

KS2

Uranus

Neptune

# Solar system

Saturn

Mars

TEACHING  
PACK

Earth

Jupiter

Venus

Mercury

- Research and learn about the planets
- Build a model solar system
- Create a museum exhibition

# Solar system

## Section A: Lesson plans

### About this project-based teaching pack

This project-based teaching pack is designed to teach and reinforce the concepts in a primary science unit on the solar system, and can be used in conjunction with existing curriculum materials.

The project is divided into 5 Milestones; each Milestone includes a self-contained pupil project activity. Completed in sequence, the Milestones connect to enable pupils to complete a comprehensive project on the solar system.

The minimum suggested duration for completing this project is 5 lessons. However, it is completely flexible and can be lengthened or shortened as necessary, based on available lesson time and interest level.

### How to use this teaching guide

Each Milestone for this project-based learning unit includes detailed daily activities presented in step-by-step order, with teaching notes, instructional guidance and page references to resources and materials included in the Teacher pack and Pupil pack.

Daily activities are organised for you as follows:

- **Prepare (bell-ringer/starter activity)**

Use these short opening activities at the beginning of class.

- **Present (teach/model)**

Use this section of the lesson to deliver new subject material and project information, and to model any instructions or activity required for Produce or Participate elements.

- **Produce (pupil project work)**

Use this section of the lesson to allow pupils to work independently or in small groups on activities and other project elements.

- **Participate (pupil/group share)**

Use this section of the lesson to allow pupils to share any project, research, or presentation materials.

- **Practise (homework/assessment/independent/extension activities)**

Use this optional section of the lesson, if desired, to give pupils homework activities.

## Step-by-step project teaching guide

### Overview

#### **Milestone 1: Building background knowledge of the solar system**

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Researching a chosen planet scavenger hunt

Identifying elements of the solar system

#### **Milestone 2: Planet design**

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Comparing planets and identifying how many astronomical units they are from the Sun

Creating a design for their planet showing surface features and other special characteristics

Explaining how to build a solar system at school

#### **Milestone 3: Building a solar system model**

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Building a solar system model

Describing the locations of the planets and explain how location is relevant to a planet's physical characteristics

#### **Milestone 4: Synthesising knowledge of the solar system**

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Synthesising the information learned about their planet by creating a slideshow

