

**Key Stage 2**

**Links with National Curriculum - Sc4 Forces and motion**  
**En1 speaking and listening presentations, En3 writing**  
**non fiction text**

**Links with QCA -6E forces in action, Earth, Sun and Moon**

# S.E.S.2 MARS TRAIL

**Name**

**School**

**Date**

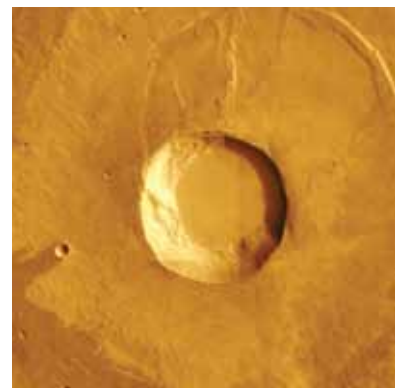


## Introduction

Human exploration of Mars is tied to the belief that new lands create new opportunities. In history people have migrated for a number of reasons, but mainly due to finding better living conditions and to relieve over crowding. However a new reason has become apparent...



By the end of the 21st Century, the world's governments have been taken over by the Order of Miserable Head-teachers whose first agenda was to place a world ban on sports, games and music. This means that many humans are now looking for a new planet to live on.



You and a number of your friends have set up a society called the S.E.S - Secret Enjoyment Society and are looking for a suitable planet to migrate to. Using technology, science and communication skills you and the other members of the S.E.S are investigating whether Mars would be the most suitable planet.



At the moment the S.E.S is a secret underground organisation, but it is expected that many humans will want to join when the organisation becomes public and publishes its plan.

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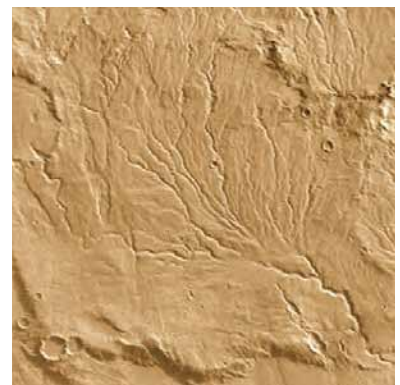
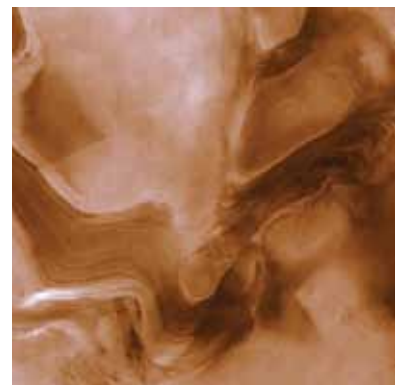
## Your Mission

Your task is to gather information to help your scientists create an environment on Mars in which humans could survive. You will need to find out how Mars is different to Earth and what changes you will bring to Mars in order to make it habitable. The journey to Mars also creates challenges and you will have to consider how to overcome these and ensure the safe delivery of you and your crew to Mars.

The settlement of Mars presents new problems, especially the absence of a liveable natural environment and the high cost of transportation. Also humans on Mars cannot easily return to Earth and must wait until Mars and Earth are aligned every 26 Earth months.

Your Mars colony must be very reliable, stable and comfortable. You may also have to convince some people to join your society, so consider carefully what advantages Mars' characteristics will offer its new inhabitants.

Good Luck!



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## The Planets Gallery - Time 4 change

To plan your colonisation you must discover the differences between Planet Earth and Mars...

**Question 1.**

**Complete the table below to find out the main differences between your old home and your new home.**

Feature	Earth	Mars
Size		
Distance from Sun (Millions of Km)		
Length of day (time taken to spin around once)		
Length of year (time taken for one orbit of Sun)		
Average temperature		
Atmosphere		
How many moons (if any)		

Using the table above answer the following questions

**Question 2.**

**Would a tin of beans feel heavier or lighter on Mars?**  
*(you will be able to test this later).*

**Question 3.**

**Why do you think it's colder on Mars? (Circle your answers)**

*Because Mars is further away from the Sun*

*Because Mars has more Moons*

*Because Mars is smaller*

*Because Mars has a thinner atmosphere than Earth*



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## The Planets Gallery - Time 4 change

### Question 4.

Think of your favourite outdoor place on Earth and sketch it in the box below.

