

Whole school curriculum coverage map by subject: Science

On- going skills	<u>Key Stage 1</u> <u>Working Scientifically</u> <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 observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. 	<u>Key Stage 2</u> <u>Working Scientifically Years 3 and 4</u> <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 			
	<u>Seasonal changes (on going throughout the year)</u> Observe changes across the 4 seasons Observe and describe associated weather Observe how day length varies	<u>Working Scientifically Years 5 and 6</u> <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. 			
<u>By the end of Year 1...</u> Asking simple questions and recognising that they can be answered in different ways <ul style="list-style-type: none"> ○ Ask questions stimulated by their exploration of their 	<u>By the end of Year 2...</u> Asking simple questions and recognising that they can be answered in different ways <ul style="list-style-type: none"> ○ Draw on their observations and ideas to offer answers to questions 	<u>By the end of Year 3...</u> Asking relevant questions and using different types of scientific enquiries to answer them <ul style="list-style-type: none"> ○ Respond to ideas given to them to answer questions or suggest solutions to 	<u>By the end of Year 4...</u> Asking relevant questions and using different types of scientific enquiries to answer them <ul style="list-style-type: none"> ○ Use scientific ideas when describing simple processes or phenomena 	<u>By the end of Year 5</u> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary <ul style="list-style-type: none"> ○ Select appropriate 	<u>By the end of Year 6</u> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary <ul style="list-style-type: none"> ○ Recognise significant

Whole school curriculum coverage map by subject: Science

<p>world</p> <ul style="list-style-type: none"> ○ Recognise basic features of objects, living things or events ○ Draw on their everyday experience to help answer questions ○ Respond to suggestions to identify some evidence (in the form of information, observations or measurements) that has been used to answer a question <p>Observing closely, using simple equipment</p> <ul style="list-style-type: none"> ○ Use their senses and simple equipment to make observations • Correctly use equipment provided to make observations and measurements 	<ul style="list-style-type: none"> ○ Identify differences, similarities or changes related to simple scientific ideas, processes or phenomena ○ Respond to ideas given to them to answer questions or suggest solutions to problems ○ Represent things in the real world using simple physical models <p>Observing closely, using simple equipment</p> <ul style="list-style-type: none"> • Select equipment or information sources from those provided to address a question or idea under investigation 	<p>problems</p> <ul style="list-style-type: none"> ○ Represent things in the real world using simple physical models <p>Setting up simple practical enquiries, comparative and fair tests</p> <ul style="list-style-type: none"> ○ Identify one or more control variables in investigations from those provided <p>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> <ul style="list-style-type: none"> ○ Make some accurate observations or whole number measurements relevant to questions 	<ul style="list-style-type: none"> ○ Identify scientific evidence that is being used to support or refute ideas or arguments <p>Setting up simple practical enquiries, comparative and fair tests</p> <ul style="list-style-type: none"> ○ Decide when it is appropriate to carry out fair tests in investigations <p>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> <ul style="list-style-type: none"> • Make sets of observations or measurements, identifying the ranges and intervals used 	<p>equipment or information sources to address specific questions or ideas under investigation</p> <ul style="list-style-type: none"> ○ Decide when it is appropriate to carry out fair tests in investigations 	<p>variables in investigations, selecting the most suitable to investigate</p> <ul style="list-style-type: none"> ○ Explain why particular pieces of equipment or information sources are appropriate for the questions or ideas under investigation
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Whole school curriculum coverage map by subject: Science

<p>Performing simple tests</p> <ul style="list-style-type: none"> ○ Respond to prompts by making some simple suggestions about how to find an answer or make observations • Identify things to measure or observe that are relevant to the question or idea they are investigating • Make measurements, using non-standard units as appropriate 	<p>Performing simple tests</p> <ul style="list-style-type: none"> ○ Make some suggestions about how to find things out or how to collect data to answer a question or idea they are investigating ○ Make measurements, using standard or non-standard units as appropriate • Make some accurate observations or whole number measurements relevant to questions or ideas under investigation • Recognise obvious risks when prompted • Identify one or more control variables in investigations from those provided 	<p>or ideas under investigation</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Select equipment or information sources from those provided to address a question or idea under investigation</p>	<ul style="list-style-type: none"> • Identify possible risks to themselves and others <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <ul style="list-style-type: none"> • Select appropriate ways of presenting scientific data • Select appropriate equipment or information sources to address specific 	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p> <ul style="list-style-type: none"> ○ Make sets of observations or measurements, identifying the ranges and intervals used 	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p> <ul style="list-style-type: none"> ○ Repeat sets of observations or measurements where appropriate, selecting suitable ranges and intervals
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Whole school curriculum coverage map by subject: Science

