

Science Progression Map

EYFS	I wonder what is special about me?	I wonder who lives in my community?	I wonder what it would be like to live in the artic?	I wonder how I can look after the world?	I wonder what moves?	I wonder who lives in my garden?
Key Vocabulary	senses, world,	seasons, change, environment, natural	Experiment, test, melt, freeze, change	animals, humans, predator, prey, growth, decay, plant, flower, root, stem, leaf, seed	Float, sink, magnet, magnetic, forces, push, pull	animals, insects, minibeast, pollinate, metamorphosis
	To identify and use my senses (touch, smell, sight, hear, taste).	To notice seasonal changes in my local environment.	<p>To notice seasonal changes around me.</p> <p>To identify and talk about how the weather has changed with the seasons.</p> <p>To know some important scientific processes e.g. changing state of matter (ice)</p>	<p>To know how to look after animals and our environment</p> <p>To know some of the features of my own immediate environment and how they might vary from one another (farm/zoo)</p> <p>To know about the life cycle of a plant and how to care for them.</p> <p>To know about influential figures and how they have had a positive effect on the natural world – David Attenborough. Greta Thunberg.</p>	<p>To explore natural processes e.g.</p> <ul style="list-style-type: none"> - identify objects that float and sink, find objects that are magnetic. - To talk about forces I can feel (push, pull) 	<p>To make observations of living creatures e.g. insects and minibeasts</p> <p>To explain some concepts of growth and life cycles e.g. butterflies</p>
SMSC	SpD-b,c	SpD – b,c	SpD-b, c	SpD-a, b MD-a,b,c	SpD-b,c	SpD-b

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Year 1	Seasonal Changes Autumn - Winter	Everyday Materials	Seasonal Changes Spring - Summer	Animals including Humans	Plants	Scientists and Inventors
Key Vocabulary	Seasons, autumn, winter, weather, daylight	Smooth, bendy, curves, waterproof, absorbent, transparent, opaque	Seasons, spring, summer, weather, daylight	Amphibians, mammals, reptiles, carnivores, herbivores, omnivores	Wild plants, garden plants, weed, deciduous, evergreen	Inventor, scientist, astronaut, biologist, veterinarian (vet)
Substantive Knowledge	<p>There are four seasons each year, autumn, winter, spring and summer.</p> <p>In autumn, the weather begins to get colder. The leaves start to fall from the trees.</p> <p>In winter, the weather is much colder. Sometimes it is cold enough to freeze, leaving frost and ice on the ground. It sometimes snows.</p> <p>In winter, the daytimes are the shortest in the year and the night times are the longest.</p> <p>The weather includes the temperature outside, the wind direction and</p>	<p>Smooth objects have no lumps or bumps.</p> <p>Bendy things can be bent easily into a curved or folded shape.</p> <p>If something is not bendy, it can't be bent easily into a curved or folded shape.</p> <p>If something is waterproof, it keeps water out. It keeps things dry.</p> <p>Not waterproof materials let water in.</p> <p>If something is absorbent, it soaks liquid up. not absorbent If something is not absorbent, it does not soak up liquid.</p>	<p>In Spring:</p> <p>-the weather starts to get warmer.</p> <p>-the leaves begin to grow on the trees and some trees may blossom.</p> <p>-plants begin to grow and you may see baby animals like lambs around.</p> <p>-the daytimes start to get longer.</p> <p>In Summer:</p> <p>-the weather gets hotter.</p> <p>-the daytime is long and the nights are short.</p> <p>-the trees are full of leaves and there are</p>	<p>Amphibians live in the water as babies and on land as they grow older. They have smooth, slimy skin.</p> <p>All birds have a beak, two legs, feathers and wings.</p> <p>Fish live and breathe under water. They have scaly skin, fins to help them swim and they breathe through gills.</p> <p>Mammals are animals that breathe air, grow hair or fur and feed on their mother's milk as a baby.</p> <p>All reptiles breathe air. They have scales on their skin.</p>	<p>A wild plant seed grows where it falls. It doesn't need to be planted or cared for as it grows.</p> <p>Garden plants are plants that people choose to grow in their gardens.</p> <p>Weeds are wild plants that grow in places where people don't want them.</p> <p>A deciduous tree loses its leaves each year.</p> <p>An evergreen tree keeps its green leaves all year round, even in the winter.</p>	<p>Ole Kirk Christiansen invented Lego in 1949.</p> <p>In 1992, Mae Jemison became the first African American woman in space. She was a scientist.</p> <p>George Mottershead founded Chester Zoo in 1931. This zoo was unusual at the time as the animals did not live in cages. They lived in larger enclosures.</p> <p>George James Symons invented his own version of the rain gauge that is still used by meteorologists today.</p> <p>Linda Brown Buck is an American biologist. She discovered that mammals have</p>

