

Block	Year 5 - Key NC Science Objectives
<p>Autumn 1 – Earth &amp; Space Space</p> <p>Explore the the Solar System and learn about planet Earths position within this. Look at the different planets and their dynamics. Understand the movements of the moon, earth and sun to each other.</p>	<p><b>Earth &amp; Space</b></p> <ul style="list-style-type: none"> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>Describe the movement of the Moon relative to the Earth.</li> <li>Describe the Sun, Earth, and Moon as approximately spherical bodies.</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>Recording results using scientific diagrams and labels</li> <li>Using test results to make predictions to set up further comparative and fair tests.</li> <li>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.</li> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>
<p>Autumn 2 – Properties and changes of materials</p> <p>Carry out a range of investigations into the changes that occur to certain materials when they are heated, cooled and mixed with other materials</p>	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their solubility and response to magnets.</li> <li>Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>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.</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>Recording results using scientific diagrams and labels</li> <li>Using test results to make predictions to set up further comparative and fair tests.</li> <li>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.</li> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>
<p>Spring 1 – Living Things and their Habitats - The art of living</p> <p>Create an inspirational and informative collection of scientific illustrations on the theme of animal and plant life cycles. Develop your mastery of key art skills as you create accurate and eye catching illustrations that tell the life cycle story of a range of nature's wonders.</p>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>Recording results using scientific diagrams and labels</li> <li>Using test results to make predictions to set up further comparative and fair tests.</li> <li>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.</li> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

<p>Summer 1 - Forces <b>May the forces be with you</b></p> <p>A rare and valuable meteorite has just landed on Earth and the Natural History Museum is sending in a recovery team to retrieve it. As the remote part of this retrieval team you need to overcome an array of challenges that will require you to put your knowledge and understanding of forces into action. May the forces be with you...</p>	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>• Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>• Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>• Recording results using scientific diagrams and labels</li> <li>• Using test results to make predictions to set up further comparative and fair tests.</li> <li>• 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.</li> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>
<p>Spring 2 Animals (including humans) <b>Life Explorers</b></p> <p>Research and collate information on growth, development, puberty and old age, and present it in a sensitive and logical way that is suited to children aged 8-12.</p>	<p><b>Animals (including humans)</b></p> <ul style="list-style-type: none"> <li>• Describe the changes as humans develop to old age</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>• Recording results using scientific diagrams and labels</li> <li>• Using test results to make predictions to set up further comparative and fair tests.</li> <li>• 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.</li> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul>
<p>Summer 2 – Properties and changes of materials <b>Music festival materials</b></p> <p>Do you know your thermal insulators from your thermal conductors? Can you find the best materials for take-out bags and drinks bottles? You will need to carry out an impressive array of tests to identify which materials are up to the job for a variety of needs.</p>	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>• Compare and group together everyday materials on the basis of their properties, including their hardness, transparency, and conductivity (electrical and thermal)</li> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul> <p><b>Working Scientifically</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, taking repeat readings when appropriate</li> <li>• Recording results using scientific diagrams and labels</li> <li>• Using test results to make predictions to set up further comparative and fair tests.</li> <li>• 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.</li> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

### Types of Investigations

'Working Scientifically' is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that children have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. The following types of enquiry are included in Hamilton Science planning.

**Exploring:**

Discovering what happens through play and exploration, e.g. what happens when you add water to fabric?

**Observing over time:**

Often linked to exploring but with a time variable included, e.g. using a thermometer to observe temperature changes of water.

**Sorting, classifying and identifying:**

Putting things into groups based on their characteristics, e.g. in how many ways can you sort these materials?

**Fair test:**

Used when we can control all the variables except the one we are changing, e.g. which 'towel' material will absorb the most water?

**Pattern seeking:**

Used when there are too many variables to control and so a true fair test is not possible, e.g. do some people have stronger muscles because they use them more?

**Problem solving:**

Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

**Researching and analysing secondary sources**

Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. which materials are biodegradable?