

# SCIENCE



## KEY STAGE 1

The principal focus of science teaching in key stage 1 is to **enable pupils to experience and observe phenomena**, looking more closely at the natural and humanly-constructed world around them. They are encouraged to **be curious and ask questions about what they notice**. They should be helped to develop **their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information**. They begin to use **simple scientific language** to talk about what they have found out and **communicate their ideas to a range of audiences in a variety of ways**. Most of the learning about science is done through the use of **first-hand practical experiences**, with reference to **secondary sources, such as books, photographs and videos**.

'Working scientifically' is described separately, but is taught through and clearly related to the programme of study.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

KEY STAGE 1							
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Working scientifically
<b>Year 1</b>	<p><u>All living things &amp; their habitats</u> Living characteristics, habitat suitability, naming plants &amp; animals in (micro)habitats. Simple food chains.</p>	<p><u>Seasonal changes</u> Observe season changes, weather &amp; day length.</p>	<p><u>Everyday materials</u> Identify, name &amp; compare materials &amp; properties.</p>	<p><u>Seasonal changes</u> Observe season changes, weather &amp; day length.</p>		<p><u>Plants</u> Identify, name &amp; basic structure of a plant.</p>	<p>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways</li> <li>• observing closely, using simple equipment</li> <li>• performing simple tests</li> <li>• identifying and classifying</li> <li>• using their observations and ideas to suggest answers to questions</li> <li>• gathering and recording data to help in answering questions.</li> </ul>
<b>Year 2</b>	<p><u>Uses of everyday materials</u> Identify &amp; compares uses of materials, how things move on different surfaces.</p>		<p><u>Animals, including humans</u> Animal groups &amp; parts of the body.</p>	<p><u>Animals, including humans</u> Animals &amp; humans have offspring, survival needs, exercise, food types &amp; hygiene.</p>		<p><u>Plants</u> Seeds &amp; bulbs, plant needs.</p>	

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## LOWER KEY STAGE 2 – YEARS 3-4

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They learn to draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately, but is taught through and clearly related the programme of study.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

LOWER KEY STAGE 2							
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Working scientifically
<b>Year 3</b>	<p><u>Sound</u> How sound is made, patterns between pitch &amp; features of objects and patterns between volume &amp; strength of vibration.</p>	<p><u>Forces &amp; magnets</u> Magnetic forces can act at a distance, magnets can attract &amp; repel, poles of magnets.</p>	<p><u>Animals, including humans</u> Nutrition, skeletons &amp; muscles.</p>	<p><u>Plants</u> Functions of parts of plants, requirements for growth, water in plants &amp; part of life cycle of flowering plants.</p>	<p><u>Light</u> Light is reflected from surfaces. Patterns that determine shadow size.</p>		<p>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them</li> <li>setting up simple practical enquiries, comparative and fair tests</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>
<b>Year 4</b>	<p><u>All living things</u> Identifying &amp; naming in local &amp; wider environment, using classification keys. Environments can change causing danger to living things.</p>	<p><u>States of matter</u> Liquids, solids &amp; gases and changes of state. Evaporation, condensation &amp; the water cycle.</p>	<p><u>Rocks</u> Compare &amp; group by appearance &amp; properties, fossils &amp; soil.</p>	<p><u>Animals, including humans</u> Simple functions of the digestive system &amp; teeth. Food chains (producers, predators &amp; prey).</p>	<p><u>Electricity</u> Electrical appliances, simple series circuits, switches &amp; common insulators and conductors.</p>		

# SCIENCE



## UPPER KEY STAGE 2 – YEARS 5-6

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, pupils encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They learn to select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately, but must always be taught through and clearly related to the programme of study. Pupils should read, spell and pronounce scientific vocabulary correctly.

UPPER KEY STAGE 2								
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Working scientifically	
<b>Year 5</b>	<p><b>Properties &amp; changes of materials</b> Compare &amp; group materials from comparative &amp; fair tests (hardness, solubility, transparency, conductivity &amp; magnetism). Solids, liquids &amp; gases. Dissolving &amp; separating mixtures. Irreversible changes of state.</p>	<p><b>All living things</b> Explain differences in life cycles (mammal, amphibian, insect &amp; bird). Describe life process of reproduction in some plants and animals.</p>	<p><b>Animals including humans</b> Describe changes as humans develop from birth to old age.</p>	<p><b>Animals including humans</b> Main parts of human circulatory system, &amp; explain functions of the heart, blood vessels &amp; blood. Impact of diet, exercise, drugs &amp; lifestyle on body function. Way nutrients &amp; water are transported within animals, including humans.</p>	<p><b>Earth &amp; space</b> Movement Earth, &amp; other planets, relative to the Sun. Movement of the Moon relative to Earth. Describe the Sun, Earth &amp; Moon as approximately spherical bodies. Earth's rotation (day and night).</p>			<p><b>Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</b></p> <ul style="list-style-type: none"> <li>▫planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>▫taking measurements, using a range of scientific equipment, with increasing accuracy and precision</li> <li>▫recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</li> <li>▫using test results to make predictions to set up further comparative and fair tests</li> <li>▫using simple models to describe scientific ideas</li> <li>▫reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</li> <li>▫identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>
<b>Year 6</b>	<p><b>All living things</b> Classification according to common observable characteristics &amp; based on similarities and differences, including micro-organisms, plants &amp; animals.</p>	<p><b>Forces</b> Explain gravity, air resistance, water resistance &amp; friction. Force &amp; motion through mechanical devices such as gears, pulleys, levers and springs.</p>	<p><b>Evolution &amp; inheritance</b> Living things have changed over time &amp; fossils provide information. Offspring vary &amp; are not identical to their parents. Animals &amp; plants are adapted to their environment &amp; adaptation may lead to evolution.</p>	<p><b>Electricity</b> Associate brightness of a lamp or volume of a buzzer with number &amp; voltage of cells. Variations in how components function (brightness, loudness &amp; on/off switches). Use symbols when representing a simple circuit in a diagram.</p>	<p><b>Light</b> Light appears to travel in straight lines. Objects are seen because they give or reflect light. Light travels to our eyes. Shadows &amp; shape of object. Predict the size of shadows.</p>			