Explaining whether or not humans could live on their planet

#### **Milestone 5: Showing what you know about the solar system**

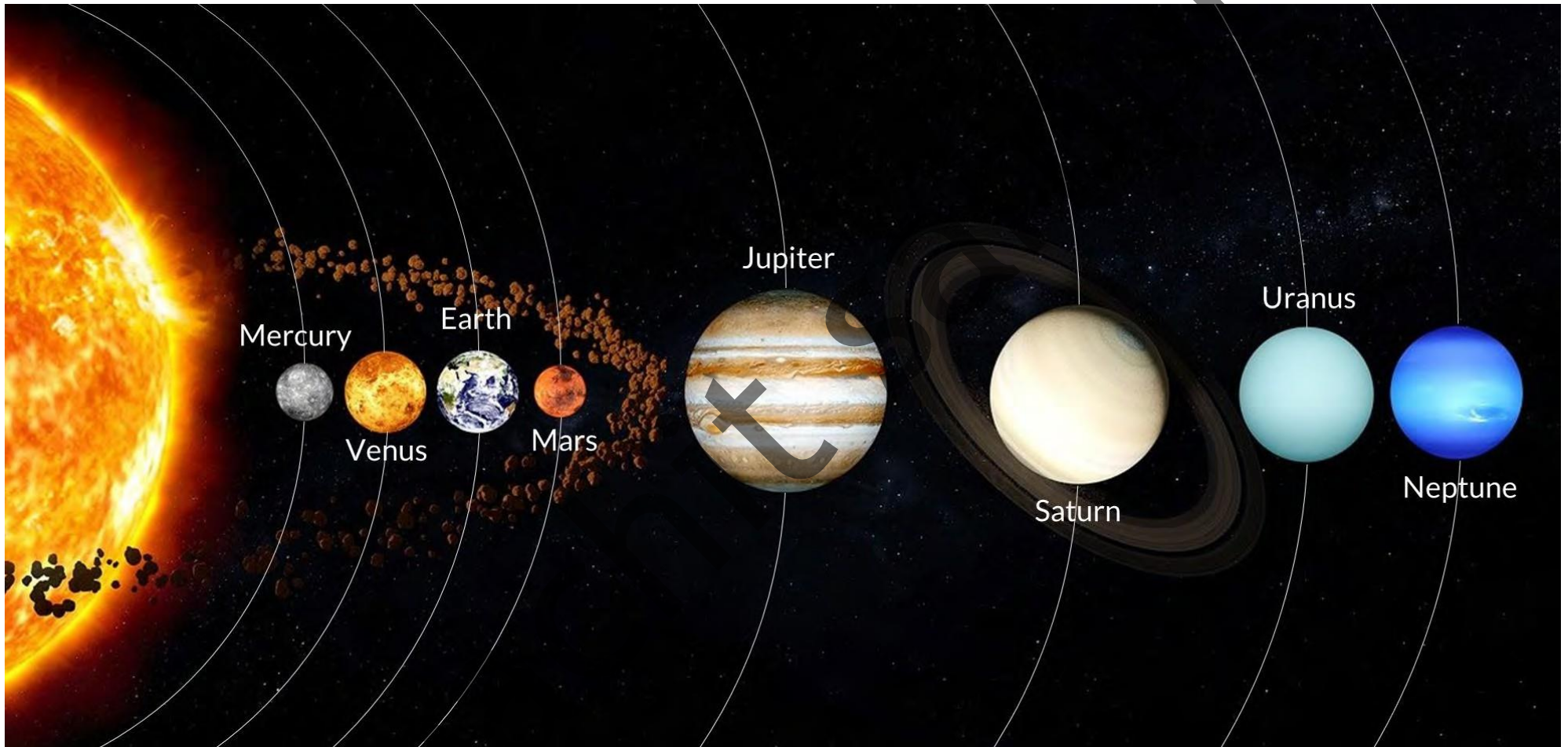
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Presenting ideas

Listening actively and learning about the solar system, and taking notes from the other presentations

