Epistemic Insight

Essential Experiences in Science

In the future will people travel and live in space?

There are lots of science-fiction books and films about space, involving people travelling in space, exploring other planets and meeting aliens. Are these adventures just stories, or could they be possible in the future?

In the past 60 years we have certainly achieved a lot in space exploration. Probes have been sent out into space, and humans have orbited the Earth in space stations and even gone to the moon.

However, the exciting possibility of people travelling large distances and living for longer periods of time in space remains a big question for us all.

Scientific Models

Scientists often use scientific models to help them think about and explain the science they are studying. A simple scientific model is a picture of our solar system as it shows the Sun and the order of the planets.

All scientific models have weaknesses and are not able to explain the science fully. Think about the picture model of the solar system, can you think of some of its weaknesses?

Canterbury Christ Church University

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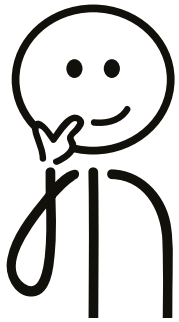
Let's use a scientific model to help us think about this question.

The Sun is the biggest object in our solar system, it is 696, 340 kilometres across, which is 109 times bigger than the Earth.

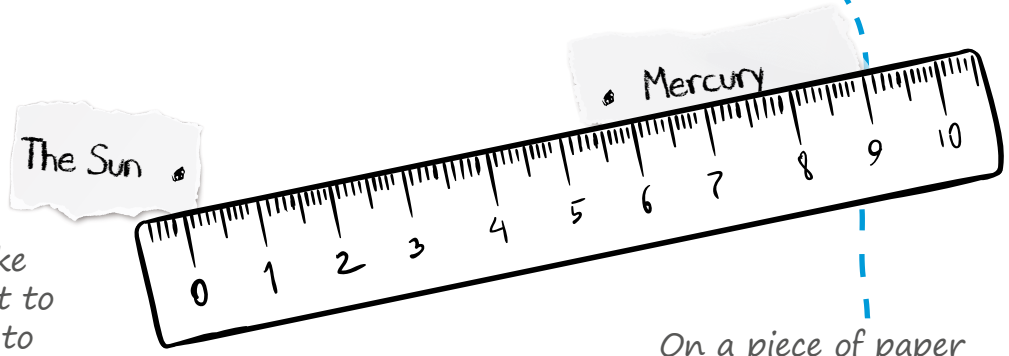
Imagine if we reduced the Sun down to the size of a full stop, what distance would all of the planets in our solar system be from the Sun and one another?

Would it be possible to carry enough water and food for such a long journey?



How would we power our space ships?

Currently, it would take six months for a rocket to travel from the Earth to Mars, so how long would it take to get to the other planets.



On a piece of paper put a full stop and write **The Sun.** On eight other pieces of paper put the names of the planets listed in the table.

Planets	Actual Distance from Sun (in million km)	Relative Model Distance (in cm)
Mercury	58	5.8cm
Venus	108	10.8cm
Earth	150	15cm
Mars	228	22.8cm
Jupiter	778	77.8cm
Saturn	1420	142cm
Uranus	2870	287cm
Neptune	4480	448cm

Across your floor, use the table to measure the **relative model distance** to each planet from your full stop Sun. Place each planet's label at the measured point.

What do you think? In the future will people travel and live in space?

Use your full stop model to help you think about your concerns and ideas about space exploration. Add your ideas to the thought diagram started above.

You could also think about the strengths and weaknesses in the full stop Sun model.