Science Progression of Skills

Curriculum Intent: To create a memorable curriculum that builds upon prior learning whilst moving knowledge and skills forward and is based upon robust assessments.

Year Group	Working Scientifically Skills							
	Asking questions and recognising that they can be answered in different ways	**Making observations and taking measurements**	**Engaging in practical enquiry to answer questions**	**Recording and presenting evidence**	**Answering questions and concluding**	**Evaluating and raising further questions and predictions**	**Communicating their findings**	**Key Vocabulary**
Nursery	• Comment and ask questions about aspects of their familiar world such as the place where they live or the natural world. • Make observations and talk about what they see, using a wide vocabulary. • Ask simple why, when, what questions. • Show interested in why things happen. • Describe similarities and differences. • Begin to group and sort.							group, sort, objects, compare, why, when, what
Reception	• Question why things happen, having their own ideas. • Carry out observations on changes, e.g. growing plants, floating and sinking, ice melting, magnets, sponges in water. • Look closely at similarities, differences, patterns and change. • Make observations and explain observations. • Explore the natural world around them. • Make predictions about what might happen. • Make decisions about what to do. • Describe what they see, hear and feel whilst outside							try, test, ideas, explore, find, out, how
Year 1 & 2	• Asking simple questions and recognising that they can be answered in different ways.	• Observing closely, using simple equipment.	• Performing simple tests - Children use practical resources to gather evidence to answer questions generated by themselves or the teacher. • Identifying and classifying - Children use their observations and testing to compare objects, materials and living things. Sort and group these, identifying the criteria for sorting. - They use simple secondary sources (such as identification sheets) to name living things and describe the characteristics they used to identify a living thing.	• Gathering and recording data to help in answering questions.	• Using their observations and ideas to suggest answers to questions.			

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	Asking questions and recognising that they can be answered in different ways	**Making observations and taking measurements**	**Engaging in practical enquiry to answer questions**	**Recording and presenting evidence**	**Answering questions and concluding**	**Evaluating and raising further questions and predictions**	**Communicating their findings**	**Key Vocabulary**
Year 3 & 4	• Asking **relevant** questions and **using different types of scientific enquiries to answer them.**	• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	• **Setting up** simple practical enquiries, comparative and fair tests. - The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. - They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	• 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.	• Using straightforward scientific evidence to answer questions or to support their findings. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	
Year 5 & 6	• **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.	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.	• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	• Identifying scientific evidence that has been used to support or refute ideas or arguments. • 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.	• 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. • 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.	

Year Group	Science Progression of Skills			
	Animals including humans	**Plants**	**Seasonal change**	**Everyday materials**
Nursery	• Show care and concern for living things and the environment. • Name obvious body parts on humans and animals. • Understand the key features of the life cycle of an animal. • Name some differences between animals, e.g. fur / colour / markings. • Name more excretions, e.g. snot, tears, blood.	• Know that fruit and vegetables are plants. • Know that some vegetables grow underground and they look different above and below the ground. • Understand the key features of the life cycle of a plant. • Develop an understanding of growth, decay and changes over time, e.g. observing an apple / banana rotting / school compost heap, wet pile of leaves. • Show care and concern for living things and the environment, e.g. keep plants alive by watering them.	• Know the difference between day and night, dark and light. • Name more weather types, e.g. storm, thunder, lightning, rainbow, cloudy. • Know that we wear different clothes for different weather.	• Explore different materials freely, to develop their ideas about how to use them and what to make. • Talk about the differences between materials and changes they notice. • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and / or different properties.
Vocab	shoulders, elbow, neck back, stomach, knees, ankles, tail, fur, whiskers, markings, grow, baby, child, adult, snot, tears, blood, differences	seeds, rot, change, fruit, vegetable, die underground	weather, day, night, light, dark, storm, thunder, lightning, rainbow, cloudy	change, senses, explore, mixture, pinecones, conkers, bark, moss

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	Environmental change	**Forces and how things work**
Nursery	• Begin to understand the effect their behaviour can have on the environment. • Begin to understand the need to respect and care for the natural environment and all living things.	• Explore how things work, e.g. wind-up toys, pulleys, sets of cogs with pegs and boards. • Explore and talk about different forces they can feel.
Vocab	forest, concrete, tidy, ruin, care, places, wildlife	cogs, gears, join,, work, turn

