



Our Science Curriculum



Progression and Skills Overview

Science

Aims and Intent:

Our children will develop a curiosity and understanding of the world around them by observing, questioning and investigating the nature and scientific processes at work all around them. As they study topics based on the disciplines of Biology, Chemistry and Physics at each key stage, they will acquire the skills and knowledge they need to work scientifically, including making observations, planning and carrying out investigations and using mathematics to collect, present and analyse data. They will become independent learners whilst exploring possible answers for their scientific based questions and be encouraged in all lessons to ask questions, challenge scientific thinking and use precise vocabulary to explain and present their findings and results. They will present their science work in a range of oral, written and digital forms and recognise that science has capacity to change our lives and plays the most significant role in securing our Earth's future.

Key Stage 1 National Curriculum Expectations (working scientifically)

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways;
- observing closely, using simple equipment;
- performing simple tests;
- identifying and classifying;
- using their observations and ideas to suggest answers to questions;
- gathering and recording data to help in answering questions.



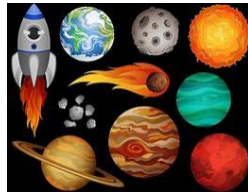
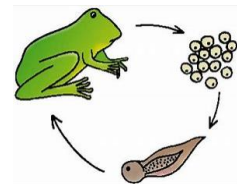






Key Stage 2 National Curriculum Expectations (working scientifically)

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them;
- setting up simple practical enquiries, comparative and fair tests;
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;
- identifying differences, similarities or changes related to simple scientific ideas and processes;
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;
- using test results to make predictions to set up further comparative and fair tests;
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations;
- identifying scientific evidence that has been used to support or refute ideas or arguments.

EYFS Units (Nursery & Reception)	<p>Unit 1 What is magical about me and my family?</p> 	<p>Unit 2 What makes a house a home? Are all homes the same as mine?</p> 	<p>Unit 3 What would I see if I travelled from Earth into Space?</p> 	<p>Unit 4 How do plants and animals change and grow?</p> 	<p>Unit 5 What amazing animals will I see in different places around the world?</p> 
	<p>Unit 6 What might I see swimming under the sea?</p> 	<p>Unit 7 How can I travel and explore my world?</p> 	<p>Unit 8 How do heroes and superheroes make the world a better place?</p> 	<p>Unit 9 (ongoing) How does the weather and my environment change through the Seasons?</p> 	<p>Unit 10 (ongoing) How do people celebrate through our world?</p> 
End of EYFS	<p>(Early Learning Goals linked to Science)</p> <ul style="list-style-type: none"> • 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. 				

<p style="text-align: center;">Year 1 & Year 2 (Cycle A)</p>	<p><u>What do plants need to grow? (Y2)</u> NC: To observe and describe how seeds and bulbs grow into mature plants. To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p><u>How are common materials used in different ways? (Y1)</u> NC: To distinguish between an object and the material from which it is made. To identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. To describe the simple physical properties of a variety of everyday materials. To compare and group together a variety of everyday materials on the basis of their physical properties.</p> <p><u>(Y2)</u> NC: To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p><u>How are animals (including humans) different and the same? (Y1)</u> NC: To identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores. To describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). To identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.</p> <p><u>What seasonal changes do I see in Autumn/ Winter? (Y1)</u> NC: Pupils should be taught to observe changes across the four seasons and describe weather associated with the seasons and how day length varies.</p> <p><u>What Seasonal changes do I see in Spring? (Y1)</u> NC: Pupils should be taught to observe changes across the four seasons and describe weather associated with the seasons and how day length varies.</p> <p><u>What seasonal changes do I see in Summer? (Y1)</u> NC: Pupils should be taught to observe changes across the four seasons and describe weather associated with the seasons and how day length varies.</p>	<p style="text-align: center;">Asking Questions and carrying out fair and comparative tests.</p> <ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways. 	<p style="text-align: center;">Observing and measuring changes</p> <ul style="list-style-type: none"> observing closely, using simple equipment. 	<p style="text-align: center;">Identifying, classifying, recording and presenting data,</p> <ul style="list-style-type: none"> identifying and classifying. gathering and recording data to help in answering questions. 	<p style="text-align: center;">Drawing conclusions, noticing patterns and presenting findings.</p> <ul style="list-style-type: none"> using their observations and ideas to suggest answers to questions. Performing simple tests. 	<p style="text-align: center;">Using scientific evidence and secondary sources of information</p>

<p style="text-align: center;">Year 1 & Year 2 (Cycle B)</p>	<p>What plants will I find in my environment? (Y1) NC: Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.</p> <p>Why do plants and animals need each other? (Y2) NC: To explore and compare the differences between things that are living, dead, and things that have never been alive. To 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. To identify and name a variety of plants and animals in their habitats, including micro-habitats. To 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.</p> <p>How do animals and humans grow and survive? (Y2) NC: To notice that animals, including humans, have offspring which grow into adults. To find out about and describe the basic needs of animals, including humans, for survival (water, food and air) To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Asking Questions and carrying out fair and comparative tests.</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways. 	<p>Observing and measuring changes</p> <ul style="list-style-type: none"> • observing closely, using simple equipment. 	<p>Identifying, classifying, recording and presenting data,</p> <ul style="list-style-type: none"> • identifying and classifying. • gathering and recording data to help in answering questions. 	<p>Drawing conclusions, noticing patterns and presenting findings.</p> <ul style="list-style-type: none"> • using their observations and ideas to suggest answers to questions. • Performing simple tests. 	<p>Using scientific evidence and secondary sources of information</p>
	<p style="text-align: center;">Year 3 & Year 4 (Cycle A)</p>	<p>What do rocks teach us about our earth? (Y3) NC: To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rocks and</p>	<p>Asking Questions and carrying out fair and comparative tests.</p>	<p>Observing and measuring changes</p>	<p>Identifying, classifying, recording and presenting data,</p>	<p>Drawing conclusions, noticing patterns and presenting findings.</p>

