

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

Year 3	<p>Plants</p> <ul style="list-style-type: none"> • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • 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 • investigate the way in which water is transported within plants • 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"> • 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.) • Plants make their own food in their leaves to provide them with energy, grow, repair and reproduction. • Leaves absorb sunlight and carbon dioxide through leaves. • Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant. • The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of the plants. • Flowering plants have evolved specific parts to carry out pollination, fertilisation and seed growth. • Seed dispersal improves chances of enough seeds germinating and growing to mature plants.
Year 3	<p>Animals, including humans</p> <ul style="list-style-type: none"> • 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement <ul style="list-style-type: none"> • 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. • Movable joints connect bones. • Muscles are connected to bones and move them when they contract. • Many animals have skeletons to support their bodies and protect vital organs.
Year 3	STEM – supplementary maths focus – blow boxes

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

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

Year 5	<p>Properties and changes of materials</p> <ul style="list-style-type: none"> • compare and group together everyday materials on the basis of their properties • know that some materials will dissolve in liquid to form a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible
Year 5	<p>Forces</p> <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Air resistance and water resistance are forces against motion caused by objects having to move air and water out of the way. • Some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move. • Friction is a force against motion caused by two surfaces rubbing against each other.
Year 5	<p>Earth and Space</p> <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Objects like planets, moons and stars spin. • Smaller mass objects like planets orbit large mass objects like stars. • Objects with larger masses exert bigger gravitational forces. • 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. • 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.
Year 5	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Environmental change can affect how well an organism is suited to its environment.

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

Year 6	<p>Light</p> <ul style="list-style-type: none"> • recognise that light appears to travel in straight lines • 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 • 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 • 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"> • Animals see objects when light is reflected off that object and enters their eyes. • Animals see light sources when light travels from the source into their eyes. • Light reflects off all objects (unless they are black). Non-shiny surfaces scatter the light so we do not see a single beam. • Light travels in straight lines.
Year 6	<p>Electricity</p> <ul style="list-style-type: none"> • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • 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 • use recognised symbols when representing a simple circuit in a diagram <ul style="list-style-type: none"> • 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. • The greater the current flowing through a device the harder it works. • Current is how much electricity is flowing round a circuit. • When current flows through wires heat is released. The greater the current, the more heat is released.
Year 6	<p>Evolution and inheritance</p> <ul style="list-style-type: none"> • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • 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"> • Some organisms reproduce sexually where offspring inherit information from both parents. • Some organisms reproduce asexually by making a copy of a single parent. • Organisms best adapted to reproduce are more likely to do so. • Organisms reproduce and offspring have similar characteristics to parents. • Variation exists within a population (between offspring and parents) • Over time the characteristics that are most suited to the environmental become increasingly common.

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