



## Science Progression of Knowledge and Skills-EYFS, Key Stage 1 & Key Stage 2

### Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

### The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

### Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals;</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores;</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets);</li> <li>• identify, name, draw and label the basic parts of the human body and say</li> </ul>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• notice that animals, including humans, have offspring which grow into adults;</li> <li>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air);</li> </ul> <p>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Being born and growing:</u> <b>Young, offspring, live young, grow, develop, change, hatch, lay, fly, crawl, talk.</b></li> </ul>	<p><b>Pupils should be taught to:</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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Food groups and nutrients:</u> fibre, fats (<b>saturated and unsaturated</b>), vitamins, minerals.</li> <li>• <u>Skeletons and muscles:</u> skeleton, <b>muscles, tendons, joints</b>, protection, support, organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, <b>vertebrate, invertebrate</b>,</li> </ul>	<p><b>Pupils should be taught to:</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> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Digestive system:</u> <b>digest</b>, digestion, tongue, teeth, saliva, salivary glands, <b>oesophagus, stomach</b>, liver, pancreas, gall bladder, <b>small intestine</b>,</li> </ul>	<p><b>Pupils should be taught to:</b> describe the changes as humans develop to old age</p> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Process of reproduction:</u> <b>gestation, asexual reproduction, sexual reproduction</b>, sperm, egg, cells, clone.</li> <li>• <u>Changes and life cycle:</u> embryo, foetus, uterus, <b>prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy</b>, old age, hormones, sweat.</li> <li>• <u>Changing body parts:</u> e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair.</li> </ul> <p>Previously introduced vocabulary: reproduction, <b>reproduce</b>, types of animals and animal groups, <b>fertilisation</b>.</p>	<p><b>Pupils should be taught to:</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> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Circulatory system:</u> circulation, <b>heart</b>, pulse, heartbeat, heart rate, lungs, breathing, <b>blood vessels</b>, blood, pump, transported, <b>oxygenated blood</b>,</li> </ul>

