

Science Progression of Knowledge and Skills

With God's help, together, we aspire, achieve and believe.



Aims	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					
Intent	Our children have told us that they enjoy science when it is hands on, practical and when they are actively involved in their own investigations. We aim for our children to be inquisitive- thinking deeply about, and to debate, science topics. The intention of our school is to develop our pupils’ spoken language and their enquiry skills giving them the confidence to plan out, adapt and evaluate investigations. We will equip all learners with the scientific vocabulary to confidently communicate their learning. Our aims are to fulfil the requirements of the National Curriculum through providing a broad and ambitious curriculum that ensures the progressive development of knowledge, skills and vocabulary building upon their learning each year as they journey through our school. We provide a coherently planned, sequenced and inclusive science curriculum. Opportunities and experiences inspire our children and positively impact on our science teaching. Our vision is for the children to develop a lifelong love of science which will positively impact their future learning and employment giving them the cultural capital that they need to succeed in life.					
Animals including humans						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Humans -Talk about members of their immediate family and community. -Name and describe people who are familiar to them. Animals excluding humans	-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	-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)	-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	-describe the simple functions of the basic parts of the digestive system in humans -identify the different types of teeth in humans and their simple functions -construct and interpret a variety of food chains,	-describe the changes as humans develop to old age	-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -recognise the impact of diet, exercise, drugs and lifestyle on the

-Recognise some environments that are different to the one in which they live. -Find out about animals from different habitats. – -Explore different habitats and the animals which live in them	-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	-describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	skeletons and muscles for support, protection and movement	identifying producers, predators and prey		way their bodies function -describe the ways in which nutrients and water are transported within animals, including humans
Vocabulary: Humans, people, animals, environment	Vocabulary: Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves • Names of animals experienced first-hand from each vertebrate group. Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	Vocabulary: Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)	Vocabulary: Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	Vocabulary: Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Vocabulary: adolescent, adult, animals, baby, changes, develop, embryo, foetus, gestation, growth, hormones, humans, old age, puberty, teenager, timeline, toddler	Vocabulary: Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
Plants						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	-identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	-observe and describe how seeds and bulbs grow into mature plants -find out and describe how plants need water, light and a suitable	-identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers			

	-identify and describe the basic structure of a variety of common flowering plants, including trees	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 that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
Vocabulary:	Vocabulary: Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees and plants in local area.	Vocabulary: Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees and plants in local area. light, shade, sun, warm, cool, water, grow, healthy	Vocabulary: Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)	Vocabulary:	Vocabulary:	Vocabulary:

Living Things and Their Habitats

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living Things and their habitats -Explore the plants in the natural environment around them. -Explore the animals in the natural environment around them. -Explore plants and animals in a contrasting natural environment - Describe what they see, hear and feel whilst		-explore and compare the differences between things that are living, dead, and things that have never been alive -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 plants,		-recognise that living things can be grouped in a variety of ways -explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment -recognise that environments can change and that this can	-describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird -describe the life process of reproduction in some plants and animals	-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals -give reasons for classifying plants and

outside in the spring/summer.		and how they depend on each other -identify and name a variety of plants and animals in their habitats, including microhabitats -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		sometimes pose dangers to living things		animals based on specific characteristics
Vocabulary: Habitat, environment, life-cycle	Vocabulary:	Vocabulary: Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed • Names of local habitats e.g. pond, woodland etc. • Names of micro-habitats e.g. under logs, in bushes etc.	Vocabulary:	Vocabulary: Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Vocabulary: Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Vocabulary: Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering
Evolution and Inheritance						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						-recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -recognise that living things produce offspring of the same kind, but normally offspring vary and are

						not identical to their parents -identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils
Rocks						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			-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			
Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone,	Vocabulary:	Vocabulary:	Vocabulary:

			slate, soil, peat, sandy/chalk/clay soil			
Materials and States of Matter						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials including Changing materials -Explore the natural world around them and the changes which occur. -Explore a range of materials including natural materials and their properties. - Explore how materials can change. -Make objects from different materials including natural materials. - Describe what they see, hear and feel whilst outside in the autumn/winter.	-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 -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	-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		-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	-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 -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 -give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic -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	
Vocabulary: Materials, natural world, see, hear and feel	Vocabulary: Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	Vocabulary: Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard. hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Vocabulary:	Vocabulary: Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Vocabulary: Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	Vocabulary:
Seasonal Changes						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Changes – seasons (ongoing throughout the year) Observe seasonal change.	-observe changes across the 4 seasons -observe and describe weather associated					

