

Science Medium Term Plan – 2021/2022

Year 3	<p>Light</p> <p>Forces and Magnets</p> <p>Rocks</p> <p>Plants</p> <p>Animals – Nutrition; Skeletons and Muscles</p>
Year 4	<p>Sound</p> <p>States of Matter</p> <p>Electricity</p> <p>Living Things and their Habitats – Classification; Environmental Change</p> <p>Animals – Digestion; Teeth; Food Chains</p>
Year 5	<p>Properties and Changes of Materials</p> <p>Forces</p> <p>Earth and Space</p> <p>Living Things and their Habitats – Life Cycles; Reproduction</p> <p>Animals – Humans develop to old age</p>
Year 6	<p>Light</p> <p>Electricity</p> <p>Evolution and Inheritance</p> <p>Living Things and their Habitats – Classification</p> <p>Animals – Human Circulatory System; Diet, Exercise, Drugs; How nutrients and water are transported within animals</p>



Year 3	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>• recognise that they need light in order to see things and that dark is the absence of light</li> <li>• notice that light is reflected from surfaces</li> <li>• recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>• find patterns in the way that the size of shadows change <ul style="list-style-type: none"> <li>• There must be light for us to see. Without light it is dark.</li> <li>• We need light to see things, even shiny things.</li> <li>• Shiny materials reflect beams better than non-shiny materials.</li> <li>• Beams of light bounce off some materials (reflection).</li> <li>• Transparent materials let light through them and opaque materials don't let light through.</li> <li>• Light comes from a source.</li> </ul> </li> </ul>
Year 3	<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>• notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li> <li>• observe how magnets attract or repel each other and attract some materials and not others</li> <li>• compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• describe magnets as having 2 poles</li> <li>• predict whether 2 magnets will attract or repel each other, depending on which poles are facing <ul style="list-style-type: none"> <li>• Magnets exert attractive and repulsive forces on each other.</li> <li>• Magnets exert non-contact forces, which work through some materials.</li> <li>• Magnets exert attractive forces on some materials.</li> <li>• Magnetic forces are affected by: magnetic strength, object mass, distance from object, object mass.</li> </ul> </li> </ul>
Year 3	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>• Recognise that soils are made from rocks and organic matter.</li> </ul>

Year 3	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal <ul style="list-style-type: none"> <li>• Seeds and bulbs need the right conditions to germinate. They contain a food store for the first stages of growth (ie until the plant is able to produce its own food.)</li> <li>• Plants make their own food in their leaves to provide them with energy, grow, repair and reproduction.</li> <li>• Leaves absorb sunlight and carbon dioxide through leaves.</li> <li>• Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant.</li> <li>• The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of the plants.</li> <li>• Flowering plants have evolved specific parts to carry out pollination, fertilisation and seed growth.</li> <li>• Seed dispersal improves chances of enough seeds germinating and growing to mature plants.</li> </ul> </li> </ul>
Year 3	<p><b>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement <ul style="list-style-type: none"> <li>• Identify that animals, including humans, need the right types and amounts of nutrient, and they cannot make their own food; they get nutrient from what they eat.</li> <li>• Movable joints connect bones.</li> <li>• Muscles are connected to bones and move them when they contract.</li> <li>• Many animals have skeletons to support their bodies and protect vital organs.</li> </ul> </li> </ul>
Year 3	STEM – supplementary maths focus – blow boxes

Year 4	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases</li> </ul> <ul style="list-style-type: none"> <li>• Sound travel can be blocked.</li> <li>• Sound travels from its source in all directions and we hear it when it travels to our ears.</li> <li>• Sound is produced when an object vibrates.</li> </ul>
Year 4	<p><b>States of Matter</b></p> <ul style="list-style-type: none"> <li>• compare and group materials together, according to whether they are solids, liquids or gases</li> <li>• 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)</li> <li>• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul> <ul style="list-style-type: none"> <li>• Solids, liquids and gases are described by observable properties.</li> <li>• <del>Materials can be divided into solids, liquids and gases.</del></li> <li>• Heating causes solids to melt into liquids and liquids to evaporate to gases.</li> <li>• Cooling causes gases to condense to liquids and liquids to freeze to solids.</li> <li>• <del>The temperature at which given substances change state are always the same.</del></li> </ul>
Year 4	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• identify 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</li> <li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> <ul style="list-style-type: none"> <li>• More batteries will push the electricity round the circuit faster.</li> <li>• Electricity sources push electricity round a circuit.</li> <li>• A source of electricity (mains or battery) is needed for electrical devices to work.</li> <li>• Devices work harder when more electricity goes through them.</li> </ul>

	<ul style="list-style-type: none"> <li>• Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators.</li> <li>• A complete circuit is needed for electricity to flow and devices to work.</li> </ul>
Year 4	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>• recognise that living things can be grouped in a variety of ways</li> <li>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> <ul style="list-style-type: none"> <li>• Environmental change affects different habitats differently.</li> <li>• Different organisms are affected differently by environmental change.</li> <li>• Different food chains occur in different habitats.</li> <li>• Living things can be divided into groups based upon their characteristics.</li> <li>• Human activity significantly affects the environment.</li> </ul>
Year 4	<p><b>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul> <ul style="list-style-type: none"> <li>• Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood takes nutrients around the body.</li> <li>• Nutrients produced by plants move to primary consumers then to secondary consumers through food chains.</li> <li>• Different animals are adapted to eat different foods.</li> <li>• Animals have teeth to help them eat.</li> <li>• Different types of teeth do different jobs.</li> </ul>
	STEM – to help embed the learning from the electricity unit.

