

ACET Junior Academies

National Curriculum 2014: Progression in Scientific Skills



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

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

			<p>9. Using straightforward scientific evidence to answer questions or to support their findings.</p>			
Maths in Science	<p><u>Measurement</u></p> <p>Compare, describe and solve practical problems and measure and begin to record:</p> <p>Lengths & heights Mass/weight Capacity & volume Time</p>	<p><u>Measurement</u></p> <p>Choose and use appropriate standard units to estimate and measure:</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><u>Measurement</u></p> <p>Measure, compare, add and subtract:</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><u>Statistics</u></p> <p>Interpret and present data using bar charts, pictograms and tables.</p> <p><i>Guidance - Pupils 'understand and use simple scales' – I still think this</i></p>	<p><u>Measurement</u></p> <p>Convert between different units of measure (e.g. km to m, hour to minute).</p> <p>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</p> <p>Solve comparison, sum and difference problems using information</p>	<p><u>Multiplication and division</u></p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</p> <p><u>Measurement</u></p> <p>Convert between units of metric measure (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><u>Measurement</u></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><u>Statistics</u></p> <p>Interpret and construct 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><u>Statistics</u></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><u>Statistics</u></p> <p>Interpret and construct pie charts and line graphs and use these to solve problems.</p> <p>Calculate and interpret the mean as an average.</p>
<p>English in Science</p>	<p>Spellings that relate to scientific concepts:</p>	<p>Spellings that relate to scientific concepts: Experiment Weight Prefixes (p60) relate closely to many scientific concepts</p>	<p>Spellings that relate to scientific concepts: Stomach Temperature Equipment</p>	<p>Spellings that relate to scientific concepts: Stomach Temperature Equipment</p>	<p>Spellings that relate to scientific concepts: Stomach Temperature Equipment</p>	