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	<p>strength, as well as rain, cloud, snow and sun.</p>	<p>Transparent objects can be seen through.</p> <p>Opaque objects can't be seen through.</p>	<p>lots of flower, bees, butterflies and other insects.</p> <p>Summer has the longest days.</p>	<p>Animals that mostly eat other animals (meat) are carnivores.</p> <p>Animals that only eat plants are herbivores.</p> <p>Animals that eat both plants and other animals are omnivores.</p>		<p>odorant receptors in their noses. This means they can smell over 10,000 different smells. She won the Nobel Prize in 2004.</p>
<p>Disciplinary Concepts</p>	<p>-observe changes across the four seasons.</p> <p>-describe weather associated with the seasons and how day length varies.</p>	<p>-distinguish between an object and the material from which it is made.</p> <p>-identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>-describe the simple physical properties of a variety of everyday materials.</p> <p>-compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>-observe changes across the four seasons.</p> <p>-describe weather associated with the seasons and how day length varies.</p>	<p>-identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>-identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>-describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>-identify, name, draw and label the basic parts of the human body and say which part of the body is</p>	<p>-identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>-identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	

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				associated with each sense.		
SMSC	SpD-a, d MD -b	SpD-b	SpD-a, d MD -b	SpD-b	SpD-b	SpD –a, b, d MD – b SD - c
Working Scientifically	<p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to suggest answers to questions. 					

Year 2	Plants	Use of everyday Materials	Animals Including Humans	Living Things and their Habitats	The Environment	Scientists and Inventors
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Key Vocabulary	Germination, shoot, seed dispersal, nutrition	Materials, suitability, properties	Offspring, live young diet, exercise, germs, hygiene, nutrition	Habitat, microhabitat, coastal, processes, survive	Energy, power, non-renewable, renewable, endangered, extinct, environment, climate, atmosphere, greenhouse gas	Biome, Eden Project, botanist, doctor, germs, turbine, waterproof
Substantive Knowledge	<p>When the conditions are right, the seed soaks up water and swells, and the tiny new plant bursts out of its shell. This is called germination.</p> <p>With out water, seeds and bulbs will not germinate.</p> <p>A shoot grows upwards from the seed or plant to find sunlight.</p> <p>Seed dispersal is when the seeds move away from the parent plant. They can drop to the ground in the plant's fruit or be moved by the wind or animals.</p> <p>Plants make their own food in their leaves using sunlight.</p>	<p>Materials are what objects are made from.</p> <p>Suitability means having the right properties which are right for a specific person.</p> <p>The properties of a material determine its suitability for a particular use.</p> <p>John McAdam was a Scottish engineer who experimented with using new materials to build roads.</p> <p>John Dunlop was a Scottish inventor who invented the air-filled rubber tyre.</p> <p>Charles Macintosh was a Scottish</p>	<p>A life cycle shows the changes living things go through to become an adult.</p> <p>Live young are mammals that have not hatched from an egg.</p> <p>Offspring do or do not look like their adult when they are born.</p> <p>To grow into a healthy adult, we must eat the right types of food in the right amount and exercise (Recognise and understand the Eatwell Guide).</p> <p>Being active and exercising keeps our bodies and minds healthy.</p>	<p>A habitat is the natural place something lives and provides living things with everything they need to survive.</p> <p>A microhabitat is a very small habitat in places like under a rock, under leaves or on a branch.</p> <p>Minibeasts live in microhabitats.</p> <p>Living things move, breathe, sense, grow, make babies, get rid of waste and get their energy from food.</p> <p>Things that are living have all the life processes.</p> <p>Things that are dead were once living.</p>	<p>Our planet provides everything that we and all living things need. We call it our environment.</p> <p>Climate is the average weather conditions over many years. The earth's climate is just right, meaning that we can live on the planet.</p> <p>Climate change is a change in the overall weather and temperature on Earth.</p> <p>Greenhouse gases are special types of gas in the atmosphere.</p> <p>Energy makes everything work.</p>	<p>Tim Smit had the idea to build the Eden Project.</p> <p>Nicholas Grimshaw designed the biomes for the Eden Project.</p> <p>Jane Colden was a botanist. She is thought to be America's first woman botanist.</p> <p>Elizabeth Garrett Anderson was the first woman to qualify as a doctor. She qualified in 1865.</p> <p>Louis Pasteur discovered that germs are living things that can be spread by touch or through the air.</p>