	<p>which part of the body is associated with each sense.</p> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Names of animal groups</u>: <b>fish, amphibians, reptiles, birds, mammals.</b></li> <li>• <u>Animal diets</u>: <b>carnivore, herbivore, omnivore.</b></li> <li>• <u>Human and animal body parts</u>: e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills.</li> <li>• <u>Human senses</u>: <b>sight, hearing, touch, smell, taste.</b></li> <li>• <u>Exploring senses</u>: loud, quiet, soft, rough.</li> </ul> <p><u>Other</u>: human, animal, pet.</p>	<ul style="list-style-type: none"> <li>• <u>Young and adult names</u>: e.g. lamb and sheep, kitten and cat, duckling and duck.</li> <li>• <u>Life cycle stages</u>: e.g. baby, toddler, child, teenager, <b>adult</b>; frogspawn, tadpole, froglet, frog.</li> <li>• <u>Survival and staying healthy</u>: basic needs, survive, food, air, <b>exercise, diet, nutrition</b>, healthy, balanced diet, <b>hygiene, germs.</b></li> <li>• <u>Food groups</u>: fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar.</li> </ul> <p>Previously introduced vocabulary: <b>water.</b></p>	<p>endoskeleton, exoskeleton, hydrostatic skeleton.</p> <ul style="list-style-type: none"> <li>• <u>Names of human bones</u>: e.g. skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula.</li> <li>• Other: <b>energy.</b></li> </ul> <p>Previously introduced vocabulary: movement.</p>	<p>duodenum, <b>large intestine, rectum, anus, faeces, organ.</b></p> <ul style="list-style-type: none"> <li>• <u>Types of teeth and dental care</u>: <b>molar, premolar, incisor, canine</b>, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth.</li> <li>• <u>Food chains and animal diets</u>: decomposer, food web.</li> </ul> <p>Previously introduced vocabulary: <b>producer, consumer, prey, predator, excretion, habitat.</b></p>		<p><b>deoxygenated blood</b>, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells.</p> <ul style="list-style-type: none"> <li>• <u>Lifestyle</u>: <b>drug, alcohol</b>, smoking, disease, calorie, energy input, energy output.</li> <li>• <u>Other</u>: water transportation, nutrient transportation, waste products.</li> </ul> <p>Previously introduced vocabulary: carbon dioxide.</p>
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Plants	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees;</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Vocabulary:</b></p> <ul style="list-style-type: none"> <li>• <u>Names of common plants:</u> <b>wild plant, garden plant, evergreen tree, deciduous tree,</b> common flowering plant, <b>weed, grass.</b></li> <li>• <u>Name some features of plants:</u> e.g. <b>flower, vegetable, fruit, berry, leaf/leaves, blossom, petal, stem, trunk, branch, root, seed, bulb, soil.</b></li> </ul>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• observe and describe how seeds and bulbs grow into mature plants;</li> <li>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Growth of plants:</u> <b>germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling.</b></li> <li>• <u>Needs of plants:</u> <b>sunlight, nutrition, light, healthy, space, air.</b></li> <li>• <u>Name different types of plant:</u> e.g. bean plant, cactus.</li> <li>• <u>Names of different habitats:</u> e.g. rainforest, desert.</li> </ul> <p>Previously introduced vocabulary: <b>water, temperature, warm, hot, cold, habitat.</b></p>	<p><b>Pupils should be taught to:</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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Water transportation:</u> transport, <b>evaporation, evaporate, nutrients, absorb, anchor.</b></li> <li>• <u>Life cycle of flowering plants:</u> <b>pollination</b> (insect/wind), pollen, nectar, pollinator, <b>seed formation, seed dispersal</b> (animal/wind/water), reproduce, <b>fertilisation, fertilise, stamen, anther, filament, carpel (pistil),</b></li> </ul>			
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		<ul style="list-style-type: none"> <li>• Name some <u>common types of plant</u> e.g. sunflower, daffodil.</li> </ul>		<p>stigma, style, ovary, ovule, <b>sepal</b>, carbon dioxide.</p> <p>Previously introduced vocabulary: life cycle.</p>			
Living things and their habitats			<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• explore and compare the differences between things that are living, dead, and things that have never been alive;</li> <li>• 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</li> </ul>		<p><b>Pupils should be taught to:</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</li> </ul>	<p><b>Pupils should be taught to:</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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <b>Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis</b>, gametes, tuber, runners/side branches, plantlet, cuttings, embryo,</li> </ul>	<p><b>Pupils should be taught to:</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>

			<p>animals and plants, and how they depend on each other:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of plants and animals in their habitats, including microhabitats;</li> <li>• 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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Living or dead</u>: <b>living, dead, never living</b>, not living, alive, never been alive, healthy.</li> <li>• <u>Habitats including microhabitats</u>: <b>depend</b>, shelter, safety, <b>survive</b>, suited, space, minibeast, air.</li> <li>• <u>Life processes</u>: movement, sensitivity, growth, reproduction, nutrition,</li> </ul>		<p>dangers to living things.</p> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Living things</u>: <b>organisms, specimen, species.</b></li> <li>• <u>Grouping living things</u>: <b>classification, classification keys, classify, characteristics.</b></li> <li>• <u>Names of invertebrate animals</u>: snails and slugs, worms, spiders, insects.</li> <li>• <u>Invertebrate body parts</u>: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs.</li> <li>• <u>Environmental changes</u>: <b>environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct.</b></li> </ul>	<p>adolescent, penis, vagina, egg, pregnancy, gestation.</p> <p>Previously introduced vocabulary: <b>life cycle, pollination</b>, offspring, <b>fertilise</b>, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.</p>	<p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Classifying</u>: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation.</li> <li>• <u>Microorganisms</u>: <b>bacteria</b>, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, <b>microscope</b>, decompose.</li> </ul>
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			<p>excretion, respiration.</p> <ul style="list-style-type: none"> <li>• <b>Food chains: food sources</b>, food, producer, consumer, predator, prey.</li> <li>• <b>Names of habitats and microhabitats:</b> e.g. under leaves, woodland, rainforest, sea shore, ocean, urban, local habitat.</li> </ul> <p>Previously introduced vocabulary: senses, <b>carnivore, herbivore, omnivore, seed, water</b>, names of materials.</p>		<p>Previously introduced vocabulary: carbon dioxide, <b>fish, bird, mammal, amphibian, reptile</b>, skeleton, bone, <b>vertebrate, invertebrate</b>, backbone, names for animal body parts, names of common plants, photosynthesis.</p>		
Evolution and Inheritance							<p><b>Pupils should be taught to:</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</li> </ul>

