

# The Size of the Planets

## Objectives

- To know that the planets are different sizes.
- To know that some planets are made of rock and some planets are made of gas.
- To know the distinction between a planet and a Moon.
- To use secondary sources and imagination to describe living on another planet.

## Subject references

### Science

- An environmental context that is familiar and of interest to them. (NC: KS1 & 2 Breadth of study 1a)

### Maths

- Estimate size using appropriate language. (NC: KS1 Ma1 4a)
- Make sensible estimates in everyday situations. (NC: KS2 Ma3 4a)

### Extension

#### Science

- An environmental context that is familiar and of interest to them. (NC: KS1 & 2 Breadth of study 1a)

### English

- Use organisational features of non fiction texts, including captions, illustrations, contents, index and chapters to find information. (NC: KS1 En2 2a)
- Engage with challenging and demanding subject matter. (NC: KS2

## RESOURCES AND PREPARATION

Secondary sources about planets and moons.

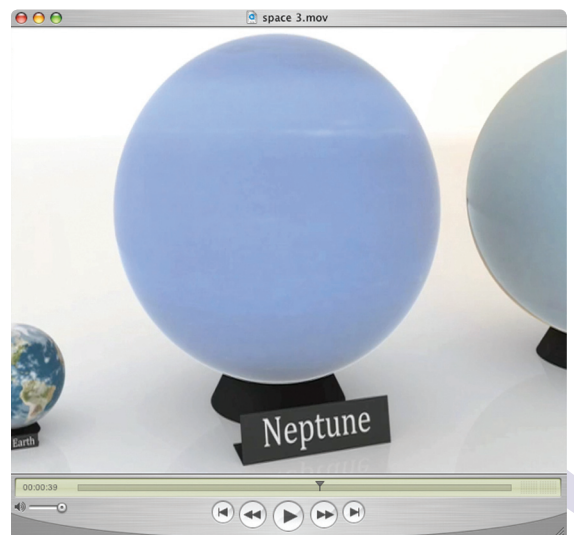
## INTRODUCING THE VIDEO

The video opens with view of a model Pluto, now relegated to the status of “dwarf planet” in the Solar System, then moves on to show a model of The Moon which is slightly larger. The video then sweeps through the eight main planets of the Solar system in order of size starting with Mercury. It moves on to show Mars, Venus, Earth, Neptune, Uranus, Saturn, and Jupiter accompanied by lively space-like music. The video ends by comparing the model planets to a huge model of the Sun!



## RESPONDING TO THE VIDEO

- **Opening sequence (Time 00:10)**  
Tell the children that Pluto was discovered eighty years ago and was considered to be a major planet of the Solar System but now scientists consider it to be a dwarf planet. Ask the children if it is bigger or smaller than the Moon. (Could be bigger or smaller).
- **The Moon (Time 00:14)** What do they think now? (Pluto is smaller than the Moon.) What can you see on the Moon? (Craters, mountains, flat grey plains).
- **Mercury (Time 00:19)** What can you see on Mercury? (Craters, short mountain ranges, small smooth areas).



- **Mars (Time 00:23)** How is Mars different from Mercury? (Different colour, considerably fewer craters, much larger areas of smooth surface).
- **Venus (Time 00:28)** Describe the appearance of Venus. (Some parts are dark brown, more parts are lighter brown with a few areas in the lower half being yellow. It has a few craters but also many smooth areas).
- **Earth (Time 00:33)** What can you see? (The oceans, continents and clouds).
- **Neptune (Time 00:38)** Describe Neptune. (Large blue ball with a band of white clouds).
- **Uranus (Time 00:43)** Compare the appearance of Uranus with Neptune. (Uranus is a paler blue, both appear smooth, both have small amounts of white cloud).
- **Saturn (Time 00:48)** What is missing from this model of Saturn? (Its rings).
- **Jupiter (Time 00:56)** What can you see on Jupiter? (Bands of white and light brown, streaks of grey, ovals of white and brown.) Next is the Sun. Warn the children that they must never look directly at the Sun because it can damage their eyes but it is safe to look at the model coming up. How many times is it bigger than Jupiter five, eight or ten times?
- **The Sun (Time 00:58)** It is about ten times bigger in diameter (however its mass is over 1,000 times bigger!).

### EXTENSION

- Tell the children that the Moon was featured here to help them realise how the dwarf planet Pluto it is not considered a planet. Moons are objects which move around planets. Challenge the children to use secondary sources to find out which other planets have moons.
- Ask the children to arrange the planets in the correct order starting with the planet nearest the Sun. The order is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto.
- There are also other dwarf planets not shown on the video which many people have not heard of: Ceres, Haumea, Makemake and Eris. As a further extension, you could use secondary sources to investigate these tiny worlds and add them to the order of the Solar System. You could also add the position of the Asteroid Belt.
- Tell the children that Pluto and the four smallest planets are made from rock and the four largest planets are made mostly of gas and have thick atmospheres with clouds. Jupiter has huge storms. Show the children the pictures from the web links (right) then ask them to select a planet (not Earth) on which they might like to live, including living in the clouds of the gas giant planets. Use the worksheet for this activity.



### Worksheet

#### English

- Use reference materials for different purposes. (NC: KS1 En2 2c)
- Imagine and explore ideas, focusing on creative uses of language and how to interest the reader. (NC: KS2 En3 9b)

#### Art

- Represent observations, ideas and feelings and design and make images. (NC: KS1 2c)
- Use a variety of methods and approaches to communicate observations, ideas and feelings, and to design and make images. (NC: KS2 2c)

#### Links to Hot Topics Space

- Theme 3 Lesson 1 Earth and the Sun (page 25)
- Theme 3 Lesson 2 Ideas of the Sun and Earth (page 26)
- Theme 4 Lesson 2 Sun, Earth and Moon (page 34)
- Theme 6 Lesson 1 Planets in our solar system (page 49)
- Theme 6 Lesson 2 Comparing planets (page 49).
- Theme 6 Lesson 3 Different worlds (page 52)

#### Web links

The colliding storms of Jupiter can be seen at: [http://science.nasa.gov/science-news/science-at-nasa/2000/ast24oct\\_1/](http://science.nasa.gov/science-news/science-at-nasa/2000/ast24oct_1/)

An artist's impression of the surface of Venus and its clouds can be seen at: <http://www.daviddarling.info/encyclopedia/V/Venusatmos.html>

Photographs of the surface of Mars, taken by the Viking lander can be seen at: <http://www.solarviews.com/eng/marssurf.htm>

# My new home

Pick a planet you would like to live on. Remember none of the planets has air that we can breathe. Make a drawing of your home on the surface of a rocky planet or up in the clouds of a gas giant. Write about how it would be different to living in your home on Earth.