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		inventor and chemist who invented waterproof fabrics in 1818.		<p>They did have all the life processes but don't now.</p> <p>Food chains are one of the ways that living things depend on each other to stay alive.</p>	<p>Electricity, gas and oil are all sources of power.</p> <p>Non-renewable power sources can't be replaced once they have been used.</p> <p>Renewable power sources can be replaced (they will never run out).</p> <p>Being endangered means that scientists think that a type of animal or plant is at risk of becoming extinct.</p>	<p>Charles Macintosh invented the first waterproof fabric.</p> <p>Rachel Carson was a scientist who studied ocean habitats. She discovered that pollution from farms was affecting the oceans and the animals in them.</p> <p>James Blyth invented the wind turbine in 1887. He used it to power the lights in his holiday home.</p>
Disciplinary Concepts	<p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending,</p>	<p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Describe the importance for humans of exercise, eating the right</p>	<p>Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and</p>		

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		twisting and stretching.	amounts of different types of food, and hygiene.	plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		
SMSC	SpD-b	SpD-a, d MD -b	SpD-b	SpD-a, d MD -b	SpD-a, d MD -b	SpD -a, b, d MD - b SD - c
Working Scientifically	<p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to suggest answers to questions. 					

Year 3	Light	Rocks	Forces and Magnets	Plants	Animals Including Humans	Scientists and Inventors
Key Vocabulary	Pupil, retina, shadow, opaque, translucent,	Fossilisation, palaeontology, erosion, permeates,	Magnet, magnetic, magnetic field, poles,	Fertilisation, stamen, carpel (pistil), sepal, pollination,	Nutrients, saturated fats, unsaturated fats, vertebrate,	Seismology, geology, botanist, magma

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	transparent, reflection, reflective, ray	erodes, sediments, Igneous, Sedimentary, Metamorphic, permeable, impermeable	repel, attract, forces, friction	pollinator, germination, seed dispersal	invertebrate, tendons, joints, exoskeleton, hydrostatic skeleton	
Substantive Knowledge	<p>We need light to be able to see things.</p> <p>Light travels in a straight line.</p> <p>When light hits an object, it is reflected,</p> <p>Some surfaces and materials reflect light well and others do not.</p> <p>The pupil is the black part of the eye which lets light in.</p> <p>The retina is the layer at the very back of the eye.</p> <p>Transparent objects let light travel through them easily, meaning that you can see through the object.</p> <p>Translucent objects let light travel through them easily, meaning that you</p>	<p>Fossilisation is the process which fossils are made.</p> <p>Soil is the uppermost layer of the Earth.</p> <p>Erosion is caused when water, wind or ice wears away land.</p> <p>Igneous rock has been formed from magma or lava.</p> <p>Sedimentary rock has been formed by layers of sediment being pressed down hard and sticking together.</p> <p>Metamorphic rock is rock that started out as igneous or sedimentary rock but changed due to being exposed to extreme heat or pressure.</p>	<p>Friction is a force that acts between two surfaces or objects that are moving, or trying to move across each other.</p> <p>The amount of friction created by an object moving over a surface depends on the roughness of the surface and the object, and force between them.</p> <p>Forces will change the motion of an object.</p> <p>North and south poles are found at different ends of a magnet.</p> <p>Repulsion is a force that pushes objects away.</p>	<p>Fertilisation is when the male and female parts of the flower have mixed in order to make seeds for new plants.</p> <p>Petals are the brightly coloured part of the flower that attracts insects to pollinate the plant.</p> <p>The male part of the flower is the stamen and is made up of the anther and filament.</p> <p>The female part of the flower is the carpel (pistil).</p> <p>The sepal is a leaf like structure that protects the flower and petals before they open out.</p>	<p>Skeletons do three important jobs: -protect organs inside the body; -allow movement; Support the body and stop it from falling on the floor.</p> <p>A vertebrate is an animal with a backbone.</p> <p>An invertebrate is an animal without a back bone.</p> <p>Living things need food to grow and to be strong and healthy.</p> <p>Plants can make their own food, but animals cannot.</p> <p>To stay healthy, humans need to exercise, eat a</p>	<p>Joseph Banks introduced 80 species of plants, including the eucalyptus and the banksia, which is named after him.</p> <p>David Douglas The Douglas fir tree is named after this botanist. He also introduced pines and the flowering currant to Britain.</p> <p>Jeanne Baret introduced 70 plants to Europe, including the bougainvillea.</p> <p>Tom Hart Dyke -this plant hunter hunts rare plants such as orchids.</p> <p>Marie Curie was a famous scientist who developed the use of x-rays, which meant</p>

