Science Progression

Each year group builds on the skills and knowledge learnt in prior year groups.

Stand-alone units which do not progress over Year Groups are not included in the progression document. These include: Seasonal Changes, Sound, Rocks, States of Matter, Space, Evolution and Inheritance

** Denotes expectations for outdoor learning.*

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Scientific knowledge	***Living things and their habitats**	Explore the natural world around them, making observations	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. 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.	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. 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.	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. 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.	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. 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.	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 the changes as humans develop to old age.	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. 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.
	***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.			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.

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Scientific knowledge	***Materials**	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	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 together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. 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. 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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Scientific knowledge	**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.		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.	
	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.		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.

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Working scientifically	**Questioning and Enquiry**	Ask questions about aspects of their familiar world such as the place where they live or the natural world	Ask simple questions about the world around us Understand that they can answer these questions using different types of enquiry	Ask questions about the world around us Recognise different types of enquiry	Ask some relevant questions and use different types of scientific enquiry to answer them	Ask relevant questions and use different types of scientific enquiry to answer them	Begin to explore and talk about ideas Begin to ask their own questions about scientific phenomena With support, understand and explain purpose of different components in a system Begin to understand relationships and interactions	Explore and talk about ideas Ask their own questions about scientific phenomena Analyse purpose of different components in a system Identify and explain relationships and interactions in a systematic manner
	Planning and Investigating	Take steps to answer questions	Perform simple tests with support	Perform simple tests	Setting up simple practical enquiries, comparative and fair tests	Setting up practical enquiries, comparative and fair tests	Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
	Observing and measuring	Make links and notice patterns in their experience Describe their immediate environment	Begin to observe closely, using simple equipment	Observe closely, using simple equipment	Begin to make organised observations Take accurate measurements Use a range of equipment	Make systematic and careful observations. Where appropriate, take accurate measurements using standard units Use a range of equipment, including thermometers and data loggers	With support, take measurements with increasing accuracy and precision Suggest which scientific equipment could be used to take measurements	Take measurements, using a range of scientific equipment, with increasing accuracy and precision Decide which scientific equipment should be used to take specific measurements Take repeat readings where appropriate.
	Recording and reporting	Orally describe what they can see	Begin to identify and classify With support, record and communicate their findings in a range of ways	Identify and classify Gather and record data to help answer questions. Communicate their findings in a range of ways	With support, gather, record, classify and present data in a variety of ways to help in answering questions Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables Begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Gather, record, and begin to classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	With help, begin to record data and results using scientific diagrams and labels, classification keys, tables and bar and line graphs Begin to report and present findings from enquiries in oral or written forms With support, present findings in a variety of ways including: conclusions, causal relationship, explanations and reliability of results	Record data and results using scientific diagrams and labels, classification keys, tables and bar and line graphs. Begin to report and present findings from enquiries in oral or written forms Decide how to record data from a choice of familiar approaches. Present findings in a variety of ways including: conclusions, causal relationship, explanations and reliability of results
	Concluding	Answer how and why questions about their experiences Connect ideas or events using simple explanations	Begin to talk about what they have found out and how they found it out. Express whether they were surprised or not With help, use simple scientific language	Use observations and ideas to suggest answers to questions Use simple scientific language in their explanations Say what they would change about their investigation	Use straightforward scientific evidence to answer questions or to support their findings With support, identify patterns in their results Begin to use results to draw simple conclusions and raise further questions Suggest how their investigation could be improved	Identify new questions arising from the data, making predictions beyond the data they have collected Find ways of improving what they have already done Look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Link cause and effect	Begin to draw conclusions based on their data and observations, using evidence to justify their ideas With support, use scientific knowledge and understanding to explain their findings Begin to look for different causal relationships in their data and identify evidence that refutes or supports their ideas Separate opinion from fact Know which evidence proves a scientific point Begin to use abstract models to explain ideas	Identify scientific evidence that has been used to support or refute ideas or arguments Use scientific language and illustrations to discuss, communicate and justify their scientific ideas Draw scientific, causal conclusions using the results of an enquiry to justify their ideas Use test results to make predictions and set up further comparatives and fair tests

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	Vocabulary	Question Pattern	Investigate Equipment Group Sort	Notice Comparative and superlative descriptions e.g. longer, longest Predict	Fair test Enquiry Observe Data Vary Conclude	Variable Cause and effect Classify Justify Hypothesis	Relationship Interaction Trend Anomaly Generalisation Reliability	Systematic Refute Causal relationship Quantitative Qualitative

Famous Scientists:

- Daniel Fahrenheit (Fahrenheit scale & mercury thermometer)
- Anders Celsius (temperature scale)
- Michael Faraday (electric motor & electromagnets)
- Alexander Graham Bell (vibrating objects make sounds)
- Thomas Edison (lightbulb)
- Nikola Tesla (alternating current)
- Albert Einstein (relativity, gravity – sought refuge in Norfolk in 1933)
- Isaac Newton (gravity, spectrum of light)
- Charles Darwin (evolution)
- Gregor Mendel (laws of inheritance)
- Francis Crick (DNA)
- James Watson (Human Genome Project)
- Carl Linnaeus (classifying living things)
- Joseph Hooker (plant distribution – born Halesworth)
- Elizabeth Garrett Anderson (first British female doctor – grew up in Aldeburgh)
- Norman Heatley (work on Penicillin – born Woodbridge)
- Louis Pasteur (germ theory of disease)
- Charles Drew (Blood bank)
- Ibn al-Haytham (light – how eyes work)
- Nicholas Copernicus (astronomer)
- Zhang Heng (Chinese astronomer)
- Galileo Galilei (astronomer & physicist)
- Stephen Hawking (Cosmology)
- Robert Hooke (microscope)
- Marie Curie (First physicist and chemist)
- Rosalind Franklin (Born in London, double helix structure of DNA)