<p>Identifying and classifying</p> <ul style="list-style-type: none"> ○ Use everyday terms to describe simple features or actions of objects, living things or events they observe • Make comparisons between basic features or components of objects, living things or events • Sort and group 	<p>Identifying and classifying</p> <ul style="list-style-type: none"> • Make comparisons between basic features or components of objects, living things or events • Sort and group objects, living things or events on the basis of what they have observed (alive, dead, never been alive). 	<p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <ul style="list-style-type: none"> ○ Use scientific forms of language when communicating simple scientific ideas, processes or phenomena <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <ul style="list-style-type: none"> ○ Present simple scientific data in more than one way, including tables and bar charts 	<p>questions or ideas under investigation</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <ul style="list-style-type: none"> • Use scientific and mathematical conventions when communicating information or ideas • Use appropriate scientific forms of language to communicate scientific ideas, processes or phenomena 	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <ul style="list-style-type: none"> ○ Select appropriate ways of presenting scientific data 	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <ul style="list-style-type: none"> • Decide on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables <p>Use appropriate scientific and mathematical conventions and terminology to communicate abstract ideas</p>
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Whole school curriculum coverage map by subject: Science

<p>objects, living things or events on the basis of what they have observed (materials).</p> <p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> ○ Respond to prompts to say what happened ○ Say what has changed when observing objects, living things or events • Say what happened in their experiment or investigation • Say whether what happened was what they expected, acknowledging any unexpected outcomes • Respond to prompts to suggest different ways they could have done things 	<p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> ○ Say whether what happened was what they expected, acknowledging any unexpected outcomes • Use scientific forms of language when communicating simple scientific ideas, processes or phenomena • Identify straightforward patterns in observations or in data presented in various formats, including tables, pie and bar charts • Identify simple advantages of working together on experiments or investigations • Suggest improvements to their working methods • Describe what they have found out in experiments or investigations, linking 	<p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> ○ Identify straightforward patterns in observations or in data presented in various formats, including tables, pie and bar charts ○ Identify simple advantages of working together on experiments or investigations ○ Suggest improvements to their working methods 	<p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> • Identify patterns in data presented in various formats, including line graphs • Suggest improvements to their working methods, giving reasons 	<p>Using test results to make predictions to set up further comparative and fair tests</p> <ul style="list-style-type: none"> ○ Identify patterns in data presented in various formats, including line graphs ○ Suggest improvements to their working methods, giving reasons 	<p>Using test results to make predictions to set up further comparative and fair tests</p> <ul style="list-style-type: none"> • Evaluate the effectiveness of their working methods, making practical suggestions for improving them • Provide straightforward explanations for differences in repeated observations or measurements • Interpret data in a variety of formats, recognising obvious inconsistencies • Make, and act on, suggestions to control obvious risks to themselves and others • Suggest how collaborative approaches to specific experiments or investigations may improve the evidence collected
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Whole school curriculum coverage map by subject: Science

<p>Gathering and recording data to help in answering questions.</p> <ul style="list-style-type: none"> ○ Present evidence they have collected in simple templates provided for them ○ Communicate simple features or components of objects, living things or events they have observed in appropriate forms ○ Share their own ideas and listen to the ideas of others • Present their ideas and evidence in appropriate ways • Use simple scientific vocabulary to describe their ideas and observations • Work together on an experiment or investigation and recognise contributions made by others (whole class). 	<p>cause and effect</p> <p>Gathering and recording data to help in answering questions.</p> <ul style="list-style-type: none"> ○ Present their ideas and evidence in appropriate ways ○ Respond to prompts by using simple texts and electronic media to find information ○ Use simple scientific vocabulary to describe their ideas and observations ○ Work together (groups) on an experiment or investigation and recognise contributions made by others • Present simple scientific data in more than one way, including tables and bar charts 	<p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <ul style="list-style-type: none"> ○ Identify differences, similarities or 		<p>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</p> <ul style="list-style-type: none"> ○ Use scientific and mathematical conventions when communicating information or ideas ○ Use appropriate scientific forms of language to communicate scientific ideas, processes or phenomena 	<p>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</p> <ul style="list-style-type: none"> • Distinguish between opinion and scientific evidence in contexts related to science, and use evidence rather than opinion to support or challenge scientific arguments
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Whole school curriculum coverage map by subject: Science

