Science Overview

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Human bodies	Materials	Comparing animals	Introduction to plants	Plants	Growing and cooking
2	Humans and animals	Materials	Plants – light and dark	Living things and their habitats	Plants – bulbs and seeds	Growing up
3	Rocks	Skeletons and nutrition	Fossils and soils	Light and shadows	Plants	Forces and magnets
4	Group and classify living things	States of matter	Sound	Electricity	Classification and changing habitats	Digestive system / Food chains
5	Imbalanced forces	Space	Materials	Animals including humans/ Life cycles	Reproduction	Reversible and irreversible changes
6	Living things and their habitats	Electricity	Light and reflection	Circulatory system / Diet, Drugs and lifestyle	Variation and adaptations	Fossils

EYFS Science Sequencing

EYFS – Understanding the World

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

ELG: Communication and Language: Listening, Attention and Understanding

- Make comments about what they have heard and ask questions to clarify their understanding.

ELG: Personal, Social and Emotional Development: Managing Self

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

ELG: Understanding the World: The Natural World

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Reception

Reception

We will explore the natural world around us.
We will describe what we see, hear and feel whilst outside.
We will recognise some environments that are different to the one in which we live.
We will understand the effect of changing seasons on the natural world around us.
We will plant seeds and care for growing plants.
We will understand the key features of the life cycle of a plant and an animal

End of EYFS

We will explore the natural world around us, making observations and drawing pictures of animals and plants.
We will know some similarities and differences
between the natural world around us and contrasting environments, drawing on our experiences and what has been read in class.
We will understand some important processes and changes in the natural world around us, including the seasons and changing states of matter.

Science Sequencing						
	Key Stage 1		Key Stage 2			
Working Scientifically						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Ask Questions	• Ask simple questions.	• Ask simple questions and recognise they can be answered in different ways.	• Ask questions and understand there are different enquiry types they can use to answer them.	• Ask relevant questions and use different enquiry to answer them.	• Ask scientific questions and begin to understand which questions would be best suited to each enquiry type.	• Ask relevant scientific questions and choose which enquiry type would be best suited to answer them.
Plan	• Verbally state what they are going to investigate.	• Make simple predictions based on a question. • Identify what they will change and keep the same.	• Make relevant predictions. • Identify what they will observe, change and keep the same. • With support set up simple practical enquiries.	• Make predictions based on simple scientific knowledge. • Identify what they will change, observe or measure and keep the same. • Set up simple practical enquiries, comparative and fair tests.	• Make predictions based on scientific knowledge. • With support, plan diffent types of scientific enquiry. Where appropriate identify the dependent, independent and controlled variables.	• Make predictions based on scientific knowledge. • Plan different types of scientific enquiries to answer questions including recognising and controlling variables where necessary.
Make observations	• Observe closely.	• Observe closely using simple equipment.	• Begin to use scientific equipment to make observations.	• Make systematic and careful observations.	• Use a range of scientific equipment to make systematic and careful observations.	• Use a range of scientific equipment to make systematic and careful observations with increased complexity.
Take measurements	• Carry out simple test using non-standard measurements when appropriate.	• Preform simple tests using standard units when appropriate.	• Carry out tests and simple experiments and take measurements using standard units.	• Take accurate measurements using standard, using a range of equipment, including thermometers and data loggers.	• Take accurate measurements using a range of scientific equipment. Start to take repeat readings when appropriate.	• Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
Gather, record and classify data	• Gather and record simple data. • Sort objects and living things into groups based on simple properties.	• Gather and record data to help in answering questions . • Identifying and classifying.	• Gather and record data to help in different ways to help answer questions. • Recording findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.	• Gather, record and classify 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.	• Gather, record and classify data with increasing complexity to help in answering questions. • Record data using scientific diagrams and labels, classification key, tables bar and line graphs.	• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Present findings	• Explain what they found out to an adult or partner.	• Talk about what they have found out and how they found it out. (non-statutory)	• Report on findings from enquiries, including oral and written explanations.	• Report on findings for enquiries including oral and written explanations, displays or presentations of results and conclusions.	• Report and present findings from enquiries including conclusions. • Begin to identify casual relationships in oral and written forms such as displays and presentations.	• Report and present findings from enquiries including conclusions, casual relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and presentations.

