   _____

   _____

Mars: The Red Planet **Answers**

1. Tick the correct response.
   We cannot breathe on Mars because the atmosphere does not have enough:

   ○ air
   ○ carbon dioxide
   ○ atmosphere
   ✓ **oxygen**

2. Find and copy the correct word to complete the sentence.
   Mars is named after the Roman god of **war**.

3. Which of these are reasons why Mars is a good place to explore? Tick **two**.

   ✓ Mars gets enough sunlight to use solar power.
   ○ A day on Mars is very short.
   ○ There is no gravity on Mars.
   ✓ There is a little water in the soil on Mars.

4. Tick the correct response.
   The Curiosity rover was launched on:

   ✓ 26th November 2011
   ○ 28th November 2011
   ○ 6th August 2012
   ○ 16th August 2012

5. How many moons does Mars have?

   Mars has two moons

6. What is a day called on Mars and how long is it?

   A day on Mars is called a 'sol' and it is 24 hours and 37 minutes long.

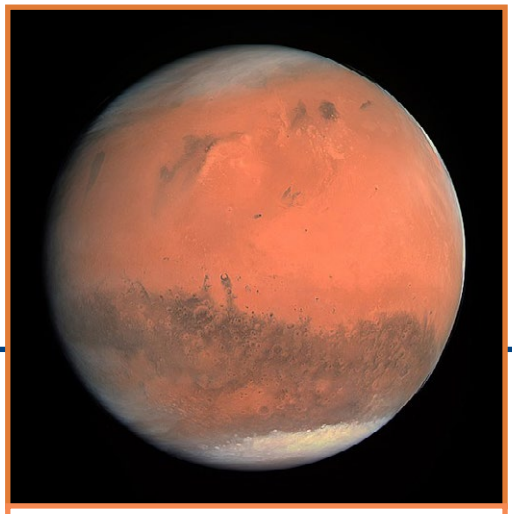
7. What is the Curiosity rover trying to find out?

   The main goals of the rover are to:

   - **study the planet's climate and what it is made of;**
   - **search for water;**
   - **find out whether Mars could have ever supported life.**

Mars: The Red Planet

Mars is the fourth furthest planet from the Sun and the second smallest planet in our solar system. Named after the Roman god of war, Mars is often described as 'the Red Planet' because of its red appearance. The atmosphere on Mars is made up of mainly **carbon dioxide**, meaning that it is not breathable.



A "true colour" photograph of Mars taken by the OSIRIS instrument on the European Space Agency (ESA) Rosetta spacecraft in February 2007.

Missions to Mars

It is important to launch a mission to Mars at the right time because Earth and Mars are always moving. Scientists have to calculate the distance between the two planets at any one time and to prepare resources for that distance of travel.

Why Mars?

Mars is not the closest planet to Earth – Venus is. The closest possible distance between Earth and Venus is approximately 38 million kilometres, while the closest distance between Earth and Mars is around 55 million kilometres. Why, then, are most of Earth's exploration efforts directed at the Red Planet?

Mars Quick Facts	
Size:	6,779km
Moons:	2 (Phobos and Deimos)
Length of year:	687 days (1.9 Earth years)
Length of day:	24 hours 37 minutes
Temperature:	between -140°C and 30°C
Atmosphere:	• 95.9% carbon dioxide • 0.14% oxygen • 3.96% other (carbon monoxide, nitrogen, argon, water vapour)

Venus, Earth's smaller sister, is blisteringly hot and has a thick atmosphere which could melt a block of lead as easily as an ice cream on Earth. Mars, on the other hand, is smaller and much colder.

It is the most **habitable** planet next to Earth because:

- its soil contains traces of water;

- it gets enough sunlight to use solar power;
- gravity is 38% as strong as on Earth, which, it is believed, humans could adapt to;
- the atmosphere somewhat protects from the Sun's **radiation**;
- Mars' day, called a 'sol', is only a little longer than Earth's.

The Mars Rover

The Curiosity rover is a robotic car which is currently exploring the surface of the planet. It is nuclear-powered and the fourth rover sent to Mars in 16 years. It was launched on 26th November 2011 and landed on 6th August 2012. Curiosity uses the most advanced scientific equipment ever used on Mars.

