

PHYSICS

YEAR 5 and 6: AUTUMN 2

How does Earth fit into our Solar System?

COVERAGE: How does Earth fit into our Solar System?

The children will Explore the movement of celestial bodies in the Solar System, learn about the Earth, other planets and the Moon, discover how the Earth's rotation causes night and day, understand how sundials work and investigate satellite uses and the issue of space junk.

- Describe the geocentric and heliocentric models.
- Name and describe the shape of celestial bodies.
- Describe the orbits of celestial bodies in the Solar System and name the force that keeps them in their orbits.
- Describe the orbit of the Moon around the Earth and its phases.
- Explain how day and night occur.
- Explain how the seasons occur.
- Explain how a sundial works.
- List some of the uses of satellites and explain why space junk poses a problem to them.

Working Scientifically

- Pose and identify testable questions about the movement of the celestial bodies in our Solar System.
- Use a model to represent the Solar System.
- Design and draw a table to record data on moons.
- Accurately draw day and night and seasons diagrams.
- Calibrate a sundial using a compass and torch and use it to measure time.
- Analyse patterns in temperature data for the Earth and use them to predict temperature values for the Earth in the future.

KEY LANGUAGE AND VOCABULARY:

celestial bodies
data
day (daytime)
degrees Celsius (Y4)
discovery
Earth, evidence
gravity, Jupiter
line graph
line of best fit
Mars
Mercury, model
moon, Neptune
night (nighttime)
orbit
phase, planet
Pluto, Saturn
season (Y1)
solar system
spherical, star
temperature (Y4)
testable
Uranus, Venus

KNOWLEDGE AND FACT SHEET

Science - Earth and space

The Solar System is a group of celestial bodies, including the Sun, planets, asteroids and moons, held together by gravity.

The Sun, Earth, moons and other planets are spherical in shape.

Our Solar System

Sun - a star at the centre of our Solar System.

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Science - Earth and space

Artificial satellites are human-made objects that orbit planets. They have many uses including gathering data, communications and taking images.

Phases of the Moon: the Moon appears to change shape as it orbits the Earth because we see different amounts of its lit-up side (the side reflecting light from the Sun).

Day and night: the Earth rotates on its axis every 24 hours, creating periods of daylight and nighttime.

Moons, also called natural satellites, are celestial bodies that orbit planets. The Earth has one moon. Some planets, like Mercury, have no moons and other planets, like Saturn, have many moons. The current count is 1461.

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Science - Earth and space

The Earth's seasons

The Earth orbits the Sun once every 365.25 days (one year). When the Northern Hemisphere is tilted towards the Sun, it receives more light for longer so it is summer. When it is tilted away from the Sun, it is winter in the Northern Hemisphere.

KEY QUESTIONS:

1. How does the Solar System work?
2. What can we find out about our Solar System?
3. How does the moon move in relation to the Earth?
4. What are the causes of day and night and the seasons?
5. How does a sundial measure time?
6. How do satellites work and why do we have them?
7. What can we do with space junk?

KEY SKILLS AND KNOWLEDGE

Knowledge

- The Sun is a star at the centre of our Solar System.
 - The Sun, Earth and Moon are approximately spherical bodies.
 - The names, order and relative positions of the planets and other main celestial bodies.
 - A moon is a celestial body that orbits a planet and give examples of moons that orbit other planets.
 - The Earth and other planets orbit around the Sun.
 - The tilt of the Earth and its orbit around the Sun causes the seasons.
- The Moon orbits around the Earth.

- How the Earth's rotation causes day and night and the apparent movement of the Sun across the sky.
- To know about famous scientists throughout history.
- To know how scientific knowledge has changed over time, leading to the current understanding of Science.
- To know that mistakes can lead to new discoveries.
- To know about the work of modern day scientists.
- To know about science in the news and recent discoveries.
- To know about the methods and equipment used by scientists throughout history and how these have led to modern methods.
- To know about current scientific research and what it aims to achieve in the future.
- To know that collaboration and peer reviewing is essential for effective scientific progress.

Skills

Posing questions

- Raising questions throughout the enquiry process.
- Identifying testable questions.
- Selecting the most appropriate enquiry method to answer questions and give justification.

Recording

Drawing scientific diagrams by:

- Using a wider range of standard symbols.
- Drawing with increasing accuracy.
- Labelling with a broader range of scientific vocabulary.
- Annotating diagrams to explain concepts and convey opinions.
- Suggesting headings to tables, including units.
- Designing results tables with increasing independence with consideration of variables where applicable.

Analysing and drawing conclusions

- Using identified patterns to predict new values or trends.

ENRICHMENT:

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Visits: -

Previous Learning:

Future Learning:

The children will go on to answer questions about how can we separate materials (Chemistry) and how we can vary circuits (Physics)?

School Drivers to Examine

Children will look at:

- **Economy and Power** = how is the development of space investigation linked to political power?
- **Creativity and Innovation** = how have we developed satellites to support the Earth?
- **Care of the Environment** = how can we support the clean up of space junk?