

Meden School Curriculum Planning							
Subject	Physics	Year Group	7	Sequence No.	1	Topic	Solar System

Retrieval	Core Knowledge	Student Thinking
What do teachers need <b>retrieve</b> from students before they start teaching <b>new content</b> ?	What <b>specific ambitious knowledge</b> do teachers need teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to <b>development of our students thinking, encouraging them to see the inequalities around them</b> and 'do something about them!'
<p><b>KS2:</b> There are 8 planets in our solar system with the Sun in the centre. The Sun is a star which gives out a massive amount of heat and light.</p> <p>The planets and the Sun are spherical and the planets move around the Sun in roughly spherical orbits.</p> <p>The Moon is also spherical and it orbits the Earth. It takes roughly 28 days to orbit the Earth. The Moon looks bright because it reflects light from the Sun. The Moon appears like it changes shape.</p> <p>The Earth takes 24 hours to spin on its axis. The side which faces the Sun is daytime, the side which faces away from the Sun is night-time. The Earth's axis is slightly tilted.</p> <p>The Sun appears to move across the sky during the day, this is because the Earth rotates.</p>	<p><b>L1:</b> The Earth is shaped like a <b>sphere</b>. It gets its <b>light</b> and <b>heat</b> from the Sun. The Earth <b>spins</b> on an imaginary line running through the North Pole and South Pole called its <b>axis</b>. It takes <b>24 hours</b> to complete 1 revolution on this axis. At any one time half the Earth is lit up by the Sun and the other half is in shadow. It is <b>daytime</b> in the half that is lit up and <b>night-time</b> in the half that is in shadow. The Earth orbits the Sun in an <b>elliptical</b> shape. The time taken for any planet to orbit the Sun is known as a <b>year</b>. An Earth year lasts <b>365.25 days</b>.</p> <p><b>L2:</b> The <b>Equator</b> is an imaginary line that runs around the centre of the Earth. It divides the Earth into the <b>Northern Hemisphere</b> and <b>Southern hemisphere</b>. The Earth's axis is tilted at <b>23.4°</b> from vertical. As the Earth moves round its orbit the hemisphere that is tilted towards the Sun changes. When the Northern hemisphere is tilted towards the Sun the UK experiences <b>Summer</b>. When the Northern hemisphere is tilted away from the Sun the UK experiences <b>Winter</b>. Summer is warmer than winter because the Sun's rays are <b>concentrated over a smaller area</b>.</p> <p><b>L3:</b> A <b>satellite</b> is any object that orbits a planet. A <b>natural satellite</b> is a satellite that is not manmade. The <b>Moon</b> is the Earth's only natural satellite. The Moon is made of rock, was formed slightly after the Earth and its surface is covered with <b>craters, pits and scars</b>. The Moon was formed when another planet collided with the Earth. The Moon is visible because it <b>reflects</b> sunlight. It orbits the Earth once every <b>29.5 days</b>.</p> <p><b>L4:</b> When none of the Moon is illuminated this is a <b>New Moon</b>; between 0 and 50% a <b>crescent</b>; 50% a <b>Half or Quarter</b>; between 50% and 100% a <b>gibbous</b> and when the Moon is fully illuminated it is a <b>Full Moon</b>. The part of the cycle where the Moon size appears to increase, we say the Moon is <b>waxing</b>. The part of the cycle where the Moon size appears to decrease, we say the Moon is <b>waning</b>. The tides are caused by the <b>gravitational pull</b> of the Moon and the <b>centrifugal force</b> caused by the Earth's rotation.</p> <p><b>L5:</b> Data analysis <b>GPA</b> task. There are 2 types of orbit that satellites can be put into, a <b>geostationary orbit</b> or a <b>polar orbit</b>.</p>	<p>L3: What do students know about the Apollo missions? Why have only men walked on the Moon? Will this change the next couple of decades with the advent of the 'Silicon valley space race'?</p> <p>Should countries be spending billions of pounds sending people into space when people are starving here on Earth.</p>

**L6:** An eclipse occurs any time something passes in front of the Sun, blocking its light. A **Solar eclipse** is when the Moon comes between the Sun and the Earth, casting a **shadow** on the Earth. The darker part of the shadow is called the **Umbra**, the lighter part is called the **Penumbra**. A **Lunar eclipse** is when the Earth comes between the Sun and the Moon, casting a shadow over the Moon.

**L7:** The Sun is a **star** that is approximately **4.5 billion years old**. It consists mainly of 2 elements, **Hydrogen** and **Helium**. It gets its energy through a process known as **nuclear fusion**. The Sun is at the centre of the Solar system and is orbited by **8 planets**; various dwarf planets; asteroids and comets. An object is classed as a planet if it orbits the Sun in a near circular orbit; has sufficient mass to be round and is not a satellite of another object. Two moons of Jupiter are important for scientists to study. **Io** is the most volcanically active object in the Solar System and provides an example of what Earth would have been like in its first billion of years of existence. **Europa** is an ice-covered moon, that may contain a water ocean below its surface – this could be harbouring primitive life and the best chance of finding life in our solar system.

**L8:** The **inner solar system** comprises the planets, **Mercury, Venus, Earth and Mars**. These are all **small, rocky** objects, with surfaces that you could walk on. They show signs of volcanic activity and have relatively few moons. The **outer solar system** comprises the planets, **Jupiter, Saturn, Uranus and Neptune**. These are **large, gaseous** objects with no recognisable surface. They have a large number of moons and have ring systems orbiting them. **Bar chart** drawing skills.

**L9:** To draw a **scale drawing** the size of the drawing is given by the **objects actual size ÷ scale**.

Calculations of scale for size of planets and distances from the Sun

**L10:** The inner planets are **tiny** compared to the outer planets. The inner planets are extremely **close together** and very close to the Sun. The outer planets are much **further away** from the Sun and spread out from each other.

**L11:** Revision lesson.