



ABOUT OUR SOLAR SYSTEM

Unit of work

Lesson 1: Introducing our solar system

Introduction

In this lesson, students will be introduced to our solar system. They will explore what it contains and use common items to create a scaled version of it.

Broad learning outcomes

- Students will begin to develop a vocabulary to discuss the solar system and learn to judge information for accuracy and validity.
- Students will be able to provide a brief explanation of what the solar system is, and what it contains, with a specific focus on the importance of the sun.
- Students will learn the order and relative size of the planets in our solar system by participating in the creation of a scaled model.

Resources

- **'Solar system mind map'** activity sheet
- **'Our solar system – what do I know?'** activity sheet
- **'Create your own solar system instructions'** sheet. This sheet contains a list of resources you will need for the activity.
- Books and internet resources about the solar system

Assessment options

- Contributions to class discussions
- **'Our solar system – what do I know?'** activity sheet
- Participation in creating the solar system



ABOUT OUR SOLAR SYSTEM

Lesson steps

Write the word 'solar system' on the board, or have a copy of the '**Solar system mind map**' displayed on an interactive whiteboard. Ask students what they already know about the solar system and record their answers. Use the following guiding/prompting questions if necessary:

- How old is our solar system?
- What is contained within our solar system?
- Is our solar system part of a bigger system? Do students know what that system is called?
- What is at the centre of our solar system?
- What words come to students' minds when they think about the solar system?
- This activity can also be done individually or in small groups using a copy of the '**Solar system mind map**' activity sheet.

To learn some basic information about our solar system, have students research to complete the '**Our solar system – what do I know?**' activity sheet.

Take students outside and follow the instructions on the '**How big is our solar system**' sheet to make a scale model of our solar system. You will need a fairly large area (school oval) to complete this activity. You can also find indoor options on the sheet.



ABOUT OUR SOLAR SYSTEM

Lesson 2: The planets – let’s find out more

Introduction

In this lesson, students will begin to focus on specific planets within our solar system. They will select (or be allocated) a planet and research to find out more about it. They will present this information to the class and add it to a class solar system mural or poster.

Broad learning outcomes

- Students will activate their prior knowledge about planets.
- Students will select a planet and research to find out more about it.
- Students will learn the importance of summarising and paraphrasing and how to reference sources of information.
- Students will assess the reliability and validity of various resources (print and online).

Resources

- ‘Planet match’ activity cards (one set per pair of students)
- ‘Planet KWL’ activity sheet
- ‘Pick a planet’ activity sheet
- Computers with internet access
- Books/resources about planets and the solar system

Assessment options

- ‘Planet match’ activity
- Planet oral presentations



ABOUT OUR SOLAR SYSTEM

Lesson steps

To investigate and activate students' prior knowledge about planets, have them complete (in pairs or small groups) the '**Planet match**' activity.

Conduct a class discussion about the planets within our solar system. If you completed the '**How big is our solar system**' activity in lesson one, you can use this as a starting point. Record all ideas. This can be done on the '**Planet KWL**' activity sheet.

Ask students to consider:

- The number of planets in our solar system.
- The position/order of the planets in our solar system.
- The composition of each planet.
- Which planets are located closest to Earth? Which are far away?
- How the planets are similar and different.

Please note: although Pluto was originally considered to be a planet, in the past 15 years astronomers have discovered that it is only one of many bodies of similar size (and smaller) making up the Kuiper Belt beyond Neptune. As a result, in 2006, astronomers came up with a new definition of what makes something a 'planet' and this meant that Pluto was reclassified as a 'dwarf planet'. This could be explored further with students.

In small groups, students to research one planet in more depth. Students can select their own planet or it can be allocated via a 'lucky dip' system, but all planets should be researched. There are guiding research questions and suggested websites on the '**Pick a planet**' activity sheet, but using this is optional. Students can also use the information in 'About our solar system' in the student section of the SCM website. Encourage students to record their sources of information and to ensure that they are reliable and valid. Students should also attempt to put information into their own words.

Each group should present their information to the rest of the class, then add it to a class information wall, mural or poster.



ABOUT OUR SOLAR SYSTEM

Lesson 3: The planets – how do they compare?

Introduction

In this lesson, students will use what they discovered in lesson 2 to discuss, contrast and compare the planets within our solar system.

Broad learning outcomes

- Students will consider what makes planets similar and different.
- Students will sort and classify planets according to identified properties.
- Students will effectively communicate their knowledge about a planet.