Year Group	Science Progression of Skills			
	Animals including humans	**Plants**	**Seasonal change**	**Everyday materials**
Reception	• Talk about some similarities and differences in animals including humans. • Name all basic parts of the human body that they can see and the brain and heart. • Observe different animals and their body parts and talk about why they have them, e.g. beak, wings, legs. • Name some habitats, e.g. homes of birds (garden, forest, wood and water). • Begin to talk about what their body needs, e.g. food, water exercise and sleep.	• Name some common plants / vegetation, e.g. grass, tree, bush, daisy, dandelion (and other plants and tree names local to their environment, e.g. reeds / lily pads in a school pond). • Examine change over time, for example, life cycle of different plants / fruit / vegetables, growing plants from seeds, plants which go to seed (collect seeds). • Talk about simple plant parts and what happens to them. Use language, e.g. leaves, roots, stem, petal. • Talk about simple similarities and differences in plants.	• Know the names of the seasons and what the weather is / can be like in each. • Talk about the changes that each seasons brings in relation to their environment: the clothes they wear, the weather and the plants. • Describe how trees and plants change in different seasons. • Know that some animals store food for the winter. • Know that some animals hibernate in the winter.	• Know about similarities and differences in materials. • Sort materials using criteria such as soft, hard, flexible, plastic, wood, metal. • Develop their own ideas through experimentation with a diverse range of materials. • Increasingly choose more appropriate materials for the job, e.g. cotton reels / lids for wheels, wool for hair. • Look at how materials change, e.g. when cooking.
Vocab	similarities, brain, heart, bones, bottom, hips. collar bone, wrist, beak, wings, feathers, gills	leaves, roots, stem, petal, familiar plant names, life cycle	autumn, winter, spring, summer, season, hibernate	sort, materials, flexible, experiment, change

Year Group	Science Progression of Skills	
	Environmental change	**Forces and how things work**
Reception	• Talk about the features of their own immediate environment and how environments might vary from one another. • Know some ways in which humans are harming the world and how to help.	• Know how to use a variety of different tools and equipment and how they work. • Know the effect of simple push and pull forces.
Vocab	harm , humans, nature, island, pollution	push, pull, action, tools, together, apart, connect, electricity, battery

Year Group	Science Progression of Skills			
	Animals including humans	**Plants**	**Seasonal changes**	**Everyday materials**
Year 1	• 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.	• 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 changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• 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.
Y1 Vocabulary	Tier 2: Blood, senses, young, feathers, fur, scales Tier 3: Mammal, amphibian, reptile, herbivore, carnivore, omnivore Moving beyond: Nutrition, respiration, reproduction, sensitivity.	Tier 2: Bud, trunk, branch, bark, seed, wild Tier 3: Nutrients, stem, deciduous, evergreen Moving beyond: Producer, oxygen, respiration, reproduction	Tier 2: Dawn, dusk, mild, rotate, soaked, weather Tier 3: Month, season, spring summer, autumn, winter Moving beyond: Temperature, climate, planet.	Tier 2: Absorb, rough, smooth, waterproof, metal, plastic. Tier 3: Materials, properties, flexible, transparent, opaque, physical Moving beyond: Magnet, friction, repel, resistance.

Year Group	Science Progression of Skills			
	Animals including humans	**Living things and their habitats**	**Plants**	**Uses of everyday materials**
Year 2	• 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.	• 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, 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.	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	• 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.
Y2 Vocabulary	Tier 2: healthy, survive, exercise, heart, lungs, muscles. Tier 3: Hygiene, larva, pupa, vertebrates, invertebrates, metamorphosis Moving beyond: Carbohydrates, minerals, proteins, vitamins.	Tier 2: Thrive, depend, producer, consumes, prey, predator Tier 3: oxygen, nutrition, respiration, sensitivity, reproduction, excretion. Moving beyond: Pollination, skeleton, muscle	Tier 2: Wither, dormant, mature, bulb, anchor, sustain. Tier 3: Germination, perennial, carbon dioxide, glucose, clone. Moving beyond: Fertiliser, pollination, dispersal.	Tier 2: Artificial, brittle, extracted, fabric, manufactured, natural. Tier 3: Ceramic, durable, inflexible, reflective, rigid, translucent. Moving Beyond: Cemented, compacted, transform

Year Group	Science Progression of Skills				
	Animals including humans	**Plants**	**Rocks**	**Light**	**Forces and magnets**
Year 3	• 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.	• 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. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	• 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.	• 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.	• 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.
Y3 Vocabulary	Tier 2: Minerals, skeleton, skull, voluntary, involuntary, nerves. Tier 3: Biceps, triceps, vertebrae, vitamins, proteins, carbohydrates. Moving beyond: Incisor, canine, molar.	Tier 2: Adapt, essential, glucose, transport, variety, vital. Tier 3: Transpiration, stoma, pollination, stamen, pistil, photosynthesis. Moving beyond: Anther, filament, stigma, style, ovule, ovary, chlorophyll	Tier 2: Cemented, compacted, decay, prehistoric, soil, transform Tier 3: Fossil, igneous, magma, metamorphic, minerals, sedimentary Moving beyond: Dissolve, evaporation, reversible.	Tier 2: Absence, cast (shadow), impenetrable, reflect, shadow, source (light). Tier 3: Constant, dependent, independent, illuminate, translucent, variable. Moving beyond: Radiation, refraction, spectrum	Tier 2: Consequence, contact, force, attract, north, south. Tier 3: Magnet, resistance, friction, repel, pole, magnetic field. Moving beyond: gravity, mechanism, lever, pulley.