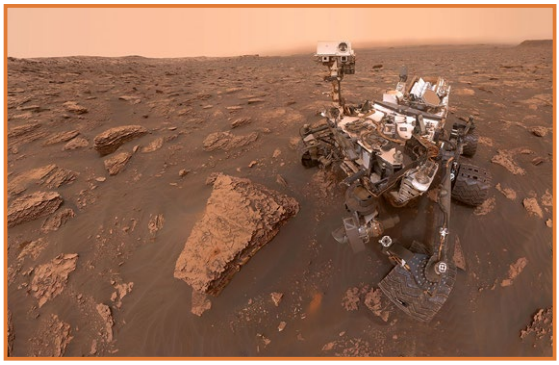
The main goals of the mission, which forms part of NASA's Mars Science Laboratory, are to:

- study Martian climate and **geology**;
- search for water;
- find out whether Mars could have ever supported life.

Glossary

geology – The science which deals with the physical structure and substance of a planet.

radiation – Energy emitted by the Sun, some of which is dangerous to humans when not absorbed by the atmosphere of a planet.



A self-portrait taken by NASA's Curiosity rover.

Read the KS2 Twinkl Originals story '**Jazz Harper: Space Explorer**' to learn all about life on Mars!

Mars: The Red Planet **Questions**

1. Tick the correct response.
   We cannot breathe on Mars because the atmosphere does not have enough:

   - ○ air
   - ○ carbon dioxide
   - ○ atmosphere
   - ○ oxygen

2. Find and copy the correct word to complete the sentence.
   Mars is named after the _____ god of _____.

3. Which of these are reasons why Mars is a good place to explore? Tick **two**.

   - ○ Mars gets enough sunlight to use solar power.
   - ○ A day on Mars is very short.
   - ○ There is no gravity on Mars.
   - ○ There is a little water in the soil on Mars.

4. How many moons does Mars have and what are their names?

   _____

   _____

5. What is a day called on Mars and how long is it?

   _____

   _____

6. Find and copy one **caption** from the text.

   _____

   _____

7. Why does it seem odd at first that NASA has chosen to explore Mars and not Venus?

   _____

   _____

8. Why do you think the author has put the facts about Mars' size and atmosphere into a 'quick facts' box?

   _____

   _____

   _____

Mars: The Red Planet **Answers**

1. Tick the correct response.
   We cannot breathe on Mars because the atmosphere does not have enough:

   ○ air
   ○ carbon dioxide
   ○ atmosphere
   ✓ oxygen

2. Find and copy the correct word to complete the sentence.
   Mars is named after the **Roman** god of **war**.

3. Which of these are reasons why Mars is a good place to explore? Tick **two**.

   ✓ Mars gets enough sunlight to use solar power.
   ○ A day on Mars is very short.
   ○ There is no gravity on Mars.
   ✓ There is a little water in the soil on Mars.

4. How many moons does Mars have and what are their names?

   Mars has two moons named Phobos and Deimos.

5. What is a day called on Mars and how long is it?

   A day on Mars is called a 'sol' and it is 24 hours and 37 minutes long.

6. Find and copy one **caption** from the text.

   Accept either:

   - **A 'true colour' photograph of Mars taken by the OSIRIS instrument on the European Space Agency (ESA) Rosetta spacecraft in February 2007.**
   - **A self-portrait taken by NASA's Curiosity rover.**

7. Why does it seem odd at first that NASA has chosen to explore Mars and not Venus?

   Accept any correct explanation that states that Venus is closer to Earth than Mars. For example, it seems odd at first that NASA would travel to Mars first because Mars is not the closest planet to Earth.

8. Why do you think the author has put the facts about Mars' size and atmosphere into a 'quick facts' box?

   Accept responses relating to the fact that the author has made the information:

   - **more digestible/easier to read;**
   - **easier to find quickly;**
   - **more interesting to look at.**

Mars: The Red Planet

Mars is the fourth furthest planet from the Sun, located between Earth and Jupiter, and is the second smallest planet in our solar system after Mercury. Named after the Roman god of war, Mars is often described as 'the Red Planet' because of its reddish hue. The atmosphere on Mars is made up of mainly carbon dioxide, meaning that the planet does not yet support life.

