

Curriculum Progression in Science

	KS1			LKS2			UKS2		
	Working scientifically								
Vocabulary	Question Answer Observe Equipment Identify Sort	Differences Similarities Diagram Describe Group	Record Science Experiment Investigation Chart Data	Compare/contrast Relevant Scientific enquiry Fair test Observation Accurate	Thermometer Data logger Gather Interpret Construct (table/graph)	Record Conclusion Prediction Evidence Classify Key	Biology Physics Chemistry Plan Variables	Accuracy Precision Causal relationships Degree of trust	Support Refute Systematic Quantitative data
Planning & predicting	Asking simple questions and recognising that they can be answered in different ways Using their observations and ideas to suggest answers to questions			Making decisions, asking relevant questions and using different types of scientific enquiries to answer them Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations			Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary		
Investigating & observing	Performing simple tests Identifying and classifying Observing closely, using simple equipment and measurement			Setting up simple practical enquiries, comparative and fair tests Begin to look for naturally occurring patterns and relationships			Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate		
Recording, analysing & evaluating	Gathering, recording and communicating data and findings to help in answering questions. Begin to notice patterns and relationships Use scientific language and read and spell age-appropriate scientific vocabulary			Making systematic and careful observations using notes and simple tables 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, using relevant scientific language, 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, patterns, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings.			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. Explore and talk about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. Recognise that scientific ideas change and develop over time. Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.		

Progression in knowledge & understanding

Biology	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.	Can observe and describe how seeds and bulbs grow into mature plants	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers		Describe the life process of reproduction in some plants.	
	Identify and describe the basic structure of a variety of common flowering plants, including trees.	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant			
			Investigate the way in which water is transported within plants			
			Explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and dispersal.			
Vocabulary	common wild/garden plant leaf deciduous/evergreen root leaves bud flowers blossom petals stem trunk branches fruit vegetables bulb seed	water light suitable temperature germination reproduction	pollination seed formation seed dispersal fertiliser life cycle nutrients function nutrition support			
Animals including humans	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	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		Describe the changes as humans develop to old age.	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
	Identify and name a variety of common animals that are carnivores, herbivores and omnivores	Notice that animals, including humans, have offspring which grow into adults				
	Describe and compare the structure of a variety of common animals -fish, amphibians, reptiles, birds and mammals, including pets	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene		Describe the simple functions of the basic parts of the digestive system in humans		Describe the ways in which nutrients and water are transported within animals, including humans.
	Identify, name, draw and label basic parts of the human body and say which part of the body is associated with each sense		Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Identify the different types of teeth in humans and their simple functions		Identify and name the main parts of the circulatory system, and describe the functions of the heart, blood vessels and blood

<p>Vocabulary</p>	<p>fish amphibians reptiles birds mammals omnivores/ carnivores tongue taste nose smell eyes vision skin touch ears hearing legs knees face ears eyes hair mouth teeth head neck arms elbows</p>	<p>offspring grow adults egg caterpillar pupa butterfly spawn tadpole frog lamb sheep baby toddler child teenager adult survival water food air exercise hygiene nutrition egg chick chicken reproduce</p>	<p>nutrition nutrients protein fats carbohydrates fibre water vitamins minerals skeleton bones joints endoskeleton exoskeleton hydrostatic skeleton muscles contract relax vertebrate/invertebrate ball/socket/hinge/gliding joint</p>	<p>mouth oesophagus transports stomach acid enzymes small intestine large intestine carnivore herbivore omnivore tongue-mixes, moistens, saliva incisors- cutting, slicing canines- ripping, tearing molars-chewing, grinding</p>	<p>Puberty life cycle gestation growth reproduce foetus baby fertilisation toddler child teenager adult old age adulthood adolescence life expectancy</p>	<p>internal organs heart lungs liver kidney brain skeletal skeleton muscle muscular digest digestion digestive circulatory system blood vessels drugs lifestyle nutrients water damage drugs alcohol substances</p>
<p>Living things and their habitats</p>		<p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p>	<p>Recognise that living things can be grouped in a variety of ways</p>			<p>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</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 animals and plants, and how they depend on each other</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>Give reasons for classifying plants and animals based on specific characteristics.</p>
		<p>Identify and name a variety of plants and animals in their habitats, including micro-habitats</p>	<p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>		<p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p>	
		<p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify different sources of food.</p>			<p>Describe the life process of reproduction in some plants and animals.</p>	
<p>Vocabulary</p>		<p>living dead never alive habitats micro-habitats food chain food sun grass shelter seashore woodland ocean rainforest conditions hot/warm/cold dry/damp/wet bright/shade/dark</p>	<p>environment vertebrate invertebrate impact positive ecology negative population development litter deforestation</p>		<p>reproduction sexual/asexual animal naturalists David Attenborough animal behaviourist Jane Goodall</p>	<p>classify compare Linnaean Carl Linnaeus classification domain kingdom phylum class order family genus species characteristics vertebrates invertebrates microorganisms organism flowering non-flowering</p>

