



Curriculum Progression Document

Subject: Science

The **National Curriculum** for **Science** aims to ensure that all pupils by the end of Year 6:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Working Scientifically

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<p><i>Pupils should be taught:</i></p> <ul style="list-style-type: none"> • 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. 	<p><i>Pupils should be taught:</i></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 • 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. 	<p><i>Pupils should be taught:</i></p> <ul style="list-style-type: none"> • 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 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

Area of Subject		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p><i>Asking questions</i></p> 	<p>National Curriculum Aims / Objectives</p>	<ul style="list-style-type: none"> • Asking simple questions and recognising that they can be answered in different ways. 	<ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. 	<ul style="list-style-type: none"> • <i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</i> • <i>Using test results to make predictions to set up further comparative and fair tests.</i> 			
	<p>Supporting Knowledge & Skills</p>	<p>Children can:</p> <ol style="list-style-type: none"> explore the world around them, leading them to ask some simple scientific questions about how and why things happen; ask people questions 	<p>Children can:</p> <ol style="list-style-type: none"> start to raise their own relevant questions about the world around them in response to a range of scientific experiences (including different types of science enquiries); start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; 	<p>Children can:</p> <ol style="list-style-type: none"> with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; explore and talk about their ideas, raising different kinds of scientific questions; make links between concepts ask their own questions about scientific phenomena; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; use test results to ask further questions 			

Carrying out science enquiries



				<ul style="list-style-type: none"> g) use their test results to identify when further tests and observations may be needed; h) use and develop keys and other information records identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment;
<p>Observing and measuring changes</p> 	<p>National Curriculum Aims / Objectives</p>	<ul style="list-style-type: none"> • <i>Observing closely, using simple equipment.</i> 	<ul style="list-style-type: none"> • <i>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</i> 	<ul style="list-style-type: none"> • <i>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</i>
	<p>Supporting Knowledge & Skills</p>	<p>Children can:</p> <ul style="list-style-type: none"> a) observe the natural world around them; b) observe changes over time. c) with guidance, begin to notice patterns and relationships; d) use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) e) observe closely using simple equipment f) with support, take simple measurements 	<p>Children can:</p> <ul style="list-style-type: none"> a) begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them b) help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; c) learn how to use a wider range of equipment, including thermometers and data loggers; d) make systematic and careful observations; e) take accurate measurements using standard units 	<p>Children can:</p> <ul style="list-style-type: none"> a) choose the most appropriate equipment to make measurements and explain their choices; b) explain how to use the equipment accurately; c) take measurements using a range of scientific equipment with increasing accuracy and precision; d) independently record observations; e) take repeat readings when appropriate; f) understand why we take an average in repeat readings.

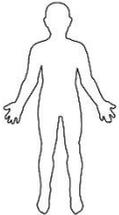
			<ul style="list-style-type: none"> f) begin to identify how they can record their observations; g) ask their own questions about what they observe; 	
<p>Identifying, classifying, recording and presenting data</p> 	<p>National Curriculum Aims / Objectives</p>	<ul style="list-style-type: none"> • <i>Identifying and classifying.</i> • <i>Gathering and recording data to help in answering questions.</i> 	<ul style="list-style-type: none"> • <i>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</i> • <i>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</i> 	<ul style="list-style-type: none"> • <i>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</i>
	<p>Supporting Knowledge & Skills</p>	<p>Children can:</p> <ul style="list-style-type: none"> a) use simple features to compare objects, materials and living things; b) decide how to sort and classify objects into simple groups with some help; c) with support, record and communicate findings; d) with support, sort, group, gather and record data in a variety of ways to help in answering questions, such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. 	<p>Children can:</p> <ul style="list-style-type: none"> a) talk about criteria for grouping, sorting and classifying; b) group and classify things; c) collect data from their own observations and measurements; d) present data in a variety of ways to help in answering questions; e) use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; f) record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. 	<p>Children can:</p> <ul style="list-style-type: none"> a) independently group, classify and describe living things and materials; b) use and develop keys and other information records to identify, classify and describe living things and materials; c) decide how to record data from a choice of familiar approaches; d) record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs. e) explain the choices that they have made when recording and presenting data

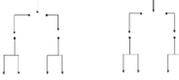
<p>Noticing patterns, drawing conclusions and presenting findings</p> 	<p>National Curriculum Aims / Objectives</p>	<ul style="list-style-type: none"> Using their observations and ideas to suggest answers to questions. 	<ul style="list-style-type: none"> Using results to draw simple conclusions, make 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. 	<ul style="list-style-type: none"> 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.
<p>Supporting Knowledge & Skills</p>		<p>Children can, with support:</p> <ol style="list-style-type: none"> identify and discuss differences between their results; begin to notice patterns and relationships, including cause and effect; begin to draw simple conclusions; say whether what happened was what they expected; read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1; talk about their findings to a variety of audiences in a variety of ways. 	<p>Children can:</p> <ol style="list-style-type: none"> begin to make choices about how to analyse data; first talk about, and then go on to write about, what they have found out; with support, look for changes, patterns, similarities and differences in their data; draw simple conclusions from their results, using and spelling scientific and language appropriate to their age; suggest improvements to investigations; raise further questions which could be investigated; report and present their results and conclusions to others in written and oral forms with increasing confidence; 	<p>Children can:</p> <ol style="list-style-type: none"> choose how to analyse the data; notice patterns; look for different causal relationships in their data; draw conclusions based on their data and observations; use their scientific knowledge and understanding to explain their findings, including if they refute them; discuss the degree of trust they can have in a set of results; discuss how they could increase their trust in a set of results independently report and present their conclusions to others in oral and written forms. read, spell and pronounce scientific and mathematical vocabulary correctly and use it accurately in their work;