	<p>organic matter.</p> <p><u>How amazing are magnets? (Y3)</u> NC: To compare how things move on different surfaces. To notice that some forces need contact between two objects, but magnetic forces can act at a distance. To observe how magnets attract or repel each other and attract some materials and not others. To 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. To describe magnets as having two poles. To predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p><u>How can we identify animals in their habitats? (Y4)</u> NC: To recognise that living things can be grouped in a variety of ways. To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. To recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p><u>What do our teeth tell us about our diet? (Y4)</u> NC: To 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.</p> <p><u>How does electricity work? (Y4)</u> NC: To identify common appliances that run on electricity. To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. To 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. To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. To recognise some common conductors and insulators, and associate metals with being good conductors of electricity.</p>	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests. 	<ul style="list-style-type: none"> • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. 	<ul style="list-style-type: none"> • using straightforward scientific evidence to answer questions or to support their findings.
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Year 3 & Year 4 (Cycle B)	<p><u>How do the sounds we make and hear, travel to our ears? (Y4)</u> NC: To identify how sounds are made, associating some of them with something vibrating. To recognise that vibrations from a sound travel through a medium to the ear. To find patterns between the pitch of a sound and features of the object that produced it. To find patterns between the volume of a sound and the strength of the vibrations that produced it. To recognise that sounds get fainter as the distance from the sound source increases.</p> <p><u>How does temperature effect common materials? (Y4)</u> NC: To compare and group materials together, according to whether they are solids, liquids or gases. To 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). To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p><u>Why do all animals (including humans) need a balanced diet? (Y3)</u> NC: To 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. To identify that humans and some animals have skeletons and muscles for support, protection and movement.</p> <p><u>What is light? (Y3)</u> NC: To recognise that they need light in order to see things and that dark is the absence of light. To 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. To recognise that shadows are formed when the light from a light source is blocked by a solid object. To find patterns in the way that the sizes of shadows change.</p> <p><u>How is each part of the plant important for growth? (Y3)</u> NC: To identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. To 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. To investigate the ways in which water is transported within plants. To explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Asking Questions and carrying out fair and comparative tests.</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests. 	<p>Observing and measuring changes</p> <ul style="list-style-type: none"> • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. 	<p>Identifying, classifying, recording and presenting data,</p> <ul style="list-style-type: none"> • 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. 	<p>Drawing conclusions, noticing patterns and presenting findings.</p> <ul style="list-style-type: none"> • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. 	<p>Using scientific evidence and secondary sources of information</p> <ul style="list-style-type: none"> • using straightforward scientific evidence to answer questions or to support their findings.

<p style="text-align: center;">Year 5 & Year 6 (Cycle A)</p>	<p><u>How does our Earth move? (Y5)</u> NC: To describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To describe the movement of the Moon relative to the Earth. To describe the Sun, Earth and Moon as approximately spherical bodies. To use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p>	<p>Asking Questions and carrying out fair and comparative tests.</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 	<p>Observing and measuring changes</p> <ul style="list-style-type: none"> taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 	<p>Identifying, classifying, recording and presenting data,</p> <ul style="list-style-type: none"> recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 	<p>Drawing conclusions, noticing patterns and presenting findings.</p> <ul style="list-style-type: none"> 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. 	<p>Using scientific evidence and secondary sources of information</p> <ul style="list-style-type: none"> identifying scientific evidence that has been used to support or refute ideas or arguments.
	<p><u>Can changes to materials be reversed? (Y5)</u> NC: To 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. To understand that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. To demonstrate that dissolving, mixing and changes of state are reversible changes. To 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.</p> <p><u>How does light travel? (Y6)</u> NC: To recognise that light appears to travel in straight lines. To 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. To 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. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p><u>How can plants and animals be classified? (Y6)</u> NC: To 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. To give reasons for classifying plants and animals based on specific characteristics.</p> <p><u>How can we control electricity? (Y6)</u> NC: To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To 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. To use recognised symbols when representing a simple circuit in a diagram.</p>					

Year 5 & Year 6 (Cycle B)	<p><u>How do we evolve and adapt? (Y6)</u> NC: To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><u>How do I keep my heart and lungs healthy? (Y6)</u> NC: To identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood. To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. To describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><u>Which forces act upon an object which is moving? (Y5)</u> NC: To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of air resistance, water resistance and friction, that act between moving surfaces. To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p><u>How do plants and animals reproduce? (Y5)</u> NC: To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. To describe the life process of reproduction in some plants and animals.</p> <p><u>How do humans grow and change? (Y5)</u> NC: To describe the changes as humans develop from birth to old age.</p>	<p>Asking Questions and carrying out fair and comparative tests.</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 	<p>Observing and measuring changes</p> <ul style="list-style-type: none"> taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 	<p>Identifying, classifying, recording and presenting data,</p> <ul style="list-style-type: none"> recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 	<p>Drawing conclusions, noticing patterns and presenting findings.</p> <ul style="list-style-type: none"> 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. 	<p>Using scientific evidence and secondary sources of information</p> <ul style="list-style-type: none"> identifying scientific evidence that has been used to support or refute ideas or arguments.