



# St Mary's Church of England Primary School

## Science progression of skills



Domain	N.C Topic	Reception EYFS Framework	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	Animals including Humans	<ul style="list-style-type: none"><li>• Children make observations of animals.</li><li>• Children know and talk about similarities and differences in relation to living things.</li><li>• Children explain why something occur and talk about changes</li></ul>	<ul style="list-style-type: none"><li>• Name a variety of common animals</li><li>• Identify and group a range of familiar animals</li><li>• Identify key features of a range of animals</li><li>• Relate each of the human senses to organs</li></ul>	<ul style="list-style-type: none"><li>• Describe the relationship between animal adults and their offspring</li><li>• Describe the importance of eating a healthy diet and exercise</li><li>• Identify human's basic needs.</li><li>• Construct and simple food chain about what eats what.</li></ul>	<ul style="list-style-type: none"><li>• Describe why animals depend on the correct nutrition.</li><li>• Explain which parts of the skeleton provide support and protection and how they allow for movement.</li></ul>	<ul style="list-style-type: none"><li>• Identify what each of the principal organs in the digestive system do.</li><li>• Describe the function for each kind of tooth in the human skull.</li><li>• Use a food chain to represent the predator-prey relationship.</li></ul>	<ul style="list-style-type: none"><li>• Identify similarities and differences in two different life cycles, e.g. sparrow and butterfly, with reference to eggs and intermediate stages.</li><li>• Describe the changes as humans develop to old age, e.g. trends in changes to size, weight, mobility etc.</li><li>• Describe in sequence the stages of reproduction in some plants and animals, e.g. dog and a thistle.</li></ul>	<ul style="list-style-type: none"><li>• Identify the broad groups into which living things are classified, e.g. mammals.</li><li>• State how animals can be classified using specific characteristics.</li><li>• Name the main parts of the human circulatory system, e.g. heart, arteries, veins.</li><li>• Recognise that diet, exercise, drugs and lifestyle impact on the way the body functions, e.g. knowing that exercise changes the body.</li><li>• Describe that nutrients and water are transported within humans.</li></ul>

	Plants	<ul style="list-style-type: none"> <li>• Children make observations of plants.</li> <li>• Children know and talk about similarities and differences in relation to living things.</li> <li>• Children explain why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify a range of local plants.</li> <li>• Name parts of a range of familiar plants.</li> <li>• Compare and contrast a collection of items into 'living' 'not living' and 'never been alive'.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe stages of development of a full grown plant.</li> <li>• Explore and identify what plants need to grow</li> <li>• Explaining with the aid of a diagram or plant how water is carried up from the soil.</li> <li>• Explain how pollination, seed formation and seed dispersal play a role in the reproduction of flowering plants.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain what all plants need to flourish and recognise how these requirements vary in amount</li> <li>• Describe what each part of a flowering plant does</li> </ul>			
	Living things and their habitats	<ul style="list-style-type: none"> <li>• Children know and talk about the features of their own environment and how environments might vary from one another.</li> <li>• Children know and talk about similarities</li> </ul>		<ul style="list-style-type: none"> <li>• Explain how for a plant it gets what it needs from its habitat and other things that are there</li> <li>• Identify a range of living things in habitats of various sizes</li> <li>• Identify and explore what plants need to thrive</li> </ul>		<ul style="list-style-type: none"> <li>• Suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults.</li> <li>• Use classification keys to group and identify members from</li> </ul>	<ul style="list-style-type: none"> <li>• Describe in sequence the stages of reproduction in some plants e.g. a thistle.</li> </ul>	<ul style="list-style-type: none"> <li>• State how plants can be classified using specific characteristics.</li> </ul>

		<p>and differences in relation to places.</p> <ul style="list-style-type: none"> <li>• Children explain why some things occur, and talk about changes in Autumn.</li> </ul>				<p>a range of familiar and less familiar living things.</p> <ul style="list-style-type: none"> <li>• Describe examples of living things that are threatened by changes to environments, e.g. owls and habitat loss.</li> </ul>		
	Evolution and inheritance							<ul style="list-style-type: none"> <li>• Recognise that fossils provide information about living things from millions of years ago, e.g. understand that they are preserved remains of extinct living things.</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary, e.g. that puppies have common features but are not identical.</li> <li>• Identify ways in which certain animals and plants are adapted to suit their environment in different ways.</li> </ul>

