

Into Our Skies: Space in Schools

Classroom Activity: How old are you on Jupiter?

National Curriculum Learning Outcome: To describe the movement of the Earth, and other planets, relative to the Sun in the Solar System.

Focus of this activity: Pupils will use their understanding of planets orbiting the Sun to determine how old they would be on a planet (of their choice) in the Solar System.

Resources required: Calculator, information on orbit lengths – this can either be displayed on a screen or given as a handout.

Starter: Use the dance session on orbits to recap with pupils what an orbit is – the time for a planet to make one complete circle around the Sun. Do the pupils remember the dance mnemonic for the order of the planets?

Teaching Questions:

- What is a year? Get pupils to think about the changes they see over a year on Earth, e.g., seasons, birthdays etc.
- Explain that a year on Earth is the time it takes for Earth to orbit once, but since other planets are closer/further from the Sun, the length of their years is different.
- Get the pupils to match the orbit length to each planet (See Table 1. For answers) Do they understand that the further away a planet is from the Sun the longer its orbit?

Student Activity:

- Get the pupils to pick one or two planets and to calculate how old they would be on that planet.

Example: Lanbot is 9 years and 4 months old.

In days, Lanbot is $(9 \times 365.25) + (30 \times 4) = 3407.25$ days .

(Note we assume 30 days in a month, higher abilities might want to account for number of days in each month)

Lanbot picks to find out their age on Mars. One Martian year is 687 days.

So, Lanbot is 3407.25 days old so if it takes Mars 687 days to orbit the Sun, how many times has Mars orbits the Sun in 3407.25 days? We need to divide the Lanbot's age in days by the length of a year in days on Mars.

On Mars, Lanbot is $3407.25/687 = 4.96$ years old (to 2 decimal places).

Extension:

- Does the size of the planet indicate day length? Ask the pupils if the following statement is true or false. **“The bigger the planet the longer the orbit”**

Pupils can investigate the size of each planet and compare them. They should find that there is no link between the length of a year on a planet and the size of a planet.

The answer to the question is false.

Table 1. Orbit Length: Table of the length of a year on each planet

Planet	Orbit Length
Mercury	88 days
Venus	225 days
Earth	365.25 days
Mars	687 days
Jupiter	12 years
Saturn	29 years
Uranus	84 years
Neptune	165 years

Additional Links:

- Explore details of the planets in the solar system <https://science.nasa.gov/solar-system/planets/>
- Where the planets are in the Solar System right now? <https://www.theplanetstoday.com/>