Choosing which planet to visit and justifying answers

Solar system map



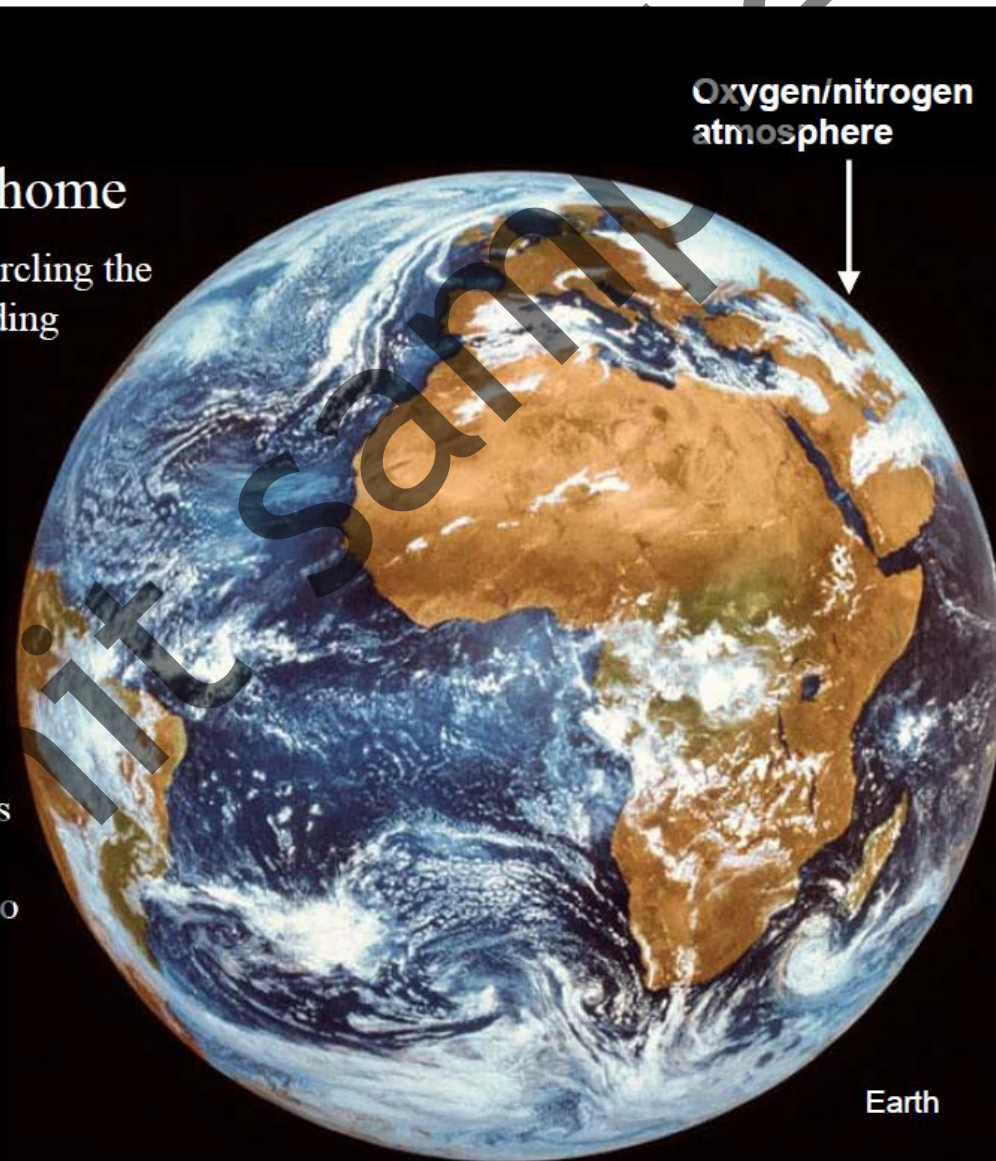


## Earth—Home sweet home

There are eight major planets circling the Sun in our solar system—including Earth, our home sweet home. What makes Earth so special? Water has a lot to do with it. More than two thirds of Earth is covered with it. The blanket of air that surrounds Earth, called the atmosphere, is also a big deal.

Air and water provide the basics for many different living things (including plants and animals) to live and grow on the planet!

**Average distance from Sun:  
93 million miles**



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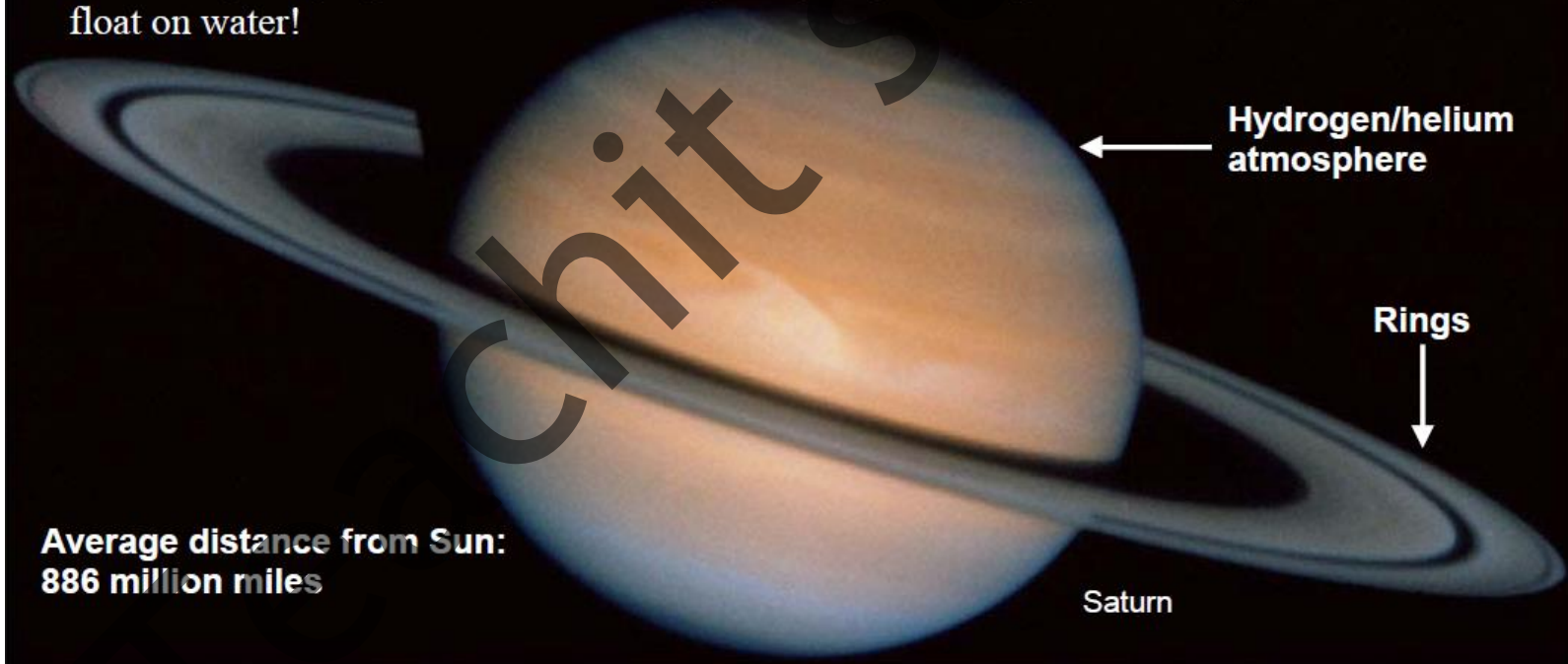
<http://www.teachervision.com>



