Progression of Skills – Science

This document outlines the progression of skills and knowledge across year groups to support long-term planning and termly overviews. Our Science curriculum is carefully planned so that pupils build on what they already know and can do, developing their knowledge and skills each year. As children move through the school, they should be able to show a growing understanding of the different areas of Science.

Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically							
Plan	Communication and Language - Listening, Attention and Understanding: • Make comments about what they have heard and ask questions to clarify their understanding Understanding the World - The Natural World: • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and that has been read in class *Children ask simple questions about what they notice.* *They make predictions and suggest ideas during play and exploration.*	• Ask simple questions when prompted • Suggest ways of answering a question	• Ask simple questions • Recognise that questions can be answered in different ways	• Ask relevant questions when prompted • Use different types of scientific enquiry to answer them. • Set up simple and practical enquiries, comparative and fair tests with some support.	• Ask relevant questions. • Use different types of scientific enquiries to answer their questions • Set up simple and practical enquiries, comparative and fair tests	• Plan different types of scientific enquiries to answer questions. • With prompting, recognise and control variables where necessary	• Plan different types of scientific enquiries to answer questions • Recognise and control variables where necessary
Do	Understanding the World - The Natural World: • Explore the natural world around them, making observations and drawing pictures of animals and plants Physical Development - Fine Motor Skills: • Use a range of small tools *Children investigate using their senses and simple tools (magnifying glasses, pipettes, containers).* *They try out their own ideas through hands-on exploration indoors and outdoors.*	• Make relevant observations using simple equipment • Conduct simple tests, with support Identify and classify with guidance	• Observe closely, using simple equipment • Perform simple tests Identify and classify	• Make systematic and careful observations, using simple equipment • Use standard units when taking measurements	• Make systematic and careful observations using a range of equipment, including thermometers and data loggers • Take accurate measurements using standard units, where appropriate	• Select, with prompting, and use appropriate equipment to take readings • Take precise measurements using standard units • Begin to understand the need for repeat readings	• Use a range of scientific equipment to take measurements • Take measurements with increasing accuracy and precision • Take repeat readings when appropriate

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Record	Communication and Language - Speaking: • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary Literacy - Comprehension: • Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role-play *Children talk about what they have seen and done.* *They may draw pictures, sort objects, or take photos to show their findings.*	• Gather and record data	• Record and communicate their findings in a range of ways and begin to use simple scientific language • Gather and record data to help answer questions	• With modelling and guidance, gather, record, classify and present data in a variety of ways to help to answer questions • With prompting, use various ways of recording, grouping and displaying evidence and suggest how findings may be tabulated	• Gather, record, classify and present data in a variety of ways to help to answer questions • Record findings using simple scientific language, drawings and labelled diagrams • Record findings using keys, bar charts, and tables	• Take and process repeat readings • Record data and results Record data using labelled diagrams, keys, tables and charts • Use line graphs to record data	• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs
Review	Communication and Language - Speaking: • Offer explanations for why things might happen, making us of recently introduced vocabulary Understanding the World - The Natural World: • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter *Children discuss what they noticed and whether it matched what they thought would happen.*	• Recognise findings • Use their observations and ideas to suggest answers to simple questions	• Use their observations and ideas to suggest answers to simple questions	• With prompting, suggest conclusions from enquiries • Suggest how findings could be reported Suggest possible improvements or further questions to investigate	• Report on findings from enquiries, including oral and written explanations, of results and conclusions • Report on findings from enquiries using displays or presentations Identify differences, similarities or changes related to simple scientific ideas and processes • Use straightforward scientific evidence to answer questions or to support their findings • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	• Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships • With support, present findings from enquiries orally and in writing • Suggest further comparative or fair tests	• Report and present findings from enquiries, including conclusions and causal relationships • Report and presents findings from enquiries in oral and written forms such as displays and other presentation • Report and present findings from enquiries, including explanations of, and degree of, trust in results • Identify scientific evidence that has been used to support or refute ideas or arguments • Use test results to make predictions to set up further comparative and fair tests

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Biology							
Animals including Humans **Living Things and their Habitats** **Plants** **Evolution and Inheritance**	*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.*	**Animals including Humans** • Identify and name a variety of common animals including fish, amphibians, reptiles, mammals and birds • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • 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 and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) **Plants** • 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.	**Animals including Humans** • 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. **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 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	**Animals including Humans** • 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 **Plants** • 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.	**Animals including Humans** • 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 **Living Things and their Habitats** • 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.	**Animals including Humans** • Describe the changes as humans develop to old age **Living Things and their Habitats** • 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.	**Animals including Humans** • 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 **Living Things and their Habitats** • 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.

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Biology							
Animals including Humans **Living Things and their Habitats** **Plants** **Evolution and Inheritance**			• 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. **Plants** • 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.				**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.

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Chemistry							
Everyday Materials **Uses of Everyday Materials** **Rocks** **States of Matter** **Properties and Changes of Materials**	*Understanding the World - The Natural World:* • *Explore the natural world around them, making observations and drawing pictures of animals and plants.* *Expressive Arts and Design - Creating with Materials:* • *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.*	**Everyday Materials** • 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.	**Uses of Everyday Materials** • 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.	**Rocks** • 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.	**States of 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.	**Properties and Changes of Materials** • 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.	

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Physics							
Seasonal Changes **Light** **Sound** **Forces and Magnets** **Electricity** **Earth and Space** **Forces**	*Understanding the World - The Natural World:* • *Explore the natural world around them, making observations and drawing pictures of animals and plants.* • *Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.*	**Seasonal Changes** • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.		**Light** • 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. **Forces and Magnets** • 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.	**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. **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 • Recognise some common conductors and insulators, and associate metals with being good conductors.	**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. **Forces** • 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	**Light** • 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. **Electricity** • 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.

Science Progression - At a Glance

Year / Stage	Biology (Living Things & Life Processes)	Chemistry (Materials & Their Properties)	Physics (Forces, Energy, Earth & Space)	Working Scientifically Skills
EYFS	Explore animals, humans, plants, habitats, and seasonal changes	Explore materials; notice simple changes (melting, mixing)	Observe movement, light/dark, weather, patterns	Ask questions, observe, sort/classify, predict, talk about findings
Year 1	Identify animals, body parts, senses, common plants	Identify everyday materials, describe properties (hard/soft, rough/smooth)	Seasonal changes; push/pull, light & dark	Observe closely, record simply (drawings, labels), answer questions
Year 2	Habitats, basic food chains, life cycles, humans – growth & nutrition	Uses of everyday materials for different purposes	Uses of everyday materials to explore forces and light/sound; basic magnets.	Compare & contrast, sort & classify, make simple measurements, record observations
Year 3	Plants – structure, needs, life cycles; animals – skeletons & nutrition	Rocks & soils – properties, formation; changes to materials	Light & shadows; forces & magnets	Systematic observation, simple tests, record in charts, use keys to classify
Year 4	Digestive system, teeth, classification, adaptation	States of matter, heating & cooling, dissolving	Electricity (circuits), forces, sound	Plan tests, control variables, record data, present results in tables/charts
Year 5	Life cycles, reproduction, adaptation & inheritance	Properties & changes of materials; reversible/irreversible changes	Forces (levers/pulleys), light, sound, Earth & space	Predict, measure, record systematically, explain using scientific vocabulary
Year 6	Human circulatory system, evolution, classification, environments	Materials and their properties revisited; chemical changes; solutions and mixtures in more depth.	Electricity, light, forces, Earth & space	Plan fair tests, control variables, analyze & evaluate results, explain phenomena in depth