A "true colour" photograph of Mars taken by the OSIRIS instrument on the European Space Agency (ESA) Rosetta spacecraft in February 2007.

Missions to Mars

It is crucial to launch a mission to Mars at the right time because Earth and Mars are always moving. It is necessary to calculate the distance between the two planets at any one time and to prepare accordingly.

As of 2019, there have been 56 missions to Mars, of which only 26 have been successful. This shows just how difficult reaching the Red Planet can be. None of these missions have been manned by humans but there is currently one Mars rover operational. There are also six active satellites orbiting Mars, providing us with plenty of data about the planet.

Why Mars?

Earth sits between Venus and Mars. Both planets are sometimes visible to the naked eye from Earth! The distance between them varies throughout their orbits of the Sun, but Mars is not the closest planet to Earth – Venus is. The closest possible distance between Earth and Venus is approximately 38 million kilometres, while the closest distance between Earth and Mars is around 55 million kilometres. Why, then, are most of Earth's exploration efforts directed at the Red Planet? The answer lies in the environments of Mars and Venus.

Venus, Earth's smaller sister, is blisteringly hot and has a thick atmosphere which could melt a block of lead as easily as an ice cream on Earth. Mars, on the other hand, is smaller and much colder. It is the most habitable planet next to Earth because:

- its soil contains traces of water to extract;
- it gets enough sunlight to use solar power;
- gravity is 38% as strong as on Earth, which, it is believed, humans could adapt to;
- the atmosphere somewhat protects from the Sun's **radiation**;
- Mars' day, called a 'sol', is only a little longer than Earth's.

The human race is very keen to prove that there is a possibility for life on other planets, and Mars is thought to be the most likely place to find that proof.

The Mars Rover

The Curiosity rover is a robotic car which is currently exploring the surface of the planet. It is nuclear-powered and the fourth rover sent to Mars in 16 years. It was launched on 26th November 2011 and landed on 6th August 2012. Curiosity uses the most advanced scientific equipment ever used on Mars.

The main goals of the mission, which forms part of NASA's Mars Science Laboratory, are to:

- study Martian climate and **geology**;
- search for water;
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Glossary

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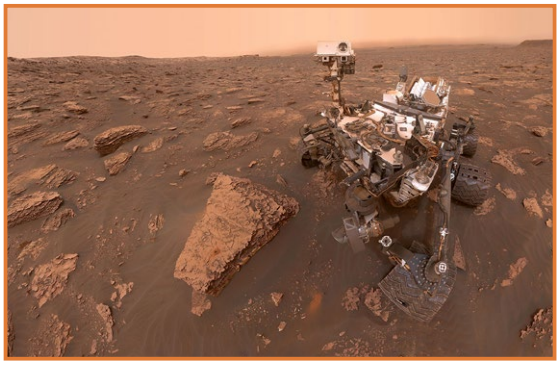

A self-portrait taken by NASA's Curiosity rover.

<table>
<tr><th colspan="4">Quick Facts</th></tr>
<tr><th colspan="2">Earth</th><th colspan="2">Mars</th></tr>
<tr><td>Diameter:</td><td>12,742km</td><td>Diameter:</td><td>6,779km</td></tr>
<tr><td>Moons:</td><td>1</td><td>Moons:</td><td>2 (Phobos and Deimos)</td></tr>
<tr><td>Rotation period:</td><td>24 hours</td><td>Rotation period:</td><td>24 hours 37 minutes</td></tr>
<tr><td>Orbit (revolution) period:</td><td>365 days</td><td>Orbit (revolution) period:</td><td>687 days (1.9 Earth years)</td></tr>
<tr><td>Surface temperature:</td><td>between -88°C and 58°C</td><td>Surface temperature:</td><td>between -140°C and 30°C</td></tr>
<tr><td>Atmosphere:</td><td><table><tr><td>Nitrogen</td><td>78.08%</td></tr><tr><td>Oxygen</td><td>20.95%</td></tr><tr><td>Argon</td><td>0.93%</td></tr><tr><td>Carbon Dioxide</td><td>0.04%</td></tr></table></td><td>Atmosphere:</td><td><table><tr><td>Oxygen</td><td>0.14%</td></tr><tr><td>Carbon Dioxide</td><td>95.9%</td></tr><tr><td>Carbon monoxide</td><td>0.06%</td></tr><tr><td>Nitrogen</td><td>1.9%</td></tr><tr><td>Argon</td><td>2%</td></tr></table></td></tr>
</table>

