

# Physics

## Strand: Earth & Space

### Working Scientifically Drives All of the Substantive Knowledge

NC Objectives	Key Scientific Knowledge	Key Vocabulary	Working Scientifically
<b>Year 5</b>			
To describe the movement of the Earth, and other planets, relative to the Sun in the solar system	<p>To know that the planets orbit stars; that stars are natural, luminous bodies that planets orbit around; that moons orbit planets.</p> <p>To name and sequence the 8 planets in our solar system (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (not Pluto= dwarf planet)</p> <p>To describe the movement of the Earth through space and other planets relative to the sun in the solar system as 'orbiting'; to understand that orbit length/ year on different planets is affected by a range of factors e.g. distance from sun.</p> <p>To identify the time it takes for the Earth to orbit the Sun once as a 'year' (365.25 days)</p> <p>To know that the Earth spins once on its axis which takes 24 hrs (1 'day')</p>	<p>Star, sun, Earth, planet, solar system, moon, orbit, year, axis, spin</p> <p>Model, scale, limitations, research, data, conclusions,</p> <p>Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (dwarf planet- Pluto)</p> <p>Data, evaluation, pattern, relationship, affect</p>	<p>Film clips/ <b>modelling</b> day and night; create diagrams to help explain day and night.</p> <p>Consider the limitations of using <b>models</b> (not to scale, inaccuracies,) but why they can be useful</p> <p><b>Research</b> planetary orbit lengths in comparison with Earth.</p> <p><b>Collect Data/ Research planets &amp; Present Findings/ Conclusions</b> e.g. what are they made from/ atmosphere/ temperatures/ gases/ solids/ distance from Sun/ size, moons etc.</p> <p><b>Data Evaluation/ Pattern seeking</b> Give chn data to research relating to planets. Ask question: do planets all have the same length of 'year'? Can we try and explain this pattern?</p> <p><b>Research</b> the work of Galileo (Earth orbiting Sun); also consider looking into his prosecution/ house arrest of Galileo for his heliocentric theories. And why might he now be called the 'Father of Modern Science'?</p>

	To identify the Earth's rotation/ spinning on its axis and its position in relation to the sun as the explanation of day/ night.		<b><i>(Identify scientific evidence that has been used to support/refute ideas or arguments).</i></b>
To describe the movement of the Moon relative to the Earth	To describe the movement of the Moon relative to the Earth as orbiting and know that it takes approx. 28 days.  To be able to identify the phases of the moon (the different shapes we see) as evidence as the Moon orbiting our planet and it not being 'fixed' in one point.	Moon, orbit, planet, phase,	Explore moon phases/ shapes and position of our Moon in relation to Earth (modelling/ investigating Moon diary data).  <b>Chn use diagrams/ videos/ models</b> to help understand how we see the moon in different phases and they begin to explain verbally how this occurs based on the relative positions of the Sun, Earth and Moon.
To describe the Sun, Earth and Moon as approximately spherical bodies	To know that the Sun, Earth and Moon are spherical/ spheres.	Sphere, spherical, planet, star, moon	<b>Model</b> spherical bodies using playdough/ clay to represent the Sun/ Moon/ Earth (understanding that there are significant issues modelling relative scales).
To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	To be able to explain how day and night occur (as a result of the Earth spinning on its axis) and link this to the apparent movement of the Sun across the sky.	Day, night, spin, axis, apparent,	<b>Make observations</b> about the Sun's position in the Sky at different times of day, and begin to explain why we think the Sun is moving  <b>Pattern-seeking</b> ( e.g. look at data for different times of the year/ location of the sun in the sky; what do we notice? The Sun seems to rise in the earlier part of the day until....) or investigating length of 'day' in Northern hemisphere in Summer vs. Winter.