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	<p>can see through the object.</p>	<p>Sediment is natural solid material that is moved and dropped off in a new place by water or wind, e.g. sand.</p>	<p>Attraction is a force that pulls objects together.</p>	<p>Pollination is when pollen is moved from the male anther of a flower to the female stigma.</p> <p>Animals and insects can be pollinators who carry pollen between plants.</p> <p>Seed dispersal is a method of moving seeds away from the parent plant so that the seeds have the best chance of survival.</p>	<p>healthy diet and be hygienic.</p> <p>Animals, including humans, need food, water and air to stay alive.</p>	<p>that a lot more patients could be correctly diagnosed and treated.</p> <p>George Washington Carver came up with more than 100 uses of a peanut so farmers could sell these plants at a higher price. The uses of peanuts included paints, face creams, plastics and medicines.</p> <p>William Smith studied geology and would study the pattern of fossils. He realised that he could tell the age of a rock by looking at fossils.</p> <p>Inge Lehmann was a seismologist and looked at the waves of energy caused by earthquakes. She concluded that the earth has a solid core at the centre</p>
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<p>Disciplinary Concepts</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made from rocks and organic matter.</p>	<p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>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.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem / trunk, leaves and flowers.</p> <p>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.</p> <p>Investigate the way in which water is transported within plants.</p> <p>-Explore that part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>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.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	
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SMSC	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-b	SpD -a, b, d MD – b SD - c
Working Scientifically	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings. 					