Answer questions and make conclusions	• Answer simple questions.	• Use their observations and ideas to suggests answers to questions.	• Make simple conclusions. • Use results, findings or observations to answer questions.	• Use straight- Use straight forward scientific evidence to answer questions or to support their findings. • Use results to draw simple conclusions. • Begin to identify differences, similarities or changes related to simple ideas or processes.	• Use scientific evidence to answer questions. • Make conclusions based on scientific evidence and from their own testing and findings. • Identify differences, similarities or changes related to simple ideas or processes.	• Use scientific evidence to answer questions. • Make conclusions based on scientific evidence and from their own testing and findings. • Identify scientific evidence that has been used to support ideas or arguments.
Evaluate			• Suggest questions for further investigation.	• Begin to make predictions for new values, suggest improvements and raise further questions.	• Make predictions for new values, suggest improvements and raise further questions.	• Use test results to make predictions to set up further comparative and fair tests. • Suggest investigation improvements including accuracy and results. • Provide some simple examples of how to extend the investigation.
Subject coverage						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Previous learning		In EYFS, children will have explored the natural world around them, making observations of animals and plants. They will have had some experiences of similarities and differences between the natural world around them and contrasting environments.		From year 2, children will know about habitats and how these provide basic needs for the plants and animals that live there. They will have been introduced to simple food chains.	In Year 2, children will have learnt about how humans change as they get older, so they will have some ideas of life cycles and reproduction.	In year 4, children will have started to classify living things into groups.
Living things and their habitats.		• 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 to describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and		• 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 sometimes pose dangers and have an impact on living things.	• 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 animals based on specific characteristics.

		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.				
Previous Learning	In EYFS, children will have learnt the names of different animals. They will have started to learn the difference between different types of animals.	In Year 1, children will have started to group animals based on what they eat and how their bodies are structured. Children will also have an awareness of what is needed to keep their bodies healthy.	Children will already be aware of what is needed to keep their bodies healthy. They will have an awareness of the basics of the human skeleton from year 1.	Children will have a basic understanding of food chains from year 2.	Children will know from year 2 some of the basic changes that humans go through from infancy to adulthood.	Children will have an awareness of the digestive system form year 4. They will also know some of the ways that they can keep their bodies healthy from KS1 and earlier in KS2. They will also have an awareness from the PSHE curriculum.
Animals, including Humans						
	• Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals • Group animals. according to what they eat 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 to 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.	• 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 part 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, identifying producers, predators and prey.	• 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 way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans.
Previous learning	From EYFS, children will have an awareness of the natural world. They should know basic materials such as wood, metal, plastic and rock.	In year 1, they will have compared and grouped everyday materials and started to look at their physical properties.	Children will have an understanding of physical properties and will already be able to make simple observations about different objects.	Children will be used to comparing and grouping different materials. They may have an idea of the basic differences between a solid and a liquid.	Children will already have a good understanding of comparing and grouping different materials. They will have a knowledge of solids, liquids and gases. They should	

					have knowledge of the term evaporation. They will already know that some materials are more suitable for different purposes than others.	
Materials (Materials and their Properties) **Rocks** **State of matter**						
	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday material, 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 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.	• 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.	**Year 6**

Previous Learning			Children may have had previous experience with magnetism from everyday objects and toys. They should know about the poles from the use of compasses in the Geography curriculum.		Children should have an understanding that if something is dropped, it will fall to the ground. They may have experienced the use of mechanisms in D.T.	
Forces and Magnets (Physical Processes)						
			• Compare how things move on different surfaces. • Notice that some forces need contact between two 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 two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Year 4** • 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.	**Year 6**	
Previous learning			Children will know the difference between light and dark. They should have experience of looking in mirrors and seeing their own reflection. They may have investigated shadows in EYFS.			Children will know that light is reflected from surfaces. They will know that light is needed in order to see things. They will know that shadows are formed when light is blocked and that the length of shadows can change.
Light						
			• Recognise that they need light in order to see things and that dark is the absence of light.			• Recognise that light appears to travel in straight lines.

			• 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 a solid object. • Find patterns in the way that the size of shadows change.			• 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.
Previous learning				Children should have an understanding of what electricity is and some of the ways that we use it in our everyday lives.		Children will have an understanding of how to construct a simple circuit and the basic parts of a circuit. They will know that some materials are conductors and some are insulators.
Electricity						
				• 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.		• 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.

