

Progression in Scientific Skills

		KS1	LKS2	UKS2
Working Scientifically	Asking Questions	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ask simple questions and recognise that they can be answered in different ways 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ask relevant questions and use different types of scientific enquiries to answer them set up simple practical enquiries, comparative and fair tests 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
	Measuring and Recording	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> observe closely, using simple equipment perform simple tests gather and record data to help in answering questions 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables gather, record, classify and present data in a variety of ways to help in answering questions 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
	Concluding	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and classify use their observations and ideas to suggest answers to questions 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify differences, similarities or changes related to simple scientific ideas and processes report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions use straightforward scientific evidence to answer questions or to support their findings 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify scientific evidence that has been used to support or refute ideas or arguments report and present 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
	Evaluating		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use test results to make predictions to set up further comparative and fair tests

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Plants	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify something as a plant Name some common plants, identify leaf, root, stem and flower recognise that plants need water to grow name some places plants live identify the seeds in a fruit 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees identify and describe the basic structure of a variety of common flowering plants, including trees observe how plants change over time observe and describe how seeds and bulbs grow into mature plants compare the lifecycle for a plant from a seed with that from a bulb know that a seed and bulb both contain everything a plant needs to grow find out and describe how plants need water, light and a suitable temperature to grow and stay healthy explain how plants survive in the desert and rainforest with little light. 	<p>Pupils should be taught to:</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 Know that plants make their own food explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal 	
Animals including Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify something as an animal and name some places animals live identify and locate parts of the body and parts of animal bodies. name a very limited range of food identify types of exercise name baby, child, adult and the young of some other animals. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene 	<p>Pupils should be taught to:</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 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age. identify and name the parts of the human circulatory system. 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.

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Materials	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • make observations of common objects • make very simplistic observations of materials • arrange materials into groups identify when changes occur e.g. when food is cooked 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock <ul style="list-style-type: none"> • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties (both visible and non-visible) • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<p>Pupils should be taught to:</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 • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic <ul style="list-style-type: none"> • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • 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, including changes associated with burning and the action of acid on bicarbonate of soda
Electricity	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • know electricity can be dangerous • explore a range of battery powered devices 		<p>Pupils should be taught to:</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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • use recognised symbols when representing a simple circuit in a diagram • 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

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Light and Sound	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • know that it is dangerous to look at the sun • relate their sense of sight to their eyes relate their sense of hearing to their ears 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • 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 shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise that light appears to travel in straight lines • 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 that objects are seen because they give out or reflect light into the eye • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Forces	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe and describe movements they and objects make 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare how things move on different surfaces • 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 • notice that some forces need contact between two objects, but magnetic forces can act at a distance • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing 	<p>Pupils should be taught to:</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 • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect