

Year 5 Earth and Space

Expected	Do not need to report GD at KS2 but these are some ideas for extending children's understanding.
<ul style="list-style-type: none"> ● knows that the Sun is a star ● knows that the Sun is at the centre of the solar system ● knows the names of the eight planets in the solar system ● knows that the Earth and the other planets in the solar system orbit the Sun ● knows the order (distance from Sun) of the eight planets in the solar system ● knows that it takes 365¼ days for Earth to orbit the Sun ● recognises that it is dangerous to look at the Sun, even when wearing sunglasses ● knows that a moon orbits a planet (not a star) ● knows that one moon orbits the Earth ● knows that it takes 29.5 days for Earth's Moon to orbit the Earth ● describes the Sun, Earth and Moon as being similar to a ball in shape and knows that the term for this shape is spherical ● names other items that are spherical or approximately spherical ● knows that the Earth spins on its own axis whilst it orbits the Sun ● knows that it takes one day (24 hours) for the Earth to make a complete rotation on its own axis ● explains the Earth's axis as an imaginary line passing through the North and South Poles ● explains that when it is light on one side of the Earth, it is dark on the other (because the side of the Earth where it is dark is facing away from the Sun and vice versa) ● explains why it appears that the Sun moves across the sky and knows that this is caused by the rotation of the Earth ● knows that the Sun (appears to) rise in the east and set in the west (approximately) 	<ul style="list-style-type: none"> ● knows that the planets take a different amount of time to orbit the Sun ● knows that planets orbiting the Sun travel at different speeds ● knows how long it takes planets in the solar system to orbit the Sun (other than Earth) ● describes the conditions on the planets ● explains an eclipse – lunar or solar ● explains what a leap year is ● describes the Moon as Earth's natural satellite ● knows that although the Moon rotates on its own axis we only see one face of the Moon from Earth, because the Moon's rotational period is exactly the same as its orbital period ● knows about the phases of the Moon ● knows that planets other than Earth have moons, e.g. the four moons of Jupiter ● describes the Earth and the Moon as spheroid (almost spherical) whereas the Sun is very nearly a perfect sphere ● knows that although the Sun, Earth and Moon are all approximately spherical in shape, they are very different in size ● knows that the Sun, the Moon, the planets, and the stars all (appear to) rise in the east and set in the west because Earth spins toward the east, in an anticlockwise direction ● describes the difference between geocentric and heliocentric models of the solar system

Enquiry Opportunities

These are suggestions for enquiry activities.
Please ensure that you are covering all types over the year. Focus on one scientific skill per enquiry.
Children do not need to write up each stage of the investigation. Focus on just the skill being taught.

Year 5 Working Scientifically Statements From Insights

- Observes over time, asking pertinent questions about similarities and differences.
- Asks questions surrounding patterns found in data as to why something observed has happened.
- Classifies, groups and presents data in a series of ways to help in answering questions.
- Takes measurements, using a range of scientific equipment, with increasing accuracy and precision.
- Use secondary sources to help interpret results seen.

Identifying and Classifying	Comparative Testing	Fair Testing	Pattern Seeking	Research	Observation Over Time
How can you organise all the objects in the solar system into groups?	How does the length of daylight hours change in each season?	How does the speed/size of a meteorite affect the size of the moon crater formed?	Is there a pattern between the size of a planet and the time it takes to travel around the Sun?	Generate questions to research about Earth and Space E.g What unusual objects did Jovcelyn Bell Burnell discover? How do astronomers know what stars are made of? How and why have our ideas about the solar system changed over time? How is the astronomer and planetary scientist Sara Seager changing our ideas about the universe?	Can you observe and identify all the phases in the cycle of the Moon?

Prior Knowledge	Previous Lesson Topics	
<ul style="list-style-type: none"> ● Understand changes in weather patterns and seasons. ● Compare how things move on different surfaces. ● Notice that some forces need contact between two objects, but magnetic forces can act at a distance. ● Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	N/a	
	Year 5 National Curriculum Statements	Future Learning
	<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 ● Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	In KS3 children will learn about: <ul style="list-style-type: none"> ● 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) ● Our Sun as a star, other stars in our galaxy, other galaxies ● The seasons and the Earth's tilt, day length at different times of year, in different hemispheres the light year as a unit of astronomical distance
	Year 5 Insight Statements	
<ul style="list-style-type: none"> ● Describes the movement of the Earth, and other planets, relative to the Sun in the solar system. ● Describes the Sun, Earth and Moon as approximately spherical bodies. ● Describes the movement of the Moon relative to the Earth. 		

	<ul style="list-style-type: none"> • Uses the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. 		
Common Misconceptions	Competitions	Scientists	Books
<p>Some children may think:</p> <ul style="list-style-type: none"> • the Earth is flat • the Sun is a planet • the Sun rotates around the Earth • the Sun moves across the sky during the day • the Sun rises in the morning and sets in the evening • the Moon appears only at night • night is caused by the Moon getting in the way of the Sun or the Sun moving further away from the Earth. 	<p>Borrow Moon Rocks https://www.surveymonkey.co.uk/r/S6ZKB6B World Space Week Competition https://www.worldspaceweek.org/</p>	<p>Required: Cellia Payne-Gaposchin - discovered the atom and what the sun is made of</p> <p>Suggested: Claudius Ptolemy and Nicolaus Copernicus - Heliocentric vs Geocentric Universe Caroline Herschel - astronomer - found the first comet Maggie Aderin-Pocock - space scientist Margaret Hamilton - computer scientist for the moon landings Stephen Hawking - black holes Mae Jemison – astronaut Neil Armstrong- first man on the Moon Helen Sharman- GB astronaut Valentina Tereshkova - cosmonaut Tim Peake - first British ESA astronaut</p>	<p>The Skies Above My Eyes (Charlotte Guillain & Yuval Zommer) George's Secret Key to the Universe (Lucy and Stephen Hawking with Christophe Galfard) The Way Back Home (Oliver Jeffers)</p>
Vocabulary		School Resources	Cross-curricular Links

<p>Year 5: Earth, planets, Sun, solar system, Moon, celestial body, sphere/ spherical, rotate/ rotation, spin, revolve, night and day, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, dwarf planet, orbit, geocentric model, heliocentric model, shadow clock, sundial, astronomical clock</p>	<p>Blow up Models Globes Torches</p>	<ul style="list-style-type: none"> ● Compare the relative sizes of planets or planets with the sun or our moon will provide opportunities to read large numbers and also to explore ratios. ● Calculate, using a calculator, how long it would take to get to different planets if you were to travel at (an average of) 70 mph. ● Pupils could use a month at a view calendar to plot the phases of the moon using previously recorded data.
	<p>Outdoor Learning and Resources</p>	