Year 4	Living Things and their Habitats	States of Matter	Animals including Humans	Electricity	Sound	Scientists and Inventors
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Key Vocabulary	Classification, specimen, characteristics, organisms, respiration, sensitivity, reproduction, excretion, extinct, deforestation, pollution	Evaporate, condense, precipitation, solids, liquids, gases	Digest, oesophagus, stomach, small intestine, large intestine, rectum, predator, prey, incisor, canine, molar, premolar	Electricity, appliances, circuit, components, electrical conductor, electrical insulator	Vibration, amplitude, pitch, soundproof	Conservationist, endangered species, solar powered, respiration, oxygen
Substantive Knowledge	<p>To stay alive and healthy, all living things need certain conditions that let them carry out the seven life process:</p> <ul style="list-style-type: none"> -Movement -Respiration -Sensitivity -Grow -Reproduction -Excretion -Nutrition <p>Changes to an environment can be natural or caused by humans.</p> <p>An environment contains many habitats and these include areas where there are both living and non-living things.</p> <p>Plants and animals rely on the environment to give them everything they need.</p>	<p>Evaporation occurs when water turns into water vapour.</p> <p>Condensation is when water vapour is cooled down and turns into water.</p> <p>Condensation and evaporation occur within the water cycle.</p> <p>Materials can be one of three states, solids, liquids or gases.</p> <p>Particles in a solid are close together and cannot move.</p> <p>Particles in a liquid are close together but can move around each other easily.</p>	<p>The teeth of an animal are designed to eat different foods depending on the diet of the animal.</p> <p>To help prevent tooth decay:</p> <ul style="list-style-type: none"> -limit sugary food and drink; -brush teeth at least twice a day using fluoride toothpaste; -visit your dentist regularly. <p>The oesophagus is a muscular tube which moves food from the mouth to the stomach.</p> <p>The stomach is an organ in the digestive system where food is broken down with stomach</p>	<p>Electricity is the flow of an electric current through a material.</p> <p>A battery is a device that stores electrical energy as a chemical.</p> <p>A circuit is a pathway that electricity can flow around.</p> <p>Appliances use mains electricity and others have a battery to make them work.</p> <p>A conductor of electricity is a material that will allow electricity to follow through it.</p> <p>Materials that are electrical insulators do not allow electricity to flow through them.</p>	<p>Solids, liquids and gases are made of particles.</p> <p>Sound can travel through solids, liquids and gases.</p> <p>Sound travels as a wave, vibrating the particles in the medium it is travelling.</p> <p>Sound cannot travel through a vacuum.</p> <p>Sound is a type of energy.</p> <p>Sounds are created by vibrations. The louder the sound, the bigger the vibration.</p> <p>The size of the vibration is called the amplitude.</p>	<p>Gerald Durrell was a conservationist who worked hard to save Madagascar's unique plants and animals.</p> <p>Alexander Graham Bell was a Scottish scientist and inventor. His most famous invention was the first telephone.</p> <p>James West and Gerhard M. Sessler invented an efficient microphone which is used in most modern phones.</p> <p>Maria Telkes was a famous scientist who made a lot of discoveries around solar power.</p> <p>Garrett Morgan was an American</p>

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	<p>Animals can be grouped in lots of different ways based upon their characteristics.</p> <p>A particular plant or animal that scientists study to find out about its species is known as a specimen.</p>	<p>Particles in a gas are spread out and can move around very quickly in all directions.</p> <p>When water and other liquids reach a certain temperature, they change state into a solid or gas. The temperatures that these changes happen at are called the boiling, melting or freezing point.</p>	<p>acid and by being churned around.</p>	<p>Materials can be tested in a circuit to see if they are electrical conductors or electrical insulators.</p>	<p>Pitch is a measure of how high or low a sound is.</p>	<p>inventor, famous for inventing the first modern gas mask and the first three-signal traffic lights.</p> <p>Antoine Lavoisier and Joseph Priestley These two scientists were mainly responsible for the discovery of oxygen.</p> <p>Lewis Howard Latimer played an important role in the development of the modern lightbulb. He improved on others' inventions to produce a lightbulb with a carbon filament.</p> <p>Thomas Edison's inventions made it possible for people to enjoy the benefits of electricity.</p> <p>Washington Sheffield was an American dentist and he was famous for inventing the first</p>
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						<p>modern toothpaste in a tube.</p> <p>Lord Kelvin William Thomson, who is better known as Lord Kelvin, determined the temperature of absolute zero (the coldest possible temperature).</p>
Disciplinary Concepts	<p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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>Identify the part played by evaporation and condensation in the water cycle and associate the rate of</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans and their simple functions.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit and</p>	<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p>	

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		evaporation with temperature.		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.	Recognise that sounds get fainter as the distance from the sound source increases.	
SMSC	SpD-a, d MD -b	SpD-a, d MD -b	SpD-b	SpD-a, d MD -b	SpD-a, d MD -b	SpD -a, b, d MD - b SD - c
Working Scientifically	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings. 					

