# *Space tourism* **Teacher background notes**

In this investigation, students will use a model to represent the scale distances between objects in the solar system. Students will understand that scientific discoveries about space have been made by a range of people from different cultures, and that these have been used to solve problems that directly affect people’s lives on Earth. Students will conduct research on space exploration to determine whether space tourism is viable.

## [Australian Curriculum: Science links](https://assist.asta.edu.au/resource/4173/space-tourism-year-5-cle)

## Learning intentions

Students will be able to:

* use a scale model to demonstrate the distances between the planets in our solar system;
* understand that a model is a representation of some aspect of the real world, which can be useful in developing our understanding of that aspect;
* understand the vast distances within the solar system;
* discuss how scientific discoveries in space have affected people’s lives;
* draw conclusions about the probability of space travel and space tourism.

## Suggested time for this CLE

The time need to complete the *Space tourism* CLE will depend on the depth of the prior knowledge of students, the time to perform the five investigations—'Pocket solar system', 'What is space tourism?', 'Astronaut requirements', 'Life in orbit according to Commander Chris Hadfield' and 'Space medicine'—and follow up with any further extension activities. Allow 3–6 hours.

**NOTE: This CLE is aimed at enhancing a unit already being taught on the solar system.**

## Prior conceptual knowledge

Science / Year 3 / Science Understanding / Earth and space sciences

Content description

*Earth’s rotation on its axis causes regular changes, including night and day* [(ACSSU048)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU048)

## New concepts to be introduced

Students will develop science knowledge and understandings about the Earth as part of a relatively simple planet–moon system operating within a larger solar system. The concept of distance in the solar system is challenging for students to understand, as the units of measure are quite vast and unfamiliar. Nevertheless, primary students' learnings about the solar system can be enhanced through a focus on models and their use in science. Students will understand that a model of something is a simplified imitation of the real-world concept, and that it can help us understand that concept better. Because of its size and distance from us, and the expense and sometimes danger of observing phenomena in space first hand, our understandings of the solar system are often represented through models.

## Possible misconceptions

Students may hold a variety of misconceptions about the solar system. A common misconception is that the solar system is very crowded and that the planets are close together or are large compared with the distances between them.

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| **STUDENTS MAY THINK…** | **INSTEAD OF THINKING…** |
| The solar system is very crowded. | The solar system covers vast distances in space and the planets and moons are large distances apart. |
| That the solar system only contains the sun, planets and moons. | That the solar system is made up of a range of celestial bodies, including asteroids, comets and meteors as well as planets, the sun and moons. |
| That the Earth is the centre of the solar system | That the Earth is a part of the solar system that is heliocentric, with the sun at its centre, and that the Earth revolves around the sun. |
| The Earth is the largest object in the solar system. | That there are other objects in the solar system bigger than the Earth, but which appear smaller due to the vast distances between objects. |
| The sun is a planet or other object because stars are small and at great distance from our solar system. | That the sun is a star within our solar system. |

## Links to further information

‘Solar system exploration’, NASA Planetary Science Division, National Aeronautics and Space Administration website, <http://solarsystem.nasa.gov/>

‘Our solar system’, *Kids Astronomy* website, <http://www.kidsastronomy.com/solar_system.htm>