<p>Understanding the applications and implications of science</p> <ul style="list-style-type: none"> ○ Identify a link to science in familiar objects or contexts ○ Recognise scientific and technological developments that help us • Describe in familiar contexts, how science helps people do things. 	<p>Understanding the applications and implications of science</p> <ul style="list-style-type: none"> ○ Express personal feelings or opinions about scientific or technological phenomena. ○ Identify people who use science to help others ○ Identify scientific or technological phenomena and say whether or not they are helpful. • Explain the purposes of a variety of scientific or technological developments • Link applications to specific characteristics or properties Identify aspects of our lives, or of the work that people do, which are based on scientific ideas 	<p>changes related to simple scientific ideas, processes or phenomena</p> <p>Understanding the applications and implications of science:</p> <ul style="list-style-type: none"> ○ Explain the purposes of a variety of scientific or technological developments ○ Link applications to specific characteristics or properties ○ Identify aspects of our lives, or of the work that people do, which are based on scientific ideas <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <ul style="list-style-type: none"> ○ Describe what they have found out in 	<p>Understanding the applications and implications of science:</p> <ul style="list-style-type: none"> • Describe some simple positive and negative consequences of scientific and technological developments • Recognise applications of specific scientific ideas • Identify aspects of science used within particular jobs or roles <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <ul style="list-style-type: none"> • Identify scientific evidence they have 	<p>Understanding the applications and implications of science:</p> <ul style="list-style-type: none"> • Describe some simple positive and negative consequences of scientific and technological developments • Recognise applications of specific scientific ideas • Identify aspects of science used within particular jobs or roles <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <ul style="list-style-type: none"> ○ Identify scientific 	<p>Understanding the applications and implications of science:</p> <ul style="list-style-type: none"> • Describe different viewpoints a range of people may have about scientific or technological developments • Indicate how scientific or technological developments may affect different groups of people in different ways • Identify ethical or moral issues linked to scientific or technological developments • Link applications of science or technology to their underpinning scientific ideas <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <ul style="list-style-type: none"> • Draw valid
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Whole school curriculum coverage map by subject: Science

		<p>experiments or investigations, linking cause and effect</p>	<p>used in drawing conclusions</p> <ul style="list-style-type: none"> • Draw straightforward conclusions from data presented in various formats 	<p>evidence they have used in drawing conclusions</p> <ul style="list-style-type: none"> ○ Draw straightforward conclusions from data presented in various formats ○ Use scientific ideas when describing simple processes or phenomena 	<p>conclusions that utilise more than one piece of supporting evidence, including numerical data and line graphs</p> <ul style="list-style-type: none"> • Identify the use of evidence and creative thinking by scientists in the development of scientific ideas • Recognise scientific questions that do not yet have definitive answer • Use abstract ideas or models or more than one step when describing processes or phenomena • Explain processes or phenomena, suggest solutions to problems or answer questions by drawing on abstract ideas or models
<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
<p><u>Animals (Geography link)</u> Identify and name a range of common animals within the local environment</p> <p>Know the difference between carnivore, herbivore, omnivore.</p>	<p><u>Living things and their habitats</u> Explore and compare the differences between things that are living, dead and never been alive.</p> <p>Identify habitats that are</p>	<p><u>Rocks</u> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>describe in simple terms how fossils are formed</p>	<p><u>Sound – (Link to music)</u> Identify how sounds are made.</p> <p>Associate sounds with vibration</p> <p>Recognise how sound travels to the ear</p>	<p><u>Properties and changes of materials</u> compare and group together every day materials according to their properties: hardness, solubility transparency conductivity (electrical and thermal)</p>	<p><u>Animals including humans</u> Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.</p>