							<p>offspring vary and are not identical to their parents;</p> <ul style="list-style-type: none"><li>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li></ul> <p>Key Vocab:</p> <ul style="list-style-type: none"><li>• <u>Evolution and inheritance</u>: evolve, <b>adaptation</b>, inherit, <b>natural selection</b>, <b>adaptive traits</b>, <b>inherited traits</b>, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin.</li><li>• <u>Other</u>: selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA.</li></ul> <p>Previously introduced vocabulary: classification, <b>offspring</b>, <b>characteristics</b>, <b>habitat</b>, <b>environment</b>, adapt, <b>variations</b>, human, <b>fossil</b>, suited, cells, names of</p>
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							different habitats, names of animals and their body parts, species, <b>sedimentary rock</b> , lava, <b>igneous rock</b> , <b>metamorphic rock</b> , <b>magma</b> , heat, <b>fossilisation</b> .
Seasonal Changes		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• observe changes across the 4 seasons;</li> <li>• observe and describe weather associated with the seasons and how day length varies.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <b>Seasons:</b> <b>spring</b>, <b>summer</b>, <b>autumn</b>, <b>winter</b>, seasonal change.</li> <li>• <b>Weather:</b> e.g. sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder, weather forecast.</li> <li>• <b>Measuring weather:</b></li> </ul>					

		temperature, rainfall, wind direction, thermometer, rain gauge. • <u>Day length:</u> night, day, daylight.					
Forces				Forces and Magnets <b>Pupils should be taught to:</b> <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.</li> </ul> Key Vocab:		Forces <b>Pupils should be taught to:</b> <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.</li> </ul> Key Vocab: <ul style="list-style-type: none"> <li>• <u>Types of forces:</u> air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force.</li> <li>• <u>Mechanisms:</u> levers, pulleys, gears/cogs.</li> </ul>	

				<ul style="list-style-type: none"> <li>• <u>How things move:</u> move, movement, <b>surface</b>, distance, strength.</li> <li>• <u>Types of forces:</u> push, pull, contact force, non-contact force, <b>friction</b>.</li> <li>• <u>Magnets:</u> <b>magnetic, magnetic field</b>, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic <b>poles</b> (north pole, south pole), <b>attract, repel</b>, compass.</li> <li>• <u>Magnetic and non-magnetic materials:</u> e.g. iron, nickel, cobalt.</li> </ul> <p>Previously introduced vocabulary: metal, names of materials.</p>		<ul style="list-style-type: none"> <li>• <u>Measurements:</u> <b>weight, mass</b>, kilograms (kg), Newtons (N), scales, speed, fast, slow.</li> <li>• <u>Other:</u> <b>streamlined</b>, Earth.</li> </ul> <p>Previously introduced vocabulary: air, heat, moon.</p>	
Light				<p><b>Pupils should be taught to:</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</li> </ul>		<p><b>Pupils should be taught to:</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</li> </ul>	

