

Science Progression Grid Class 4- 5

Cycle 1

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Electricity (4) Focusing on how appliances use electricity	States of Matter (4) Focusing on solids, liquids and gases	Animals including Humans (4) Focusing on teeth	Earth and Space (5) Focusing on the planets and their location	Properties of materials (5) Grouping and comparing materials	Living things and their habitats (5) Life cycles
Minimum vocabulary shown in bold			Minimum learning is highlighted in yellow		
<p>FOCUS To know the common appliances that run on electricity.</p> <p>Appliances - A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.</p> <p>Electricity - The flow of an electric current through a material, e.g. from a power source through wires to an appliance.</p>	<p>FOCUS To know how to compare and group materials together, according to whether they are solids, liquids or gases;</p> <p>Solids - These are materials that keep their shape unless a force is applied to them. They can be hard, soft or even squashy. Solids take up the same amount of space no matter what has happened to them.</p> <p>Liquids - take the shape of their container. They can change shape but do not change the amount of space they take up. They can flow or be poured.</p> <p>Gases - Gases can spread out to completely fill the container or room they are in. They do not have any fixed shape but they do have a mass.</p>	<p>FOCUS To know and identify the different types of teeth in humans and their simple functions.</p> <p>Teeth - Hard structures in the mouth that help with biting and chewing food.</p> <p>Function – What something actually does.</p>	<p>FOCUS To know the planets in order.</p>	<p>FOCUS To know, compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Hardness - the ability to withstand impact, without damage.</p> <p>Transparency - A transparent object lets light through so the object can be looked through, for example glass or some plastics.</p> <p>Solubility –the ability to be dissolved in a liquid.</p> <p>Conductivity - a measurement that determines a material's ability to transport an electric charge</p>	<p>FOCUS To know the life cycle of different mammals</p> <p>Life cycle – The journey of changes that take place throughout the life of a living thing including birth, growing up and reproduction.</p> <p>Mammals - humans and all other animals that are warm-blooded vertebrates (vertebrates have backbones) with hair.</p>

				Thermal – relating to or caused by heat.	
<p>To know the differences between mains and battery power.</p>	<p>To know / 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);</p> <p>Heat – a form of energy that moves from hot objects to cooler objects.</p> <p>Cooled – the process of becoming cooler and dropping in temperature.</p> <p>Change state – to go from one of the states of matter (solid, liquid or gas) to a different form (solid liquid or gas).</p>	<p>To know and understand how to keep teeth healthy.</p>	<p>To know the movement of the Earth and other planets relative to the Sun in the solar system;</p> <p>Earth – It is a round body that spins around in space and travels around the Sun. It is the only planet that can support life.</p> <p>Planets – A large object, round or nearly round, that orbits a star.</p> <p>Solar system – The collection of eight planets and their moons in orbit round the sun, together with smaller bodies in the form of asteroids, meteoroids, and comets.</p> <p>Sun – A huge star that Earth and the other planets in the solar system orbit around.</p>	<p>To be able to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic;</p>	<p>To know the differences in the life cycles of a mammal and a bird (hatch, eggs, nest, frogspawn)</p> <p>Mammals - humans and all other animals that are warm-blooded vertebrates (vertebrates have backbones) with hair.</p> <p>Birds – These are warm bloodied animals who can maintain their own body temperature. Birds lay eggs and have feathers. Many birds can fly, but not all can.</p>
<p>To know how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Simple series circuit - A circuit where the components are connected in a loop. Electricity flows through each component in a single pathway.</p>	<p>RECAP</p> <p>To know and identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>To know how to construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Food chains – A series of organisms each dependent on the next as a source of food.</p>	<p>To know the movement of the Moon relative to the Earth.</p> <p>Moon – A natural satellite which orbits Earth or other planets.</p>	<p>To know and explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<p>RECAP</p> <p>To know the differences in the life cycles of an amphibian and an insect by exploring complete and incomplete metamorphosis.</p>

<p>To know whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>Circuit - A pathway that electricity can flow around. It is based around wires and a power supply. Examples of components (parts) you can add in to a circuit are bulbs, switches, buzzers and motors.</p> <p>Battery - A device that stores electrical energy as a chemical. Two or more cells joined together form a battery.</p>		<p><u>RECAP</u></p> <p>To know how to demonstrate and explain the process of digestion.</p>	<p><u>RECAP</u></p> <p>To know the Sun, Earth and Moon as approximately spherical bodies;(orbit, rotates, axis)</p>	<p><u>RECAP</u></p> <p>To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution;</p>	<p>To know the life process of reproduction in some plants and animals.</p>
<p><u>RECAP</u></p> <p>To know that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p>		<p>To know how to describe the simple functions of the basic parts of the digestive system in humans.</p>	<p>To know and understand Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p>To know that we can separate solids, liquids and gases and to decide how mixtures might be separated, including through filtering, sieving and evaporating;</p>	
<p>To know and recognise some common conductors and insulators, and associate metals with being good conductors.</p>				<p>To know that dissolving, mixing and changes of state can be reversible changes or irreversible.</p> <p>Reversible changes – can be reversed, meaning that the original materials can be recovered from the change.</p> <p>Irreversible changes – A change is called irreversible if</p>	

				it cannot be changed back again. In an irreversible change, new materials are always formed.	
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One lesson of each half term is about the Scientist named below, children to investigate the scientist and why they are famous. Children to know about the different types of scientists and what they study- Botanist, Palaeontologist, Astronomer, Seismologist, Hydrologist, Zoologist, Audiologist

Scientist Focus: Thomas Edison	Scientist Focus: Albert Einstein	Scientist Focus: Pierre Fauchard	Scientist Focus: Zhang Heng	Scientist Focus: Charles McIntosh- waterproof	Scientist Focus: Jane Goodall- animal and human behaviour
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Disciplinary knowledge

Pupils might work scientifically by observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some cannot be used to connect across a gap in a circuit.	Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They might also observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.	Pupils might work scientifically by: comparing the teeth of carnivores and herbivores and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.	Pupils might work scientifically by: carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' They might compare materials in order to make a switch in a circuit.	Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.
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Some key words will appear more than once which is deliberate across the progression grids as the children are consolidating their learning in different year groups. They will constantly be revisiting learning and embedding their understanding in the subject using key words.