Whole school curriculum coverage map by subject: Science

<p>Compare the structure of animals: fish, reptiles, amphibians. Label the human body including senses</p>	<p>well suited to different animals and plants Identify and name a variety of plants and animals and their habitat Describe how animals acquire their food from plants and other animals (food chains)</p>	<p>when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter.</p>	<p>Find patterns between the pitch of the sound and features of the object producing it (music link) Find patterns between the volume of the sound and the strength of the vibrations that produce it. (music link) Recognise that sounds get fainter as distance increases.</p>	<p>and their response to magnets Know that some materials will dissolve in liquid to form a solution and describe how to recover this substance from a solution. Use knowledge of solids, liquids and gasses to decide how mixtures might be separated including: filtering, sieving and evaporating. Use fair testing to give reasons for the particular uses of everyday materials Demonstrate that dissolving mixing and changes of state are reversible changes Explain that some changes (irreversible) result in the formation of new materials.</p>	<p>Recognise the impact of diet, exercise, drugs and life style on the way their bodies function. Describe the ways in which nutrients and water are transported within animals / humans.</p>
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Whole school curriculum coverage map by subject: Science

<p><u>Everyday materials-</u> Distinguish between an object and the material from which it is made. EG This chair is made from metal and plastic</p> <p>Identify and name a variety of materials and describe their physical properties (vocabulary)</p> <p>Compare and sort everyday materials according to their physical properties</p> <p><u>Plants: (Geography link)</u> Name common plants including deciduous and evergreen</p> <p>Identify and describe the structure of flowering plants</p>	<p><u>Use of everyday materials</u> Identify and compare the suitability of every day materials for particular uses. Find out how materials can be changed by: squashing, bending, twisting, stretching. (PE link)</p> <p><u>Animals including humans</u> Notice that animals and humans have offspring which grow into adults</p> <p>Find out about basic needs for survival</p> <p>Describe the importance of exercise (Humans) and eating the right amount of different food and keeping clean</p> <p><u>Plants</u> Observe and describe how bulbs and seeds grow into mature plants</p> <p>Find and observe what plants need to grow</p>	<p><u>Forces and Magnets</u> compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p>	<p><u>Electricity –</u> Identify common electrical appliances</p> <p>Construct a simple series circuit, name its basic parts (cells, wires, bulbs, switches, buzzers)</p> <p>Identify whether or not a lamp will light in a simple series circuit.</p> <p>Recognise that a switch opens and closes a circuit (linked to above)</p> <p>Recognise common conductors and insulators</p> <p><u>Living things and their habitats –</u> Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things</p> <p>Recognise that environments can change and this can sometimes pose danger to living things.</p>	<p><u>Earth and Space</u> Describe the movement of the Earth, and other planets, relative to the Sun in the Solar system</p> <p>Describe the movement of the moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>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><u>Forces including a focus on famous scientists</u> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</p> <p>Recognise that some mechanism including</p>	<p><u>Living things and their habitats</u> 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</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p><u>Evolution and inheritance</u> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit</p>
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Whole school curriculum coverage map by subject: Science

		<p><u>Animals including humans</u> identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p><u>Plants</u> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>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</p> <p>investigate the way in which water is transported within plants</p> <p>explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><u>Animals including humans</u></p>	<p><u>Animals including humans</u> Describe the simple functions of the basic parts of the digestive system</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains identifying: producers, predators and prey.</p> <p><u>State of matter</u> (linked to Geography) Compare and group materials together, according to whether they are solids, liquid or gas</p> <p>Observe that some materials change state when heated or cooled and measure the temperature at which this happens in degrees Celsius.</p> <p>Identify the part played by evaporation and condensation in the Water Cycle and associate the rate of</p>	<p>levers, pulleys and gears allow a smaller force to have a greater effect.</p> <p><u>Living Things and their habitats-</u> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>describe the life process of reproduction in some plants and animals.</p> <p><u>Animals, including humans-</u> Describe the changes as humans develop to old age.</p>	<p>their environment in different way and that adaptation may lead to evolution.</p> <p><u>Light</u> Recognise that light appears to travel in straight lines</p> <p>Use the idea of light travelling in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>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.</p> <p>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>Electricity</u> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of</p>
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Whole school curriculum coverage map by subject: Science

		<p>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.</p> <p><u>Light</u> recognise that they need light in order to see things and that dark is the absence of light</p> <p>notice that light is reflected from surfaces</p> <p>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>recognise that shadows are formed when the light from a light source is blocked by a solid object</p> <p>find patterns in the way that the size of shadows change</p>	<p>evaporation with temperature.</p>		<p>cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function including brightness, loudness and the on/off position of switches.</p> <p>Use recognised symbols when representing circuit diagrams.</p> <p><u>Sex education/Drugs? → PSHCE?</u></p>
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