## Saturn—the ringmaster

Although it's not the only planet to have them, Saturn is famous for the rings that circle it. The rings look solid from Earth, but they are not. They are actually made of billions of pieces of ice, rock, and dust.

Saturn, a giant gas planet, is made mostly of hydrogen. The planet is so light that it could float on water!



**Average distance from Sun:  
886 million miles**

Saturn

Planet cards

**Teacher notes:** Cut out the planet cards and mix them up in a hat or bag. Ask each group to choose one card to determine which planet they will research.



Mercury



Venus



Mars



Jupiter



Saturn



Uranus



Neptune

Teachit Sample





Name: ..... date: .....

**Creating a solar system model**

**Part 1:** Look at the diameters of the planets on the chart below. Put them in order from largest to smallest. Use the number 1 for the largest planet and the number 8 for the smallest planet.

Number	Planet	Diameter (km)
	Mercury	4,989
	Venus	12,392
	Earth	12,757
	Mars	6,759
	Jupiter	142,749
	Saturn	120,862
	Uranus	51,499
	Neptune	44,579

Name of your planet .....

My planet is the ..... largest in the solar system.

**Part 2:** Determine how far to place your planet from the Sun.

My planet is ..... million miles from the Sun.

Earth is 93 million miles from the Sun. This is equivalent to one astronomical unit (AU). To convert the distance of your planet from the Sun into astronomical units, divide your planet's distance from the Sun by 93.

..... ÷ 93 = .....

My planet is ..... AU from the Sun.

Name: ..... date: .....

**Designing a planet**

**Instructions:** Answer the questions about your planet. Design your planet on the circle at the bottom of the page.

What colour will you make your planet? .....

What does the surface of your planet look like? .....

.....

What other features will you include in the model of your planet? .....

.....



## Steps for making a solar system model

**Step #1** Look at your 'Designing a planet' paper. Use the tools to add details to the surface of your planet and to give your planet any special features.

**Step #2** Look at the chart below to see how long your string should be to model your planet's distance from the Sun. Cut a piece of string that length.

Planet	Distance from the Sun (in millions of miles)	AU Equivalent	Lengths	Length of string Length / 2
Mercury	36	.39	39 cm	19.5 cm
Venus	67.27	.7	70 cm	35 cm
Earth	93	1 m	1 m	50 cm
Mars	141.7	1.52	1.52 m	76 cm
Jupiter	483.9	5.2	5.2 m	2.6 m
Saturn	887.1	9.54	9.54 m	4.8 m
Uranus	1783.98	19.18	19.18 m	9.6 m
Neptune	2795.5	30.06	30.06 m	15 m