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Year 5	Living Things and their Habitats	Earth and Space	Forces	Properties and Change of Materials	Animals Including Humans	Scientists and Inventors
Key Vocabulary	Asexual reproduction, fertilise, gestation, metamorphosis, pollination, reproduction, sexual reproduction, amphibians	Orbit, rotate, axis, geocentric model, heliocentric model, astronomer, satellite, spherical bodies	Friction, air resistance, water resistance, buoyancy, streamlined, mechanism, upthrust	Evaporating, condensing, conductor, insulator, transparency, solubility, irreversible, dissolving	Fertilisation, prenatal, gestation, reproduce, asexual reproduction, sexual reproduction, adolescence, puberty, menstruation life expectancy	Biology, chemistry, chromatography, DNA, geology, naturalist, physicist
Substantive Knowledge	<p>Reproduction is the process of new living things being made.</p> <p>Humans develop inside their mothers and are dependent on their parents for many years until they are old enough to look after themselves.</p> <p>Amphibians such as frogs are laid in eggs then once hatched, go through many changes until they become an adult.</p> <p>Metamorphosis is an abrupt and obvious change in the structure of an animal's body and their behaviour.</p>	<p>The moon orbits Earth in an oval-shaped path while spinning on its axis.</p> <p>Mercury, Venus, Earth and Mars are rocky planets that are mostly made up of metal and rock.</p> <p>Jupiter, Saturn, Uranus and Neptune are mostly made up of gases (helium and hydrogen) although they do not have cores made up of rock and metal.</p> <p>Pluto used to be considered a planet but was reclassified</p>	<p>Friction is a force that acts between two surfaces or objects that are moving, trying to move, across each other.</p> <p>Air resistance is a type of friction caused by air pushing against any moving object.</p> <p>Water resistance is a type of friction caused by water pushing against any moving object.</p> <p>Mechanisms are simple machines with moving parts</p>	<p>Different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency.</p> <p>A conductor is a material that heat or electricity can easily travel through.</p> <p>An insulator is a material that does not let heat or electricity travel through.</p>	<p>Fertilisation is where male and female sex cells fuse together.</p> <p>Adolescence is the social and emotional stage of development between childhood and adulthood.</p> <p>Reproduce is to produce young.</p>	<p>David Attenborough is a wildlife filmmaker and naturalist who has written and presented many popular documentaries about animals and their behaviour. He has been on TV for over 60 years and is recognised all over the world.</p> <p>Eva Crane was a physicist who became interested in bees' behaviour and their life cycle. She studied bees all around the world and wrote many books about her</p>

Science Progression Map

	<p>Pollination is the transfer of pollen to a stigma to allow fertilisation.</p> <p>Some living things, such as plants, contain both the male and female sex cells.</p> <p>Mammals use sexual reproduction to produce their offspring.</p> <p>Most plants contain both the male sex cell (pollen) and female sex cell (ovules), but most plants can't fertilise themselves.</p>	<p>as a dwarf planet in 2006.</p>	<p>that change input forces and movement into a set of useful output forces.</p> <p>Examples of mechanisms are pulleys, gears or leavers.</p> <p>Mass is how much matter is inside an object. It is measured in kilograms(kg).</p> <p>Weight is how strongly gravity is pulling and object down. It is measured in newtons (N).</p> <p>The Earth's gravitational pull is the pull that Earth exerts on an object, pulling it towards Earth's centre.</p> <p>It is Earth's gravitational pull which keeps us on the ground.</p>	<p>A transparent object lets light through so the object can be looked through.</p> <p>Irreversible changes often result in a new product being made from old materials (reactants).</p> <p>Materials that will dissolve are known as soluble. Materials that won't dissolve are known as insoluble. A suspension is when particles don't dissolve.</p>	<p>discoveries. The Eva Crane Trust was set up to further understand the life of bees across the world.</p> <p>Stephanie Kwolek While trying to find a lighter material for car tyres, Stephanie created a very hard, but light, material called Kevlar. This invention was used in cars but also in bulletproof vests and is still used to protect the police and armed forces today.</p> <p>Leonardo da Vinci was known as an expert scientist, inventor, engineer, architect, writer, sculptor and painter. His most famous painting, The Mona Lisa, is thought to be the best known and most visited work of art in the world.</p>
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Science Progression Map