Resources

- Planet research from lesson 2
- **'Planet pictures'** activity sheet
- **'Planet Venn diagram'** activity sheet
- **'Planet tri-Venn diagram'** activity sheet
- **'Planet match assessment'** activity sheet

Assessment options

- Observation of group discussions
- Recorded data from group discussions (using Venn diagram, tri-Venn diagram, or planet pictures)
- **'Planet match assessment'** activity sheet



ABOUT OUR SOLAR SYSTEM

Lesson steps

In small groups, students will compare and contrast planets using the information they gathered in lesson 2. There are several ways to group students for this activity:

- Use the same groups as in lesson 2 and ask them to find planets that are similar or different to the one they have researched.
- Group students so that each group has a variety of ‘planet experts’ in it (i.e. a group of four should comprise students who each researched a different planet in lesson 2).
- In their groups, ask students to focus on one, or a few, specific elements of their planets (e.g. temperature, composition, appearance etc.) and discuss the similarities and differences.

Three options have been provided to assist students to record their thinking. The ‘**Planet Venn diagram**’ activity sheet and the ‘**Planet tri-Venn diagram**’ activity sheet allows students to compare and contrast two or three different planets. Alternatively, the pictures on the ‘**Planet pictures**’ activity sheet can be cut out and grouped in many different ways.

Groups should be encouraged to share their ideas.

Some ideas for classification and comparison include:

- size
- weight
- distance from sun
- composition (e.g. rock, gas, ice)
- visual appearance
- presence of moons
- orbit and rotation times
- date discovered.

Students to complete the ‘**Planet match assessment**’ activity sheet. This sheet is an extension of the ‘**Planet match**’ cards activity completed in lesson 2.



ABOUT OUR SOLAR SYSTEM

Lesson 4: What else is out there?

Introduction

In this lesson, students will explore the other celestial bodies that are present in our solar system including the Sun (which is a star) comets, asteroids, meteoroids and dwarf planets. They will research one of these and present their findings in a creative way.

Broad learning outcomes

- Students will be able to describe and explain one or more celestial bodies (other than planets) within our solar system.
- Students will learn the importance of summarising and paraphrasing and how to reference sources of information.
- Students will assess the reliability and validity of various resources (print and online).

Resources

- **'What else is out there?'** activity sheet
- Computers with internet access

Assessment options

- Participation in class discussions
- Celestial body presentation or project



ABOUT OUR SOLAR SYSTEM

Lesson steps

The focus of this unit so far has been the planets in our solar system, but there are many other celestial bodies within it that are just as important. Ask students if they know what any of these are. Record their ideas.

Individually, or in small groups, students select one body to research. This could be comets, asteroids, dwarf planets or meteoroids. Guiding research questions are provided on the '**What else is out there?**' activity sheet.

The information gathered should be presented in a creative way such as:

- making the body (e.g. from papier mache), adding the researched information and hanging it from the classroom ceiling to create a solar system
- writing a story from the perspective of the chosen body
- writing a persuasive text convincing the reader that the chosen body is an integral part of the solar system
- creating a short video demonstrating how the chosen body moves or travels
- building a model of the solar system, focusing on the location and function of the chosen body
- writing, presenting and recording a fictional news report about the chosen body.



ABOUT OUR SOLAR SYSTEM

Lesson 5: Space exploration and Australia's involvement

Introduction

In this lesson, students will contribute to the creation of a timeline of significant space exploration events over the last 60 years. They will research major events and consider Australia's involvement. They can also consider the role of scientists, engineers and technology in space exploration.

Broad learning outcomes

- Students will be able to list and explain a number of significant space exploration events.
- Students will be able to describe how Australia has contributed to space exploration since the 1960s.
- Students will learn the importance of summarising and paraphrasing and how to reference sources of information.
- Students will assess the reliability and validity of various resources (print and online).

Resources

- **'Space exploration events'** cards (one set per small group)
- Computers with internet access

Assessment opportunities

- Participation in class discussions
- Contribution to space exploration timeline



ABOUT OUR SOLAR SYSTEM

Lesson steps

As a class, brainstorm the space exploration events that students are familiar with. Record these. Provide small groups of students with a set of the '**Space exploration events**' cards and ask them to try and put these events in chronological order. Ask students to think about the types of technology that would be needed to undertake these events and when this might have become available. Display the answers on an interactive whiteboard to check and discuss students' responses.

Ask students which events they think Australia was involved in and why?

In small groups, students will further research these space exploration events (and any others they are interested in), record their information (try to include specifics about Australia's involvement if applicable) and add it to a large class 'space exploration timeline'. Useful websites for this research include:

www.cdsc.nasa.gov

www.nasa.gov

www.nationalgeographic.com

As an extension activity, discuss the technologies used in these events (consider robots, space craft, technology to track and televise the events, telescopes etc.) and consider the role of scientists and engineers in making these events possible. There are many available YouTube videos that explain the various technologies used.