				<p>a light source is blocked by an opaque object;</p> <ul style="list-style-type: none"> <li>find patterns in the way that the size of shadows change.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li><b>Light and seeing:</b> dark, absence of light, <b>light source</b>, illuminate, visible, <b>shadow</b>, <b>translucent</b>, energy, block.</li> <li><b>Light sources:</b> e.g. candle, torch, fire, lantern, lightning.</li> <li><b>Reflective light:</b> reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon.</li> <li><b>Sun safety:</b> dangerous, glare, damage, UV light, UV rating, sunglasses, direct.</li> </ul> <p>Previously introduced vocabulary: <b>opaque</b>, <b>transparent</b>, sunlight, sun.</p>			<p>from light sources to objects and then to our eyes;</p> <ul style="list-style-type: none"> <li>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li><b>Reflection:</b> periscope.</li> <li><b>Seeing light:</b> <b>visible spectrum</b>, <b>prism</b>.</li> <li><b>How light travels:</b> light waves, wavelength, straight line, <b>refraction</b>.</li> </ul> <p>Previously introduced vocabulary: names and properties of materials, absorb.</p>
Sound				<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>identify how sounds are made, associating some of them with something vibrating;</li> </ul>			

- 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.

Key Vocab:

- Parts of the ear: **eardrum.**
- Making sound: **vibration, vocal cords, particles.**
- Measuring sound: **pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance.**
- Other: **soundproof, absorb sound.**

<p>Earth and Space</p>						<p><b>Pupils should be taught to:</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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Solar system</u>: <b>star, planet.</b></li> <li>• <u>Names of planets</u>: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus.</li> <li>• <u>Shape</u>: <b>spherical bodies, sphere.</b></li> <li>• <u>Movement</u>: <b>rotate, axis, orbit, satellite.</b></li> <li>• <u>Theories</u>: <b>geocentric model, heliocentric model, astronomer.</b></li> <li>• <u>Day length</u>: sunrise, sunset, midday, time zone.</li> </ul>	

						Previously introduced vocabulary: <b>Sun, moon, shadow, day, night, heat, light, reflect.</b>	
Electricity					<p><b>Pupils should be taught to:</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</li> </ul>		<p><b>Pupils should be taught to:</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.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Flow and measure of electricity</u>: <b>voltage, amps, resistance, electrons</b>, volts (V), <b>current</b>.</li> <li>• <u>Circuits</u>: <b>symbol, circuit diagram,</b></li> </ul>

					<p>associate metals with being good conductors.</p> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <b>Electricity:</b> mains-powered, battery-powered, <b>mains electricity</b>, plug, <b>appliances</b>, devices.</li> <li>• <b>Circuits:</b> <b>circuit</b>, simple series circuit, complete circuit, incomplete circuit.</li> <li>• <b>Circuit parts:</b> bulb, cell, wire, buzzer, switch, motor, <b>battery</b>.</li> <li>• <b>Materials:</b> <b>electrical conductor</b>, <b>electrical insulator</b>.</li> <li>• <b>Other:</b> safety.</li> </ul> <p>Previously introduced vocabulary: names of materials.</p>		<p>component, function, filament.</p> <ul style="list-style-type: none"> <li>• <b>Variations:</b> dimmer, brighter, louder, quieter.</li> <li>• <b>Types of electricity:</b> natural electricity, human-made electricity, solar panels, power station.</li> <li>• <b>Other:</b> positive, negative.</li> </ul>
Materials		<p>Everyday Materials</p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• distinguish between an object and the</li> </ul>	<p>Use of Everyday Materials</p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday</li> </ul>	<p>Rocks</p> <p><b>Pupils should be taught to:</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> </ul>	<p>States of Matter</p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group materials together, according to whether they are</li> </ul>	<p>Properties and Changes of Materials</p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group together everyday materials on the basis of their properties, including their hardness, solubility,</li> </ul>	