Year 5	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>• compare and group together everyday materials on the basis of their properties</li> <li>• know that some materials will dissolve in liquid to form a solution</li> <li>• use knowledge of solids, liquids and gases to decide how mixtures might be separated</li> <li>• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials</li> <li>• demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible</li> </ul>
Year 5	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect <ul style="list-style-type: none"> <li>• Air resistance and water resistance are forces against motion caused by objects having to move air and water out of the way.</li> <li>• Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move.</li> <li>• Friction is a force against motion caused by two surfaces rubbing against each other.</li> </ul> </li> </ul>
Year 5	<p><b>Earth and Space</b></p> <ul style="list-style-type: none"> <li>• describe the movement of the Earth and other planets relative to the sun in the solar system</li> <li>• describe the movement of the moon relative to the Earth</li> <li>• describe the sun, Earth and moon as approximately spherical bodies</li> <li>• use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky <ul style="list-style-type: none"> <li>• Objects like planets, moons and stars spin.</li> <li>• Smaller mass objects like planets orbit large mass objects like stars.</li> <li>• Objects with larger masses exert bigger gravitational forces.</li> <li>• Stars, planets and moons have so much mass they attract other things, including each other, due to a force called gravity. Gravity works over a distance.</li> <li>• Stars produce vast amounts of heat and light. All other objects are lumps of rock, metal or ice and can be seen because they reflect the light of stars.</li> </ul> </li> </ul>
Year 5	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>• describe the life process of reproduction in some plants and animals <ul style="list-style-type: none"> <li>• Environmental change can affect how well an organism is suited to its environment.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Organisms best suited to their environment are more likely to survive long enough to reproduce.</li> <li>• Competition exists for resources and mates.</li> <li>• Life cycles have evolved to help organisms survive to adulthood.</li> <li>• Different types of organism have different life cycles.</li> </ul>
Year 5	<p><b>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age</li> </ul> <ul style="list-style-type: none"> <li><del>• The heart pumps blood around the body.</del></li> <li><del>• Oxygen is breathed into the lungs where it is absorbed by the blood.</del></li> <li>• Different animals mature at different rates and live to different ages.</li> <li><del>• Muscles need oxygen to release the energy from food to do work.</del></li> <li><del>• Oxygen is taken into the blood in the lungs.</del></li> <li><del>• The heart pumps blood through blood vessels to the muscles.</del></li> <li><del>• The muscles take the oxygen and nutrients from the blood.</del></li> </ul>
Year 5	STEM – wind turbine project

Year 6	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>• recognise that light appears to travel in straight lines</li> <li>• use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</li> <li>• explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</li> <li>• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them <ul style="list-style-type: none"> <li>• Animals see objects when light is reflected off that object and enters their eyes.</li> <li>• Animals see light sources when light travels from the source into their eyes.</li> <li>• Light reflects off all objects <del>(unless they are black)</del>. Non-shiny surfaces scatter the light so we do not see a single beam.</li> <li>• Light travels in straight lines.</li> </ul> </li> </ul>
Year 6	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>• use recognised symbols when representing a simple circuit in a diagram <ul style="list-style-type: none"> <li>• Batteries are a store of energy. This energy pushes electricity round the circuit. When the battery's energy is gone, it stops pushing. Voltage measures the push.</li> <li>• The greater the current flowing through a device the harder it works.</li> <li>• Current is how much electricity is flowing round a circuit.</li> <li>• When current flows through wires heat is released. The greater the current, the more heat is released.</li> </ul> </li> </ul>
Year 6	<p><b>Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution <ul style="list-style-type: none"> <li>• Some organisms reproduce sexually where offspring inherit information from both parents.</li> <li>• Some organisms reproduce asexually by making a copy of a single parent.</li> <li>• Organisms best adapted to reproduce are more likely to do so.</li> <li>• Organisms reproduce and offspring have similar characteristics to parents.</li> <li>• Variation exists within a population (between offspring and parents)</li> <li>• Over time the characteristics that are most suited to the environmental become increasingly common.</li> </ul> </li> </ul>



Year 6	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• <del>Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds.</del></li> <li>• <del>Changing the way an object vibrates changes its sound.</del></li> <li>• <del>Changing the shape, size and material of an object will change the sound it produces.</del></li> <li>• <del>Faster vibrations (higher frequencies) produce higher pitched sounds.</del></li> <li>• <del>Sound spreads out as it travels.</del></li> </ul> <p>Sound moves through all materials by making them vibrate.</p>
Year 6	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</li> <li>• give reasons for classifying plants and animals based on specific characteristics</li> </ul>
Year 6	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>
Year 6	<p>STEM – to help embed the learning from the electricity, <del>sound</del> or light unit.</p>