

# ACET Junior Academies

## National Curriculum 2014: Progression in Scientific Skills



	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<b>2014 National Curriculum subject content for Key Stage 1 and Key Stage 2</b>	<ul style="list-style-type: none"> <li>• <b>Experience and observe phenomena</b>, looking more closely at the natural and humanly-constructed world around them</li> <li>• They should be curious and <b>ask questions</b> about what they notice</li> <li>• Use different types of scientific enquiry to answer their own questions                             <ul style="list-style-type: none"> <li>○ observing changes</li> <li>○ noticing patterns</li> <li>○ grouping and classifying things</li> <li>○ carrying out simple comparative tests</li> <li>○ finding out from secondary information</li> </ul> </li> <li>• Begin to use simple scientific language to talk about what they have found out</li> <li>• Communicate their ideas to a range of audiences in a variety of ways</li> </ul>	<ul style="list-style-type: none"> <li>• To enable students to <b>broaden their scientific view</b> of the world around them</li> <li>• <b>Exploring, talking about, testing and developing ideas about</b> everyday phenomena and the relationships between living things and familiar environments</li> <li>• Beginning to develop their ideas about functions, relationships and interactions.</li> <li>• Ask their own questions</li> <li>• <b>Make some decisions</b> about <b>which types of scientific enquiry</b> are likely to be the best ways of answering them, including                             <ul style="list-style-type: none"> <li>○ observing changes</li> <li>○ noticing patterns</li> <li>○ grouping and classifying things</li> <li>○ carrying out simple comparative <b>and fair</b> tests</li> <li>○ finding out from secondary information</li> </ul> </li> <li>• Draw simple conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• The principal focus is to enable students to develop a <b>deeper understanding</b> of a wide range of scientific ideas.</li> <li>• Exploring and talking about their ideas, <b>asking their own questions</b> about scientific phenomena, and analysing functions, relationships and interactions <b>more systematically</b>.</li> <li>• They should encounter more <b>abstract</b> ideas, and begin to recognise how these ideas help them to understand and <b>predict</b> how the world operates.</li> <li>• They should begin to recognise that scientific ideas <b>change and develop over time</b>.</li> <li>• <b>Select the most appropriate ways</b> to answer science questions using different types of scientific enquiry, including                             <ul style="list-style-type: none"> <li>○ observing changes over <b>different</b> periods of time</li> <li>○ noticing patterns</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Most of the learning about science should be done through practical first-hand experiences</b></li> <li>• There should be some use of appropriate secondary sources, such as books, photographs, videos.</li> </ul>	<ul style="list-style-type: none"> <li>• Use some scientific language, first, to talk about and, later, to write about what they have found out.</li> </ul>	<ul style="list-style-type: none"> <li>o grouping and classifying things</li> <li>o carrying out simple comparative tests</li> <li>o finding out from secondary information</li> <li>• Draw conclusions based on their data and observations</li> <li>• Use evidence to justify their ideas</li> <li>• Use their scientific knowledge and understanding to explain their findings.</li> </ul>
<b>Working Scientifically</b>	<ol style="list-style-type: none"> <li>1. <b>Asking</b> simple questions and recognising that they can be answered in different ways.</li> <li>2. Observing closely, using simple equipment.</li> <li>3. Performing simple tests.</li> <li>4. Identifying and classifying.</li> <li>5. <b>Using their observations and ideas</b> to suggest answers to questions.</li> <li>6. Gathering and recording data to help in answering questions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Asking <b>relevant</b> questions and <b>using</b> different types of scientific enquiries to answer them.</li> <li>2. <b>Setting up</b> simple practical enquiries, comparative and <b>fair</b> tests.</li> <li>3. Making <b>systematic</b> and careful observations and, where appropriate, taking <b>accurate</b> measurements using <b>standard units</b> using a <b>range of equipment</b>, including thermometers and data loggers.</li> <li>4. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>5. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> <li>6. Reporting on findings from enquiries, including oral and written explanations, displays, <b>or</b> presentations of results and conclusions.</li> <li>7. <b>Using</b> results to <b>draw simple conclusions</b>, make predictions for new values, suggest improvements and raise further questions.</li> <li>8. Identifying differences, similarities or changes related to simple scientific ideas and processes.</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Planning</b> different types of scientific enquiries to answer questions, including <b>recognising</b> and <b>controlling</b> variables where necessary.</li> <li>2. Taking measurements, using a range of scientific equipment, <b>with increasing accuracy and precision, taking repeat readings where appropriate.</b></li> <li>3. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>4. Using test results to <b>make predictions</b> to <b>set up further comparative and fair tests.</b></li> <li>5. Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and <b>degree of trust in</b> results, in oral and written forms such as displays and other presentations.</li> <li>6. Identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ol>

			9. Using straightforward scientific evidence to answer questions or to support their findings.			
<b>Maths in Science</b>	<p><b><u>Measurement</u></b></p> <p>Compare, describe and solve practical problems <b>and</b> measure and begin to record:</p> <p>Lengths &amp; heights Mass/weight Capacity &amp; volume Time</p>	<p><b><u>Measurement</u></b></p> <p><b>Choose and use</b> appropriate standard units to <b>estimate and measure:</b></p> <p>Length/height (m/cm) Mass (kg/g) Temperature (°C) Capacity (litres/ml)</p> <p>to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p>	<p><b><u>Measurement</u></b></p> <p>Measure, compare, <b>add and subtract:</b></p> <p>Lengths (m/cm/mm) Mass (kg/g) Volume/capacity (l/ml)</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p><b><u>Statistics</u></b></p> <p>Interpret and <b>present data</b> using bar charts, pictograms and tables.</p> <p><i>Guidance - Pupils 'understand and use simple scales' – I still think this</i></p>	<p><b><u>Measurement</u></b></p> <p>Convert between different units of measure (e.g. km to m, hour to minute).</p> <p>Interpret and present discrete <b>and continuous</b> data using appropriate graphical methods, <b>including bar charts and time graphs.</b></p> <p>Solve comparison, sum and difference problems using information</p>	<p><b><u>Multiplication and division</u></b></p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</p> <p><b><u>Measurement</u></b></p> <p>Convert between units of <b>metric measure</b> (km-m, cm-mm, g-kg, l-ml)</p> <p>Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.</p> <p>Estimate volume and capacity</p>	<p><b><u>Measurement</u></b></p> <p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>Use, read, write and convert between standard units, converting measurements of length, mass, volume and time ... using decimal notation up to three decimal places</p>

		<p><b><u>Statistics</u></b></p> <p><b>Interpret and construct</b> simple pictograms, tally charts, block diagrams and simple tables.</p>	<p><i>implies that they can be given scales.</i></p>	<p>presented in bar charts, pictograms, tables and other graphs.</p>	<p>Solve problems involving converting between units of time</p> <p><b><u>Statistics</u></b></p> <p>Solve comparison, sum and difference problems using information presented in a line graph.</p> <p>Complete, read and interpret information in tables, including timetables.</p>	<p>Convert between miles and kilometres</p> <p><b><u>Statistics</u></b></p> <p>Interpret and construct pie charts and line graphs and use these to solve problems.</p> <p><b>Calculate and interpret the mean as an average.</b></p>
English in Science	Spellings that relate to scientific concepts:	<p>Spellings that relate to scientific concepts:</p> <p>Experiment</p> <p>Weight</p> <p><b>Prefixes</b> (p60) relate closely to many scientific concepts</p>			<p>Spellings that relate to scientific concepts:</p> <p>Stomach</p> <p>Temperature</p> <p>Equipment</p>	