Chemistry	Materials (rocks, states of matter)	<ul style="list-style-type: none"> <li>Children know and talk about similarities and difference in materials (ice / solids)</li> <li>Children can talk about why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>Correctly identify both object and material.</li> <li>Identify and name a range of materials.</li> <li>Describe a range of properties of a variety of materials.</li> <li>Classify a variety of materials into groups based on physical properties.</li> </ul>	<ul style="list-style-type: none"> <li>Describe changes achieved to materials by applying forces in different directions.</li> <li>Select and justify a material for a particular use.</li> </ul>	<ul style="list-style-type: none"> <li>Explain how fossils are formed.</li> <li>Describe how soil is made.</li> <li>Examine and test rocks, grouping them according to the results.</li> </ul>	<ul style="list-style-type: none"> <li>Group materials according to their state of matter.</li> <li>Describe how evaporation and condensation happen in the water cycle, and how temperature affects evaporation.</li> <li>Identify changes of state and research values of degrees Celsius at which changes happen.</li> </ul>	<ul style="list-style-type: none"> <li>Test and sort a range of materials based on their physical properties.</li> <li>Describe how some materials, e.g. sugar, will dissolve and can be retrieved.</li> <li>Justify separation techniques proposed, with reference to materials being separated.</li> <li>Show how the original materials can be retrieved from each of these changes.</li> <li>Identify reactants and products of chemical changes and recognise these as being irreversible.</li> <li>Use evidence to justify the selection of a material for a purpose.</li> </ul>	
Physics	Seasonal Changes	<ul style="list-style-type: none"> <li>Children know and talk about the features of their own</li> </ul>	<ul style="list-style-type: none"> <li>Describe seasonal changes.</li> <li>Relate weather patterns and day</li> </ul>					

		<p>environment and how environments might vary from one another.</p> <ul style="list-style-type: none"><li>• Children know and talk about similarities and differences in relation to places.</li><li>• Children explain why some things occur, and talk about changes in Autumn / summer / winter</li></ul>	<p>length to seasons.</p>				
	Forces and Magnets			<ul style="list-style-type: none"><li>• Compare how an object, such as a toy car, will move on different surfaces.</li><li>• Recognise the difference between contact and contact forces.</li><li>• Describe how magnets attract or repel each other, and attract</li></ul>		<ul style="list-style-type: none"><li>• Explain that gravity causes objects to fall towards Earth.</li><li>• Describe how motion may be resisted by air resistance, water resistance or friction.</li><li>• Describe how some devices may turn a smaller</li></ul>	

			<p>magnetic materials.</p> <ul style="list-style-type: none"> <li>• Group materials on the basis of testing for being magnetic.</li> <li>• Describe and identify the poles of a magnet.</li> <li>• Predict outcomes of a particular arrangement of magnets.</li> </ul>		<p>force into a larger one.</p> <ul style="list-style-type: none"> <li>•</li> </ul>	
	Light and sound		<ul style="list-style-type: none"> <li>• Relate being able to see to the presence of light.</li> <li>• Describe how some objects reflect light.</li> <li>• Describe how and why our eyes should be protected from sunlight.</li> <li>• Explain how shadows are made.</li> <li>• Describe how to change the size of a shadow.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain, with reference to vibrations, how an object makes a sound.</li> <li>• Describe the role of a medium in the transmission of sound.</li> <li>• Describe the effect of moving further from the source of a sound.</li> <li>• Explain with reference to a particular object how the pitch of the sound can be changed.</li> <li>• Explain with reference to a particular object how the volume</li> </ul>		<ul style="list-style-type: none"> <li>• Represent light using straight line ray diagrams.</li> <li>• Draw diagrams using straight lines showing light travelling to the eye.</li> <li>• Explain how we can see an object by referring to light travelling into the eye.</li> <li>• Draw a diagram showing an object, shadow and light to relate object shape to shadow shape.</li> </ul>

				of the sound can be changed.		
	Electricity			<ul style="list-style-type: none"> <li>• List examples of appliances that run on electricity.</li> <li>• Construct a simple circuit and name its components.</li> <li>• Sort materials into conductors and insulators, identifying metals as conductors.</li> <li>• Predict whether a particular arrangement of components will result in a bulb lighting.</li> <li>• Predict how the operation of a switch will affect bulbs lighting.</li> </ul>		<ul style="list-style-type: none"> <li>• Explain how number and voltage of cells affects the lamp or buzzer.</li> <li>• Explain the use of switches, how bulbs can be made brighter and buzzers made louder.</li> <li>• Represent a circuit that has been constructed using symbols.</li> </ul>
	Earth and Space				<ul style="list-style-type: none"> <li>• Draw a diagram or use a model to describe planetary orbits.</li> <li>• Draw a diagram or use a model to describe the Moon's orbit around the Earth.</li> </ul>	