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Science Progression Map

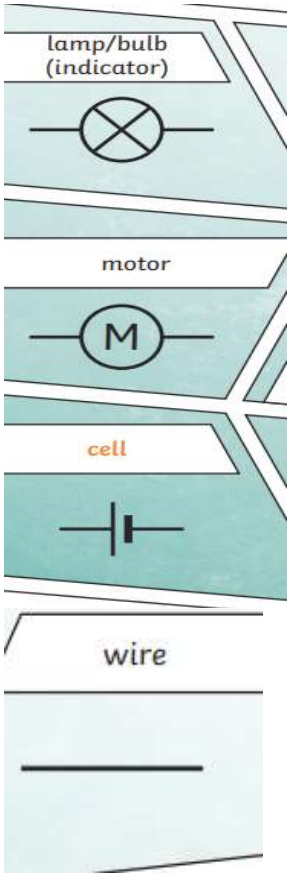
<p>Disciplinary Concepts</p>	<p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>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>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>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>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of</p>	<p>Describe the changes as humans develop to old age.</p>	
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Science Progression Map

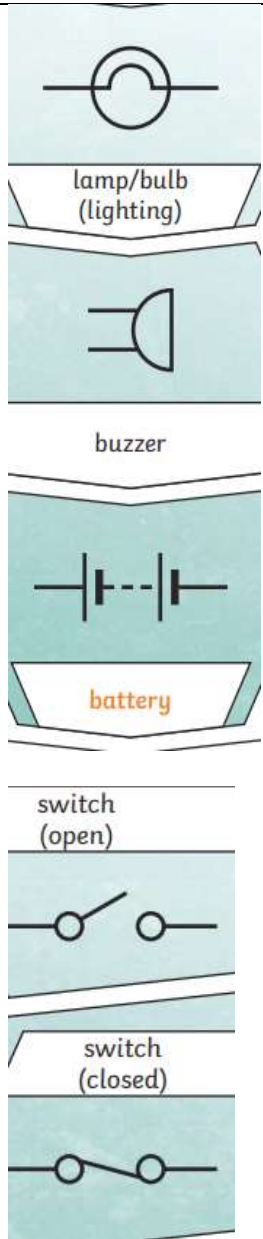
				<p>everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>		
SMSC	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-b	SpD -a, b, d MD - b SD - c
Working Scientifically	<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • using test results to make predictions to set up further comparative and fair tests. • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. • identifying scientific evidence that has been used to support or refute ideas or arguments. 					

Year 6	Animals Including Humans	Light	Evolution and Inheritance	Electricity	Living Things and their Habitats	Scientists and Inventors
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Science Progression Map

Key Vocabulary	Alcohol, nutrients, circulatory system, blood vessels, oxygenated, deoxygenated, arteries, capillaries, veins	Refraction, visible spectrum, prism, transparent, translucent, opaque,	Inheritance, variations, characteristics, adaptation, evolution	Voltage, resistance, electrons	Characteristics, taxonomist, bacteria, microorganism, species, classification	Astrophysicist, black holes, classification, invertebrates, cholesterol, evolution, hominins
Substantive Knowledge	<p>The circulatory system is a system which includes the heart, veins, arteries and blood transporting substances around the body.</p> <p>Capillaries are the smallest blood vessels in the body and it is here that the exchange of water, nutrients, oxygen and carbon dioxide takes place.</p> <p>Arteries carry oxygenated blood away from the heart.</p> <p>Veins carry deoxygenated blood towards the heart.</p> <p>A healthy diet involves eating the right types of nutrients in the right amounts.</p>	<p>Light waves travel out from sources of light in straight lines.</p> <p>Light that is visible to the human eye is made up of a colour spectrum.</p> <p>The law of reflection states that the angle of incidence is equal to the angle of reflection.</p> <p>The angle of reflection is the angle between the normal line and the reflected ray of light.</p> <p>The angle of incidence is the angle between the normal line and the incident ray of light.</p> <p>A shadow is always the same shape as the object that casts</p>	<p>Inheritance is when characteristics are passed on to offspring from their parents.</p> <p>In the same way that there is variation between parents and their offspring, you can see variation within any species and even plants.</p> <p>Characteristics that are influenced by the environment the living things live in are known as adaptive traits.</p> <p>Inherited traits are passed on to offspring from their parents.</p> <p>Natural selection is the process where organisms that are</p>	<p>To recognise the components of a circuit and their symbols.</p>  <p>The diagram shows a circuit with four components: a lamp/bulb (indicator) represented by a circle with an 'X' inside, a motor represented by a circle with an 'M' inside, a cell represented by two parallel lines of unequal length, and a wire represented by a simple horizontal line.</p>	<p>Microorganisms are viruses, bacteria, moulds and yeast. Some animals (dust mites) and plants (phytoplankton) are also microorganisms.</p> <p>Microorganisms are very tiny living things that can only be seen using a microscope. They can be found in and on our bodies, in the air, in water and on objects around us.</p> <p>Scientists, called Taxonomists, sort and group living things according to their similarities and differences.</p> <p>In 1735, Swedish Scientist Carl Linnaeus first published a system</p>	<p>Stephen Hawking was an astrophysicist whose theories, including those concerning black holes, have changed the way we understand the universe.</p> <p>Libbie Hyman was a zoologist who is best known for her work on the classification of invertebrates.</p> <p>Marie Maynard Daly is known for her work on how the heart and circulatory system are affected by sugar and cholesterol.</p> <p>Alexander Fleming is well known for discovering the world's first antibiotic that could be used to treat</p>

Science Progression Map

	<p>Drugs, alcohol and smoking have negative effects on the body.</p> <p>The liquid part of blood contains water and protein. This is called plasma.</p> <p>Regular exercise:</p> <ul style="list-style-type: none"> -strengths muscles including the heart muscle; -improves circulation; -increases the amount of oxygen around the body; -releases brain chemicals which help you feel calm and relaxed; -helps you sleep more easily; -strengths bones. 	<p>it (this is because when an opaque object is in the path of light travelling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling.</p> <p>Shadows can be elongated or shortened depending on the angle of the light source.</p>	<p>better adapted to their environment tend to survive and produce more offspring.</p> <p>Evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years.</p>	 <p>The diagram shows five circuit symbols arranged vertically. From top to bottom: 1. A circle with a horizontal line through its center and a semi-circle on top, labeled 'lamp/bulb (lighting)'. 2. A semi-circle with a horizontal line through its center, labeled 'buzzer'. 3. A battery symbol consisting of four cells (two long, two short) connected in series, labeled 'battery'. 4. An open switch symbol with two terminals and a lever that is not touching, labeled 'switch (open)'. 5. A closed switch symbol with two terminals and a lever that is touching both terminals, labeled 'switch (closed)'.</p>	<p>for classifying all living things. An adapted version of this system is still used today: The Linnaeus System.</p>	<p>illnesses caused by bacteria. He called it penicillin.</p> <p>Mary Leakey discovered many fossils of early hominins and their tools. These fossils provide evidence for the evolution of humans.</p> <p>In 1893, Dr Daniel Hale Williams performed the world's first successful open-heart surgery, without blood transfusions, with unreliable anaesthetic and with no way of stopping the heart from beating while he operated!</p> <p>Steve Jobs was an innovator, inventor and entrepreneur who introduced new technologies to the public. He co-founded the technology</p>
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Science Progression Map

				<p>A battery is a device that stores chemical energy until it is needed. A battery is a collection of cells.</p> <p>Voltage is the force that makes the electric current move through the wires.</p> <p>More batteries or a higher voltage create more power to flow through the circuit.</p> <p>Shortening the wires means the electrons have less resistance to flow through.</p> <p>A circuit that has only one route for the current to take is known as a series circuit.</p> <p>If just one part of this series circuit breaks, the circuit is broken and the flow of current stops.</p>		<p>company, Apple Incorporated, and launched the iPod, iPhone and iPad</p>
Disciplinary Concepts	Identify and name the main parts of the human circulatory system, and describe the functions of	Recognise that light appears to travel in straight lines.	Recognise that living things have changed over time and that fossils provide	Associate the brightness of a lamp or the volume of a buzzer with the number and	Describe how living things are classified into broad groups according to	

Science Progression Map

	<p>the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>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.</p> <p>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.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>voltage of cells used in the circuit.</p> <p>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.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p>	
SMSC	SpD-b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD-a, d MD -b	SpD -a, b, d MD - b SD - c
Working Scientifically	<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • using test results to make predictions to set up further comparative and fair tests. • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. • identifying scientific evidence that has been used to support or refute ideas or arguments. 					

Science Progression Map