

Topic Name	Earth and Space
Big Question	Could we send a human to Mars?
Scientists to use as examples	Maggie Aderin Pocock, Margaret Hamilton, Stephen Hawking, Neil Armstrong
Key Knowledge	<ul style="list-style-type: none"> • describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky <p>Pupils should be introduced to a model of the sun and Earth that enables them to explain day and night. Pupils should learn that the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).</p> <p>Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.</p> <p>Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.</p>
Key investigational skills	<p>Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p> <p>Measuring shadows at regular time intervals, using a compass to establish their direction.</p> <p>What will happen to the length of shadows as the day progresses? Can I explain how the length of shadows and day/night are linked to the Earth's rotation?</p> <p>Recording data: Do I understand the position of the Earth and other planets in the Solar System?</p> <p>Exchanging facts about the solar system in a game.</p>

	<p>Presenting findings from an enquiry: Discuss and explore available evidence in books and clips which show us how the Moon moves, then present findings.</p> <p>Identify evidence to support/refute arguments: Children explore theories about the shape of the Earth, Moon and Sun. Compare older belief systems with recent evidence. and decide which is more reliable. Which is more reliable? Why?</p>
Vocabulary	Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit
Prior learning – what children should know	<p>Explore the natural world around them. (Reception – Earth and space) • Describe what they see, hear and feel whilst outside. (Reception – Earth and space) • Observe changes across the four seasons. (Y1 - Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)</p>
Future learning – next time they will be learning	<p>Gravity force, weight = mass x gravitational field strength (g), on Earth $g=10 \text{ N/kg}$, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only). (KS3) • Our Sun as a star, other stars in our galaxy, other galaxies. (KS3) • The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. (KS3) • The light year as a unit of astronomical distance. (KS3)</p>
Visits	<p>Planetarium</p> <p>Hadleigh observatory club</p>
Book links	<p>Dr Maggie's Grand Tour of the Solar System</p> <p>Dr Maggie Aderin-Pocock</p> <p>https://www.youtube.com/watch?v=Lo5hVlhSL4o</p> <p>Man on the Moon</p> <p>Simon Bartram</p>