Explore aspects of the season. Compare the seasons.	with the seasons and how day length varies (Ongoing observations throughout the year).					
Vocabulary: Seasons (winter, summer, spring, autumn)	Vocabulary: Weather (sunny, rainy, windy, snowy etc) • Seasons (winter, summer, spring, autumn) • Sun, sunrise, sunset, day length	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:
Light						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			-recognise that they need light in order to see things and that dark is the absence of light -notice that light is reflected from surfaces -recognise that light from the sun can be dangerous and that there are ways to protect their eyes -recognise that shadows are formed when the light from a light source is blocked by an opaque object -find patterns in the way that the size of shadows change			-recognise that light appears to travel in straight lines -use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye -explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes -use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Light, light source, dark, absence of light, transparent,	Vocabulary:	Vocabulary:	Vocabulary: Light, light source, dark, absence of light, transparent,

			translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, straight lines, light rays
Forces and Magnets						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces -Explore the natural world around them. -Describe what they see, hear and feel whilst outside. - Explore how objects move through the air			-compare how things move on different surfaces -notice that some forces need contact between 2 objects, but magnetic forces can act at a distance -observe how magnets attract or repel each other and attract some materials and not others -compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials -describe magnets as having 2 poles -predict whether 2 magnets will attract or repel each other, depending on which poles are facing		-explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object -identify the effects of air resistance, water resistance and friction, that act between moving surfaces -recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	
Vocabulary: Force, push, pull	Vocabulary:	Vocabulary:	Vocabulary: Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength,	Vocabulary:	Vocabulary: Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple	Vocabulary:

			bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		machines, levers, pulleys, gears	
Sounds						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound -Describe what they see, hear and feel whilst outside in relation to sound. -Listen to sounds outside and identify their source. -Find different ways to make sound.				-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		
Vocabulary: Senses, sound, hearing	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Vocabulary:	Vocabulary:
Electricity						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

				-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		-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches -use recognised symbols when representing a simple circuit in a diagram
Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor,	Vocabulary:	Vocabulary: Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage

				insulator, metal, non-metal, symbol		
Earth and Space						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					-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	
Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary:	Vocabulary: Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets	Vocabulary:
Working Scientifically						
EYFS	KS1		LKS2		UKS2	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ongoing throughout the year – Explore/Observe - look closely at/notice features in the natural world including animals and plants, weather and seasons, and natural materials e.g. water, ice, sand, stones, etc. - Describe - talk about what they notice/observe	- 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		- 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		- 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	

in the natural world, e.g. features of animals, plants, natural materials, seasons, weather, etc; talk about changes they notice and changes over time, based on real experiences or books read to them at home or school. Record - draw pictures e.g. observational drawings of plants, mini-beasts, take photographs, make models or record in scrapbooks. Questioning - show an interest in and be curious about the natural world; ask questions about what they notice/observe or changes that occur, e.g. changes in plants throughout the seasons. Explain - talk about what they know and what they have learnt about the natural world. Talk about why things happen/occur in relation to different processes e.g. ice melting, seasonal changes. Research - talk to people (visits/visitors/family), think of questions to ask to find out about plants, animals, seasons, processes; use first hand experiences/use secondary sources, (e.g. books, photographs, internet). Equipment and measures - use senses/use simple equipment to make observations, (e.g. magnifiers, pipettes, egg timers, digital	gathering and recording data to help in answering questions	- 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.	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 a 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
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microscopes, etc).
Compare/sort/group/identify/classify: notice similarities, notice differences in the natural world, including plants and animals; talk about what they know and understand about similarities and/or differences, e.g. in relation to the natural world around them and other environments they have learnt about through real experiences or books read at home or school.

Test - make suggestions, show resilience, work with others. Vocabulary - use simple vocabulary to name and describe objects, materials, living things and environments