A large, empty rectangular box with a black border, intended for a student to draw their favourite outdoor place on Earth.

Now draw a second picture in the box below. This picture should be of the same place, but you must take out from the picture everything that would not be there if this place was on Mars.

A large, empty rectangular box with a black border, intended for a student to draw the same outdoor place as in the previous box, but as it would appear on Mars.

How are your two pictures different?

A large, empty rectangular box with a black border, intended for a student to write down the differences between their two sketches.



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## Into Space - Weightlessness is Bad for you

### Question 5. The Journey

On your journey to Mars your crew start to complain of bad cold-like symptoms, what might explain this?

### Question 6. The Space Workout

The spacecraft Medical Officer advises that you and your crew exercise for at least 2 hours a day.

Give one reason why.

### Question 7. Biosphere - a world apart

(go around the corner)

Your crew on Mars would have to exist in a biosphere environment.

Give an example of a biosphere on Earth that was unsuccessful and state the reason why.

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## An Alien can't change it's stripes On arrival

**Your Mars:** On your journey to Mars you may become an inch taller due to having very little gravity pushing you down, but that extra height will go away when you stand up in Mars gravity.

**Your Mars Weight:** Your mass is a measure of how much matter - how much stuff - you are made of, it is measured in kilograms and won't change when you visit another planet. Your weight is a measure of the pull of gravity on your mass, it is measured in Newtons and changes when the strength - the pull - of gravity changes.

Go to the Planets gallery and stand on the scales.

**Question 8.**

**Record the difference in your weight below.**

<i>Mass (kg)</i>	<input type="text"/>	<i>Mars weight (Newtons)</i>	<input type="text"/>
<i>Earth weight (Newtons)</i>	<input type="text"/>		

This weight loss is due to lower surface gravity, not to any change in your appearance!

*Next to the scales are several tins of beans, feel the difference between a tin of beans on Mars and a tin of beans on Earth.*

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**Question 9.**

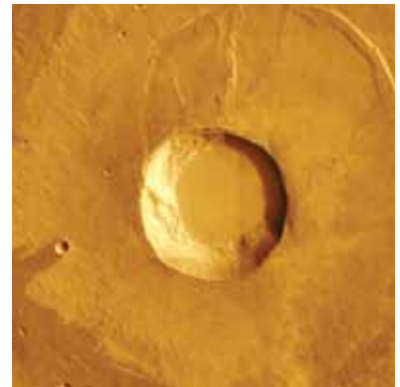
**Did you answer the earlier question directly?**

**Your Mars Age**

You are also much younger in Mars years because it takes Mars almost twice as long to orbit the Sun. So to get your rough Mars age half your age in Earth years. If you want a more exact martian age multiply your Earth age by 0.53 on a calculator. Of course your body will not actually feel younger!

Earth Age

Mars Age



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**Did you know?**

*Mars is home to the largest volcano in the Solar System - Olympus Mons. It is 3 times higher than Mount Everest and its base is as big as Britain!*



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## Question 10. Mission accomplished

Using the information you have learnt, write an article for a newspaper trying to convince the people of Earth to come with you and the other members of the S.E.S. Remember the reason you're leaving and the attractions Mars may offer them. For example why might athletes like Mars and does it have anything to offer people who enjoy extreme sports e.g. rock climbing?

**Title:** *(example: Should we migrate to Mars?)*

**Summary:**

The S.E.S have been investigating...

**Reasons for:**

One of the main reasons for migrating to Mars is...



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**Another reason would be:**

**Reasons against:**

**The problem with migrating to Mars is**

**Conclusion: I believe we should/shouldn't migrate to Mars because ...**