							<ul style="list-style-type: none"><li>• Describe the Sun, Earth &amp; Moon as spheres.</li><li>• Use a diagram or model to explain why the Sun seems to travel across the sky, and what causes day and night.</li></ul>	
Working Scientifically Process	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Planning Investigations	<p>In the EYFS, the characteristics of effective learning from the Statutory Framework for the Early Years Foundation Stage are the foundations on which the working scientifically skills build in Key Stage 1.</p> <p>While children are playing and exploring, teachers should be modelling, encouraging and supporting</p>	<ul style="list-style-type: none"><li>• Pupil can, with prompting, ask simple questions that can be tested, e.g. about plants growing in their habitat.</li><li>• Pupil can offer ways of gathering evidence to answer a question, e.g. by deciding on the best material to use for a particular application.</li></ul>	<ul style="list-style-type: none"><li>• Pupil can ask simple questions that can be tested, e.g. about the local environment and how organisms depend on each other.</li><li>• Pupil can suggest different ways of answering a question, e.g. testing the suitability of materials for different purposes.</li></ul>	<ul style="list-style-type: none"><li>• Pupil can, with support, develop relevant, testable questions, e.g. what happens to shadows when the light source moves.</li><li>• Pupil can plan enquiry, such as comparative or fair test, e.g. comparing the effect of different factors on plant growth.</li><li>• Pupil can set up a comparative test, e.g. how far things move on different surfaces.</li></ul>	<ul style="list-style-type: none"><li>• Pupil can develop relevant, testable questions, e.g. based on observations of animals.</li><li>• Pupil can plan investigations using different types of scientific enquiry, e.g. exploring various materials by observing change over time, running comparative tests and conducting surveys.</li><li>• Pupil can set up comparative and fair tests, e.g. finding patterns in the</li></ul>	<ul style="list-style-type: none"><li>• Pupil can, with support, can answer questions using evidence gathered from different types of scientific enquiry, e.g. comparing life cycles of different plants using change over time, surveys and secondary research.</li><li>• Pupil can, with prompting, identifies and manages variables, e.g. when exploring falling paper cones.</li></ul>	<ul style="list-style-type: none"><li>• Pupil can answer questions using evidence gathered from different types of scientific enquiry, e.g. operation of circulatory system from experiment, survey and secondary research.</li><li>• Pupil can identify and manage variables, e.g. distances and sizes in shadow formation.</li></ul>	



	them to do the following: <ul style="list-style-type: none"> <li>• Show curiosity and ask questions.</li> <li>• Make observations using their senses and simple equipment.</li> <li>• Make direct comparisons.</li> <li>• use equipment to measure.</li> <li>• Record their observations by drawing, taking photographs, using sorting rings or boxes.</li> <li>• Use their observations to help them to answer their questions.</li> <li>• Talk about what they are doing and have found out.</li> <li>• Identify, sort and group.</li> </ul>				sounds made by elastic bands of different thicknesses.		
Conducting Experiments		<ul style="list-style-type: none"> <li>• Pupil can examine objects to note key features, e.g. observe growth of plants they have planted.</li> <li>• Pupil can, with support, conduct simple tests, e.g. comparing the properties of different materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can examine carefully, e.g. using a hand lens.</li> <li>• Pupil can conduct simple tests, e.g. setting up comparative tests to show that plants need water and light.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use various equipment, as instructed, e.g. using a hand lens to examine rocks.</li> <li>• Pupil can use standard measurements when taking measurements, e.g. measuring distances between a light source and an object.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use various equipment, as instructed, repeatedly and with care, e.g. thermometers.</li> <li>• Pupil can recognise the importance of using standard units and measures accurately, e.g. measuring temperature when investigating its effect on washing drying.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, following discussion of alternatives, selects appropriate equipment, e.g. using a shadow stick and measuring length and angle of shadow.</li> <li>• Pupil can take measurements that are precise as well as accurate, e.g. measuring the force needed to pull different shapes of boat through the water.</li> <li>• Pupil can know how to process repeat readings, e.g. when timing falling objects.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use appropriate equipment, such as meter rule, to take measurements, such as distance travelled by light.</li> <li>• Pupil can consider how by modifying instrument or technique, measurements can be improved, e.g. when recording route of light rays.</li> <li>• Pupil can identify situations in which taking repeat readings will improve the quality of evidence, e.g. investigating the behaviour of components in a circuit.</li> </ul>
Recording Evidence		<ul style="list-style-type: none"> <li>• Pupil can, with prompting, identify what might usefully be recorded, e.g. drawing</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with assistance, draw and label diagrams, e.g. recording plants changing over</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, draw and label diagrams, e.g. to show how water travels in a plant.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use words and diagrams to record findings, e.g. how</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can start to use labelled diagrams to show more complex outcomes, e.g.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use labelled diagrams to show complex outcomes, e.g. relating specific adaptations of</li> </ul>