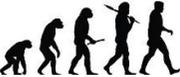
			<ul style="list-style-type: none"> h) with support, start to link scientific knowledge and understanding with their results i) with support, identify new questions arising from the data, making predictions for new values within or beyond the data that they have collected; 	
<p>Using scientific evidence and secondary sources of information <i>n</i></p> 	<p>National Curriculum Aims / Objectives</p>		<ul style="list-style-type: none"> • <i>Identifying differences, similarities or changes related to simple scientific ideas and processes.</i> • <i>Using straightforward scientific evidence to answer questions or to support their findings.</i> 	<ul style="list-style-type: none"> • <i>Identifying scientific evidence that has been used to support or refute ideas or arguments.</i>
	<p>Supporting Knowledge & Skills</p>		<p>Children can, with support:</p> <ul style="list-style-type: none"> a) make links between their own science results and other scientific evidence; b) use straightforward scientific evidence to answer questions or support their findings; c) identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; d) recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. 	<p>Children can:</p> <ul style="list-style-type: none"> a) use primary and secondary sources' evidence to justify ideas; b) identify evidence that refutes or supports their ideas; c) recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact; d) use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas; e) talk about how scientific ideas have developed over time.

Scientific Knowledge

Area of Subject	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p style="text-align: center;">Plants National Curriculum Aims / Objectives</p> 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<p>Connections to: Living things and their habitats</p>	<p>Connections to: Living things and their habitats</p>	<p>Connections to: Living things and their habitats</p>

			flowering plants, including pollination, seed formation and seed dispersal			
<p>Animals, including humans National Curriculum Aims / Objectives</p> 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • describe the changes as humans develop to old age 	<ul style="list-style-type: none"> • 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

	and label the basic parts of the human body and say which part of the body is associated with each sense					transported within animals, including humans
<p>Living things and their habitats</p> <p>National Curriculum Aims / Objectives</p> 	<p>Connections to:</p> <p>Plants</p> <p>Animals, including humans</p>	<ul style="list-style-type: none"> • 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 	<p>Connections to:</p> <p>Plants</p> <p>Animals, including humans</p>	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 • give reasons for classifying plants and

		<p>they depend on each other</p> <ul style="list-style-type: none"> • 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 		pose dangers to living things		animals based on specific characteristics
<p>Evolution and inheritance</p> <p>National Curriculum Aims / Objectives</p> 			Connections to: Rocks (fossils)			<ul style="list-style-type: none"> • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth

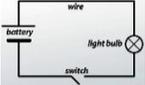
						<p>millions of years ago</p> <ul style="list-style-type: none"> • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Materials, rocks and	Everyday materials <ul style="list-style-type: none"> • distinguish between an object and the material from 	Uses of everyday materials <ul style="list-style-type: none"> • identify and compare the suitability of a 	Rocks <ul style="list-style-type: none"> • compare and group together different kinds of rocks on the 	States of matter <ul style="list-style-type: none"> • compare and group materials together, 	Properties and changes of materials <ul style="list-style-type: none"> • compare and group together 	Connections to: Evolution and inheritance (fossils)

states of matter
National Curriculum Aims / Objectives



					<p>including through filtering, sieving and evaporating</p> <ul style="list-style-type: none">• 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	
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					reversible, including changes associated with burning and the action of acid on bicarbonate of soda	
<p>Light National Curriculum Aims / Objectives</p> 			<ul style="list-style-type: none"> • 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 			<ul style="list-style-type: none"> • 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

			<ul style="list-style-type: none"> find patterns in the way that the size of shadows change 			<p>or from light sources to objects and then to our eyes</p> <ul style="list-style-type: none"> use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
<p>Electricity National Curriculum Aims / Objectives</p> 				<ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> 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,

				<ul style="list-style-type: none"> • 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 		<p>including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <ul style="list-style-type: none"> • use recognised symbols when representing a simple circuit in a diagram
<p>Sound National Curriculum</p>				<ul style="list-style-type: none"> • identify how sounds are made, associating 		

**Aims /
Objectives**

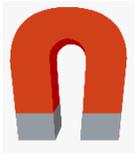


some of them
with
something
vibrating

- 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

Forces and magnets

National Curriculum Aims / Objectives



- compare how things move on different surfaces
 - notice that some forces need contact between 2 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
- 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

			<ul style="list-style-type: none"> • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing 			
Seasonal changes National Curriculum Aims / Objectives 	<ul style="list-style-type: none"> • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies 				Connections to: Earth and space	
Earth and space National Curriculum Aims / Objectives 	Connections to: Seasonal changes				<ul style="list-style-type: none"> • describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon 	

					<p>relative to the Earth</p> <ul style="list-style-type: none">• 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	
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