				• Recognise some common conductors and insulators, and associate metals with being good conductors.		
					Children should have knowledge of the moon, sun and Earth. They may already know some of the planets in the solar system. They will know that there is a difference between day and night.	
Earth and space						
					• 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.	
Previous Learning	Children will have made basic observations of the differences between the seasons in EYFS.					
Seasonal Changes						
	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.					
				From their learning of the senses in year 1, children will know that we hear through our ears. They will have an understanding between loud and quiet noises. They may have an understanding of vibrations creating sounds.		
Sound						

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				• 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.		
Previous learning						Children will have a knowledge of fossils and what these can tell us from their 'Rocks and soils' unit in year 3. From Year 5, they will have an understanding of reproduction including sexual and asexual reproduction. They will already have some knowledge that animals and plants are suited to the habitats in which they live.
Evolution and Inheritance						• 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.

Key Scientific Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans					
Hair, eyes, face, nose, ears, teeth, mouth, head, neck, arm, elbow, hand, leg, knee, foot Light, dark, blind, hear, loud, quiet, noisy, sweet, salty, sour, bitter, savoury, skin, rough, smooth, hard, soft, smell, scent, sniff, stench Animal, mammal, fur, wild mammal, pet, bird, wings, beak, feathers, webbed feet, flippers, tail, fins, scales, gills, amphibian, frog, toad, newt, reptile, lizard, crocodile, turtle, carnivore, sharp teeth, herbivore, plants, vegetable, fruit, omnivore	Shelter, heart, exercise, physical health, mental health, healthy diet, unhealthy diet, meat, sugar, germs, hygiene, doctor, disease, plaque, gums, filling Offspring, egg, parent, child, teenager, life cycle, adolescent, frogspawn, tadpole, froglet, caterpillar, pupa, butterfly, insect, adult	Skeleton, skull, ribcage, pelvis, femur, spine, antennae, exoskeleton, joint, hinge joint, ball-and-socket joint, muscle, biceps, triceps, contract, relax Carbohydrates, proteins, dairy products, fats, fruit and vegetables, balanced diet, balanced meal, nutrition, Eatwell Guide, vegan diet, vegetarian diet, omnivorous diet, pescatarian diet	Incisors, canines, premolars, molars, enamel, root, decay, digestive system, mouth, oesophagus, stomach, small intestine, large intestine, rectum, saliva Producer, consumer, prey, predator, farming, overfishing, hunting	Foetus, elderly adult, milestone, womb, period, reproduce, hormone, puberty, life expectancy, gestation period, gestation	Circulatory system, blood vessels, arteries, veins, capillaries, red blood cells, white blood cells, lungs, plasma, oxygen, atria, ventricles, right atrium, left atrium, right ventricle, left ventricle, oxygenated blood, deoxygenated blood Calories, saturated fats, unsaturated fats, trans fats, drug, painkiller, depressant, stimulant, cigarette, tar, nicotine, vape, carbon monoxide, addiction, heart rate
Living things and their habitats					
	Arctic plants, hibernate, habitat, cactus, desert, rainfall, ocean, seagrass, woodland, fern, moss, microhabitat, spider, snail, diet, food chain, living, dead, never alive		Vertebrate, invertebrate, soft-bodied invertebrate, flowering plant, non-flowering plant, seasonal changes, natural resources, rewilding, nature reserve	Monotreme, mammary gland, metamorphosis, larva, chrysalis, hatchling, nestling, fledgling, fertilisation, embryo, sperm cells, egg cells, sexual reproduction, anther, sigma, style, filament, ovary, ovule, clone, runner, tuber, asexual reproduction, cutting, parent plant	Organism, excretion, reproduction, mollusc, arachnid, classification, coniferous tree, microorganism, bacteria, virus, fungi, characteristics
Plants					
Plant, flower, leaf, petals, stem, roots, branch, trunk, roots, wildflower, daisy, garden plant, sunflower, nettle, buttercup, dandelion, deciduous tree, horse chestnut, oak, sycamore, evergreen tree, pine, holly, needles, seed, soil, growth	Sunlight, compost, herb, blossom, bulb, shoot	Water transportation, seedling, seed coating, germination, stamen, pistil, pollen, reproductive organs, pollination, pollinators, wind dispersal, explosion dispersal, water dispersal, animal dispersal, seed dispersal			
Materials					
Material, shiny, dull, rock, heavy, light, object, wood, metal, plastic, glass, wool, solid, liquid, melt, freeze, ice, float, sink, absorb, transparent, opaque	Natural material, human-made material, recycle, flexible, rigid, stone, pebble, brick, brittle, flexible, translucent, tough, lightweight, strong, breakable, waterproof			Electrical conductor, electrical insulator, thermal insulator, properties, lifespan, dissolve, soluble, insoluble, solution, mixture, reversible changes, reverse, chemical reaction, irreversible change, burning, heating, vinegar, bicarbonate of soda	
Rocks					
		Granite, pumice, sandstone, chalk, marble, gneiss, crystals, grains, layers, texture, hardness, weathering, fossil, shell,			