		structures of plants or recording changing day length.	time, starting from seed or bulb.	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, use tables to record evidence, e.g. recording what happens when various rocks are rubbed together.</li> <li>• Pupil can, with prompting, gather and display evidence in various ways, e.g. about the ways that magnets behave in relation to each other.</li> </ul>	habitats change during the year. <ul style="list-style-type: none"> <li>• Pupil can use various ways to record evidence, e.g. comparing the teeth of herbivores and carnivores.</li> <li>• Pupil can use various ways to record, group and display evidence, e.g. grouping and classifying various materials.</li> </ul>	comparing the time of day at different places on the earth. <ul style="list-style-type: none"> <li>• Pupil can, with prompting, use various ways to record complex evidence, e.g. when investigating how gears and levers enable a small force to have a larger effect.</li> <li>• Pupil can use a line graph to record basic data, e.g. length and mass of a baby as it grows.</li> </ul>	organisms to environmental factors. <ul style="list-style-type: none"> <li>• Pupil can use various ways, as appropriate, to record complex evidence, e.g. in the construction of a key to aid plant identification.</li> <li>• Pupil can use line graphs to display complex data, e.g. size of object in relation to the size of the shadow it casts.</li> </ul>
Reporting Findings		<ul style="list-style-type: none"> <li>• Pupil can identify key findings from an enquiry, e.g. noting how plants have changed over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can identify and group key outcomes from enquiry, e.g. describing conditions in different habitats and how these affect the numbers and types of organisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, write a conclusion based on evidence, e.g. exploring the strengths of different magnets.</li> <li>• Pupil can indicate findings from an enquiry that could be reported, e.g.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can write a conclusion based on evidence, e.g. effect on brightness of bulbs if more cells are added.</li> <li>• Pupil can present findings either in writing or orally, e.g. relating to investigating which materials are conductors.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, write a conclusion using evidence and identifying causal links, e.g. investigating what makes a parachute fall quicker.</li> <li>• Pupil can, with support, display and present key findings from enquiries orally and in writing,</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can write a conclusion using evidence and identifying causal links, e.g. in the design of a periscope.</li> <li>• Pupil can display and present key findings from enquiries orally and in writing, e.g. deciding how well classifications fit unfamiliar animals and plants.</li> </ul>

				answering questions about how rocks are formed.		e.g. suggesting reasons for similarities and differences between various animals. • Pupil can, with support, indicate why some results may not be entirely trustworthy, e.g. when timing falling objects.	• Pupil can, in conclusions, indicate how trustworthy they are, e.g. in relating brightness of bulb to voltage supplied.
Conclusions and predictions		<ul style="list-style-type: none"> <li>• Pupil can collect data, e.g. comparing and contrasting familiar plants.</li> <li>• Pupil can suggest answers to enquiry questions using data, e.g. describe how to group plants.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can collect data relevant to the answering of questions, e.g. seeing how the shapes of some materials can be changed.</li> <li>• Pupil can answer enquiry questions using data and ideas, e.g. to help decide how the properties of certain materials make them suitable for certain applications.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, recognise patterns that relate to scientific ideas, e.g. investigating the behaviour of magnets.</li> <li>• Pupil can, with support, use evidence to produce a simple conclusion, e.g. the changes that occur when rocks are in water.</li> <li>• Pupil can suggest how an investigation could be extended, e.g. suggesting</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can recognise patterns that relate to scientific ideas, e.g. finding out which materials make better earmuffs.</li> <li>• Pupil can use evidence to produce a simple conclusion, e.g. the effect of temperature on various substances.</li> <li>• Pupil can use evidence to suggest further relevant investigations, e.g. making own</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can show how evidence supports a conclusion, e.g. researching gestation periods of various mammals and relating them to adult mass.</li> <li>• Pupil can suggest further relevant comparative or fair tests, e.g. when testing materials for various properties to determine their suitability for an application.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can identify how an idea is supported or refuted by evidence, e.g. selective breeding to produce animals or plants with desirable characteristics.</li> <li>• Pupil can use evidence to suggest further comparative or fair tests that would develop the investigation, e.g. in the design of rear view mirrors for cars.</li> </ul>

				creative uses for different magnets.	instruments, using ideas about pitch and volume.		
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