Read the KS2 Twinkl Originals story '**Jazz Harper: Space Explorer**' to learn all about life on Mars!

Mars: The Red Planet **Questions**

1. Find and copy the correct word to complete the sentence.
   Mars is named after the _____ god of _____.

2. Which of these are reasons why Mars is a good place to explore?

   - ○ Mars gets enough sunlight to use solar power.
   - ○ A day on Mars is very short.
   - ○ There is no gravity on Mars.
   - ○ There is a little water in the soil on Mars.

3. How many moons does Mars have and what are their names?

_____

_____

4. What is a day called on Mars and how long is it?

_____

_____

5. Find and copy a word from the text which means 'working'.

_____

_____

6. a) Tick the correct box for each statement to say whether it is true or false.

	True	False
Venus is so hot that lead would melt on its surface.		
Mars has a diameter of 6,793km.		
A day on Mars is slightly shorter than a day on Earth.		

b) Correct any false statements here:

_____

_____

_____

7. a) Which planet has the highest possible temperature: Earth or Mars?

b) Which has the lowest possible temperature?

8. Why does it seem odd at first that NASA has chosen to explore Mars and not Venus?

9. Look at the section titled 'The Mars Rover'. What other subtitle could you use for this section? Explain why you have chosen it.

10. Look at the section titled 'Why Mars?'. Why do you think the author has put the facts about Mars into bullet points?

Mars: The Red Planet **Answers**

1. Find and copy the correct word to complete the sentence.
   Mars is named after the **Roman** god of **war**.

2. Which of these are reasons why Mars is a good place to explore?

   ⊘ Mars gets enough sunlight to use solar power.
   ○ A day on Mars is very short.
   ○ There is no gravity on Mars.
   ⊘ There is a little water in the soil on Mars.

3. How many moons does Mars have and what are their names?

   Mars has two moons named Phobos and Deimos.

4. What is a day called on Mars and how long is it?

   A day on Mars is called a 'sol' and it is 24 hours and 37 minutes long.

5. Find and copy a word from the text which means 'working'.

   Accept 'operational' or 'active'.

6. a) Tick the correct box for each statement to say whether it is true or false.

	True	False
Venus is so hot that lead would melt on its surface.	✓	
Mars has a diameter of 6,793km.		✓
A day on Mars is slightly shorter than a day on Earth.		✓

   b) Correct any false statements here:

   Mars has a diameter of 6,779km.

   A day on Mars is 37 minutes <u>longer</u> than a day on Earth.

7. a) Which planet has the highest possible temperature: Earth or Mars? What is it?

   Earth, 58°C

   b) Which has the lowest possible temperature?

   Mars, -140°C

8. Why does it seem odd at first that NASA has chosen to explore Mars and not Venus?

   Accept any correct explanation that states that Venus is closer to Earth than Mars. For example, it seems odd at first that NASA would travel to Mars first because Mars is not the closest planet to Earth.

9. Look at the section titled 'The Mars Rover'. What other subtitle could you use for this section? Explain why you have chosen it.

   Accept suitable titles for the section and an explanation of why the title is catchier, more appropriate or more interesting than the original, for example 'I would call the section 'Curiosity' as it is the name of the rover that the section is talking about but the section also describes the things that humans are curious to find out, so it links to human curiosity, too.'

10. Look at the section titled 'Why Mars?'. Why do you think the author has put the facts about Mars into bullet points?

    Accept responses relating to the fact that the author has made the information:

    - **more digestible/easier to read;**
    - **easier to find quickly;**
    - **more interesting to look at;**
    - **less repetitive as each bullet shares one sentence opener.**