		fossilisation, sediment, sandy soil, clay soil, peat soil, organic matter, nutrients, deforestation, habitat loss			
States of Matter					
			Solid, liquid, gas, states of matter, pouring solid, ooblek, flow, freezing, melting, boiling, condensation, evaporation, melting point, water cycle, precipitation, atmosphere, petri dish		
Electricity					
			Appliances, plug, socket, cell, electrocuted, circuit, switch, battery, buzzer, conductor, insulator		series circuit, voltage, current, complete circuit, incomplete circuit
Earth and Space					
				Solar system, orbit, Sun, planets, Pluto, celestial body, gravity, heliocentric model, geocentric model, rotate, axis, North Pole, South Pole. Earth, night, day, gravitational force, satellite	
Seasonal Changes					
Autumn, daylight, night, weather, season, rainfall, weather, rain gauge, winter, rainy, snowy, windy, cloudy, frosty, sunny, spring, summer					
Sound					
			Vibration, sound, volume, pitch, outer ear, ear bones, cochlea, ear drum, ear canal, decibel, insulate, high-pitched, low-pitched, background noise		
Light					
		Light sources, natural light, light sources, artificial light sources, Sun, sunglasses, protect, reflection, shadow			Retina, iris, pupil, lens, ray diagram, solar eclipse, refraction, medium, rainbow, prism, coloured filter, spectrum of light
Forces and Magnets					
		Push, pull, contact force, friction, magnet, magnetic, poles, magnetic force, non-metal, iron, aluminium, steel, attract, repel		Frictional force, motion, air resistance, parachute, surface area, water resistance, streamlined, non-contact force, gravity, weight, lever, gear, pulley, machine	
Evolution and inheritance					
					Variation, species, inheritance, desirable, characteristics, polar habitat, desert habitat, adaptations, evolution, common ancestor, natural selection, finch, Galapagos Islands, decompose, Charles Darwin, palaeontologist, Mary Anning

Working Scientifically Key Vocabulary

	KS1	Year 3/4	Year 5/6

Key Vocabulary	Measure, observe, compare, measurement, growth, trowel, temperature, bend, squash, twist, stretch, absorb	Hardness, reaction, bar chart, pictogram, data, increase, decrease, prediction, dissection, scales, filter paper, filter funnel, measuring cylinder, thermometer, conclusion, evaluation, data, volume, decibel meter, stopwatch, beaker, temperature, Petri dish, block chart, bar graph, classifying, classification key	Line graph, microscope, anomaly, anomalous result, control, control beaker, sieve, filtering, repeatability, accuracy, correlation, precision, angle, periscope, scatter graph, independent variable, dependent variable, controlled variables, duration, theory
Exposure words	Draw, label, change, same, table, record, tally, pipette, size, predict, similar, different, sort, group, identify, pattern, height, number, amount, hand lens, ruler, counting cubes, centimetres, metres, suitable, unsuitable, match,, test, scientific enquiry, comparative test, research, pattern seeking	Fair test, identify, group and classify, model, modelling, investigate, changed, measured, stayed the same, millimetres, millilitres, data logger, tape measure, features, scientists, diagram, sorting diagram, block diagram, distance, results	Casual relationship, decimals, analyse, interpret, conclude, capacity, mass, approximate, justify, secondary source, evidence, duration, mean, calculate, method