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	Animals including humans	**Living things and their habitats**	**States of matter**	**Sound**	**Electricity**
Year 4	• 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, identifying producers, predators and prey.	• 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 to living things.	• 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.	• 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.	• 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.
Y4 Vocabulary	Tier 2: Expel, compact, digestion, acid, stomach, intestines. Tier 3: Incisor, canine, molar, enzyme, saliva, peristalsis. Moving beyond: Gastric, Oesophagus, bolus	Tier 2: Classification, environment, interdependence, interact, beneficial, hierarchy. Tier 3: Vertebrate, invertebrate, biotic, ecosystem, species, niche. Moving beyond: Taxonomy, phylum	Tier 2: Permanent, particle, solid, liquid, gas, vapour. Tier 3: Evaporate, condense, melt, matter, state, volume. Moving beyond: Composition, disperse, reversible and irreversible.	Tier 2: Produce, property, source, frequent, regular, affect. Tier 3: Vibrate, pitch, volume, medium, vacuum, sound, wave.	Tier 2: Associate, identify, portable, effect, appliance, series. Tier 3: Component, electrical, insulator, electrical, conductor, circuit, hypothesis, variable Moving beyond: Terminal, voltage, current.

Year Group	Science Progression of Skills				
	Animals including humans	**Living things and their habitats**	**Properties and changes of materials**	**Forces**	**Earth and space**
Year 5	• Describe the changes as humans develop to old age.	• 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.	• 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.	• 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.	• 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.
Y5 Vocabulary	Tier 2: Development, diverse, unique, generation, mature, equipped Tier 3: Adolescence, puberty, gestation, embryo, foetus, womb Moving beyond: Expectant, expectancy, physical, physically, emotion, emotional, emotionally	Tier 2: Deduce, process, re-form, transform, adolescence, contrast Tier 3: Embryo, sexual, metamorphosis, incubate, biochemical, fertilisation Moving beyond: Entomology, diversity	Tier 2: Property, particle, separate, combine, recover, comparative Tier 3: Atom, molecule, chemical, physical, reversible, reaction. Moving beyond: Nucleus, nuclear, combustion	Tier 2: Opposite, reaction, advantage, displace, weight, mass Tier 3: Pulley, gear, pivot, fulcrum. Lever, up thrust Moving beyond: Static, constant, inhibitor	Tier 2: Luminous, phenomenon, attraction, approximately, relative, apparent Tier 3: Orbit, axis, crescent, gravitational, waxing, waning Moving beyond: Elliptical, cosmology.

Year Group	Science Progression of Skills				
	Animals including humans	**Living things and their habitats**	**Light**	**Electricity**	**Evolution and inheritance**
Year 6	• 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.	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics.	• 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.	• 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 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.
Y6 Vocabulary	**Circulatory system** Tier 2: Cell, chamber, system, circulation, vessel, clot Tier 3: Plasma, platelet, artery, capillary, vein, ventricle Moving beyond: Gestation, puberty, classification **Water transportation** Tier 2: Filter, expel, substance, function, regulate, transform Tier 3: Kidney, bladder, urine, excretion, toxin, nutrient Moving beyond: Renal, urethra, ureter.	Tier 2: Characteristic, interdependence, specific, categorise, primitive, hierarchy Tier 3: Fungus, arthropod, taxonomy, kingdom, phylum, genus Moving beyond: Entomology, entomologist	Tier 2: Impurity, emit, absorb, constituent, filter, artificial Tier 3: Refraction, incidence, spectrum, prism, lux, pigment Moving beyond: Caliginous, caliginosity, diffuse	Tier 2: Component, consequence, systematic, represent, source, generate Tier 3: Proton, neutron, electron, terminal, series, voltage Moving beyond: Parallel circuit, semi-conductor, electromagnet, electromagnetism	Tier 2: Characteristic, adaptation, acquire, theory, modify, generation Tier 3: Evolve, survival, species, clone, inherit, fossil Moving beyond: Asexual, entomb