<p>Evolution & inheritance</p>						<p>Recognise that living things have changed over time and that fossils provide 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>Vocabulary</p>						<p>evolution adaption inherited traits adaptive traits natural selection inheritance Charles Darwin Alfred Wallace DNA genes variation parent offspring fossil environment habitat fossilisation plants animals living things</p>

Chemistry	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday Materials Changing Materials States of matter Properties and changes of materials Rocks	I can distinguish between an object and the material from which it is made	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	I can compare and group materials together, according to whether they are solids, liquids or gases		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	
	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock		Observe some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in °C)		Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials,	
	Describe the simple physical properties of a variety of everyday materials including metals, wood and plastic	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	
	Compare and group together a variety of everyday materials on the basis of their simple physical properties.		Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties		Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	
			Describe in simple terms how fossils are formed when things that have lived are trapped within rock		Demonstrate that dissolving, mixing and changes of state are reversible changes	
			Recognise that soils are made from rocks and organic matter.		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.	
Vocabulary	Material wood plastic metal glass water rock brick paper fabric elastic foil properties hard/soft stretchy/stiff shiny/dull rough/smooth bendy waterproof absorbent	Revise Y1 plus John Dunlop rubber Charles Macintosh waterproof fabric John McAdam tarmac macadamisation	appearance physical properties hard/soft shiny/dull rough/smooth absorbent/not absorbent fossils sedimentary rock soils organic matter buildings gravestones grains crystals		solubility transparency electrical /thermal conductor dissolve solution separate solids liquids gases evaporating reversible mixing evaporation filtering sieving melting irreversible new material burning rusting	

Physics	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Seasonal Changes	I can observe changes across the four seasons		Recognise that they need light in order to see things and that dark is the absence of light	Identify how sounds are made, associating some of them with something vibrating	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system	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		
	Observe and describe weather associated with the seasons and how day length varies.		Notice that light is reflected from surfaces	Recognise that sounds get fainter as the distance from the sound source increases.				
	Light			Recognise that light from the sun can be dangerous and that there are ways to protect their eyes	Recognise that vibrations from sounds travel through a medium to the ear		Describe the movement of the Moon relative to the describe the Sun, Earth and Moon as approximately spherical bodies	Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to eyes
				Sounds	Find patterns in the way that the size of shadows changes			
Earth and Space	Recognise that shadows are formed when the light from a light source is blocked by a solid object	Find patterns between the volume of a sound and the strength of the vibrations that produced it			Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.		
	Vocabulary	season summer winter autumn spring day daytime weather wind rain snow hail sleet fog sun hot warm cold			light dark reflect surface natural star Sun Moon shadow blocked solid artificial torch candle lamp	source vibrate travel pitch tune muffle vibrations insulation percussion Strings brass woodwind	moons planets stars solar system rotate orbit axis spherical hemisphere tilt	reflect reflection light source mirrors periscope rainbow filters
Forces & magnets			Compare how things move on different surfaces	Identify common appliances that run on electricity	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit		
			Notice some forces need contact between objects, but magnetic forces can act at a distance	Recognise some common conductors and insulators, and associate metals with being good conductors.				
			Electricity	Observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Use recognised symbols when representing a simple circuit in a diagram.	
				Predict whether two magnets will attract or repel each other, depending on which poles are facing.	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 that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	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	

			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	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		
Vocabulary			force push pull surface magnet magnetic attract repel magnetic poles North South	Appliances electrical circuit cell wire bulb buzzer danger insulators conductors switch components plug motor mains	gravity air resistance water resistance friction surface force effect move accelerate decelerate change direction brake mechanism pulley gear spring theory of gravitation Galileo Galilei Isaac Newton	voltage brightness volume switches danger series circuit switch bulb symbols circuit diagram buzzer motor