	<p>material from which it is made;</p> <ul style="list-style-type: none"> <li>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock;</li> <li>• describe the simple physical properties of a variety of everyday materials;</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Names of materials</u>: wood, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric.</li> <li>• <u>Properties of materials</u>: <b>hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, transparent, opaque,</b></li> </ul>	<p>materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses;</p> <ul style="list-style-type: none"> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Changing shape</u>: squash, bend, twist, stretch.</li> <li>• <u>Properties of materials</u>: e.g. strong, flexible, light, hard-wearing, elastic.</li> <li>• <u>Other</u>: <b>suitability</b>, recycle, pollution.</li> </ul>	<ul style="list-style-type: none"> <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> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Types of rock</u>: <b>sedimentary rock, igneous rock, metamorphic rock.</b></li> <li>• <u>Properties of rocks</u>: <b>permeable</b>, semi-permeable, <b>impermeable</b>, durable.</li> <li>• <u>Names of rocks</u>: e.g. marble, chalk, granite, sandstone, slate.</li> <li>• <u>Formation of rocks and fossils</u>: natural, human-made, <b>magma, lava</b>, molten rock, <b>sediment, erosion, fossilisation</b>, layers, bone, fossil.</li> <li>• <u>Soil</u>: sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost.</li> <li>• <u>Other</u>: <b>palaeontology</b>.</li> </ul> <p>Previously introduced vocabulary: soil, <b>water</b>, air.</p>	<p>solids, liquids or gases;</p> <ul style="list-style-type: none"> <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> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>States of matter</u>: <b>solids, liquids, gases</b>, particles.</li> <li>• <u>State change</u>: <b>evaporate, condense, melt, freeze</b>, heat, cool, melting point, freezing point, boiling point, <b>water vapour</b>.</li> <li>• <u>Water cycle</u>: <b>precipitation</b>, evaporation, condensation, ground run-off, collection, underground water,</li> </ul>	<p>transparency, conductivity (electrical and thermal), and response to magnets;</p> <ul style="list-style-type: none"> <li>• know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution;</li> <li>• use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating;</li> <li>• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic;</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, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul> <p>Key Vocab:</p> <ul style="list-style-type: none"> <li>• <u>Properties of materials</u>: thermal <b>conductor/insulator</b>, magnetism, electrical resistance, <b>transparency</b>.</li> </ul>	
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## Progression of skills: Working Scientifically

EYFS Working Scientifically	Key Stage 1 Working Scientifically	Lower Key Stage 2 Working Scientifically	Upper Key Stage 2 Working Scientifically
<p>In EYFS I will:</p> <p><b>Plan</b> Choose the resources I need for my chosen activities and say when I do or don't need help.</p> <p><b>Do</b> I know about similarities and differences in relation to places, objects, materials and living things; Make observations of animals and plants; Explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; Select and use technology for particular purposes.</p> <p><b>Record</b> Represent my own ideas, thoughts and feelings through design and technology, art, music, dance, role-play and stories.</p> <p><b>Review</b> Talk about the features of my own immediate environment and how environments might vary from one another; Explain why some things occur and talk about changes.</p>	<p>In Y1 &amp; Y2 I will use the following practical scientific methods, processes and skills:</p> <p><b>Plan</b> Ask simple questions and recognise that they can be answered in different ways.</p> <p><b>Do</b> Observe closely, using simple equipment; Perform simple tests; Identify and classify.</p> <p><b>Record</b> Gather and record data to help in answering questions.</p> <p><b>Review</b> Use my observations and ideas to suggest answers to questions.</p>	<p>In Y3 &amp; Y4 I will use the following practical scientific methods, processes and skills:</p> <p><b>Plan</b> Ask relevant questions and use different types of scientific evidence to answer them; Set up simple practical enquiries, comparative and fair tests.</p> <p><b>Do</b> Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p><b>Record</b> Gather, record, classify and present data in a variety of ways to help in answering questions; Record findings, using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p><b>Review</b> Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; Identify differences, similarities or changes related to simple scientific ideas and processes; Use straightforward scientific evidence to answer questions or to support their findings.</p>	<p>In Y5 &amp; Y6 I will use the following practical scientific methods, processes and skills:</p> <p><b>Plan</b> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p><b>Do</b> Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p><b>Record</b> Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p><b>Review</b> Use 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 arguments.</p>



