

TERM	1	2	3	4	5	6
<p><b>Topic Title (Threshold Concept)</b></p> <p><b>NC Reference</b></p>	<p><b>Forces (Movement, Forces and Magnets)</b> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p><b>Earth and Space (Earth in Space)</b> 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>	<p><b>Properties &amp; Changes of Materials (Substances and properties)</b> Compare and group together everyday materials on the basis of their properties, know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Demonstrate that dissolving, mixing and changes of state are reversible changes</p>	<p><b>Living Things &amp; Their Habitats (Living Things &amp; Their Habitats))</b> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.</p>	<p><b>Animals inc Humans (Animals &amp; Humans)</b> Describe the changes as humans develop to old age.</p>	
<p><b>Prior learning</b></p>	<p>Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. (Y3 - Forces and magnets)</p>	<p>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>	<p>Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter) • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). (Y4 - States of matter) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Y4 - States of matter)</p>	<p>Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>	<p>Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</p>	
<p><b>Sticky Knowledge</b></p>	<p>A <b>force</b> causes an object to start moving, stop moving, speed up, slow down or change direction. <b>Gravity</b> is a force that acts at a distance. Everything is pulled to the Earth by gravity. <b>Air resistance, water</b></p>	<p>The Sun is a star. It is at the centre of our <b>solar system</b>. There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed</p>	<p>Substances have different uses depending on their <b>properties</b> and <b>state</b> (liquid, solid, gas). Properties include <b>hardness, transparency, electrical and thermal conductivity</b> and attraction to magnets. Some substances will <b>dissolve</b> in a liquid</p>	<p>Most animals <b>reproduce</b> sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals, including humans, have <b>offspring</b> which grow into adults. In humans and some</p>	<p>When <b>babies</b> are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills. At <b>puberty</b>, a child's body changes and develops <b>primary and secondary sexual</b></p>	

	<p><b>resistance and friction</b> are contact forces that act between moving surfaces. A <b>mechanism</b> is a device that allows a small force to be increased to a larger force. The payback is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover. <b>Pulleys, levers and gears</b> are all mechanisms, also known as simple machines.</p>	<p>orbits. Earth takes 365¼ days to complete its <b>orbit</b> around the Sun. The Earth <b>rotates</b> (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). As the Earth rotates, the Sun appears to move across the sky. The Moon <b>orbits</b> the Earth. It takes about 28 days to complete its orbit. The Sun, Earth and Moon are approximately <b>spherical</b>.</p>	<p>and form a <b>solution</b> while others are <b>insoluble</b> and form <b>sediment</b>. <b>Mixtures</b> can be separated by <b>filtering, sieving and evaporation</b>. Some changes to materials such as dissolving, <b>mixing</b> and <b>changes of state</b> are <b>reversible</b>, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new substances and these are <b>not reversible</b>.</p>	<p>animals, these offspring will be born alive and then grow into adults. In other animals, such as chickens or snakes, there may be <b>eggs</b> laid that <b>hatch</b> to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a <b>metamorphosis</b>. Plants reproduce both <b>sexually and asexually</b>. Bulbs, tubers, runners and plantlets are examples of <b>asexual plant reproduction</b> which involves only one parent. <b>Sexual reproduction</b> occurs through <b>pollination</b>, usually involving wind or insects.</p>	<p><b>characteristics</b>. This enables the adult to <b>reproduce</b>. This needs to be taught alongside PSHE.</p>
<p><b>Working Scientifically</b></p> <p>(These are suggested WS areas that complement unit - also refer to and highlight WS milestones as cover and ensure all covered over year/phase)</p>	<p><b>Identify, classify and group</b> Identify and classify gears, levers and pulleys</p> <p><b>Comparative and fair testing</b> Investigate the effects of friction, air and water resistance on objects and speed</p>	<p><b>Pattern Seeking</b> Investigate how the planet's temperatures change according to their distance from the sun Explain evidence gathered about the position of shadows in term of the movement of the Earth and show this using a model</p> <p><b>Secondary Sources</b> Research each planet and find out how far away from the sun. Present in scaled way</p>	<p><b>Identify, classify and group</b> Classify materials according to their properties Classify ways of separating materials Classify which solids dissolve in water Classify reversible and non- reversible changes</p> <p><b>Pattern Seeking</b> Observe and describe reversible and non-reversible changes</p> <p><b>Comparative and fair testing</b> Investigate variables which affect how fast sugar dissolves.</p>	<p><b>Identify, classify and group</b> Classify vertebrates and identify their life cycles Classify flowers according to male and female parts Identify the ways plants reproduce and the reproductive parts of flowers which differ from plant to plant.</p> <p><b>Pattern Seeking</b> Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth. Look for patterns between the size of an animal and its expected life span.</p>	<p>Taught through direct instruction and in conjunction with PHSE according to RSE policy.</p> <p><b>Pattern Seeking</b> Look for patterns in the main changes occurring from birth to old age</p>
<p>End of unit task</p>	<p><b>Understand movement, forces and magnets</b> How does the height and surface of a ramp affect how the car travels along it?</p>	<p><b>Describe movement of the Earth in relation to the sun</b> Explain and demonstrate how a sundial, used to tell the time, works.</p>	<p><b>Understand how mixtures can be separated</b> Investigate how to extract pure salt from rock salt. Explain findings</p>	<p><b>Describe life process of reproduction in plants and animals</b> Explain the similarities and differences between the process of reproduction in plants and animals, including amphibians, insects and birds as well as mammals.</p>	<p><b>Investigate living things</b> Graph changes in average heights of males and females at different ages. Summarise findings.</p>

