



WORKING SCIENTIFICALLY						
Progression in Scientific knowledge, concepts & skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p><u>(Additional guidance per year group below)</u></p>	<p>Know how to ask simple scientific questions</p> <p>Know how to use simple equipment to make observations</p> <p>Know how to carry out simple tests</p> <p>Know how to identify and classify things</p> <p>Know how to explain to others what I have found out</p> <p>Know how to use simple data to answer questions</p>		<p>Know how to ask relevant Scientific questions</p> <p>Know how to use observations and knowledge to answer scientific questions</p> <p>Know how to set up a simple enquiry to explore a scientific question</p> <p>Know how to set up a test to compare two things</p> <p>Know how to set up a fair test and explain why it is fair</p> <p>Make careful and accurate observations, including the use of standard units</p>			<p>Know how to plan different types of scientific enquiry</p> <p>Know how to control variables in an experiment</p> <p>Know how to measure accurately and precisely using a range of equipment</p> <p>Know how to record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Know how to use the outcome of test results to make predictions and set up further comparative and fair tests</p> <p>Know how to report findings from enquiries in a range of ways</p>



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		<p>Know how to use equipment, including thermometers and data loggers to make measurements Gather, record, classify and present data in different ways to answer scientific questions</p> <p>Know how to use diagrams, keys, bar charts and tables; using scientific language</p> <p>Know how to use findings of a report in different ways, including oral and written explanations, presentations.</p> <p>Know how to draw conclusions and suggest improvements</p> <p>Know how to make a prediction with a reason</p> <p>Know how to identify differences, similarities and changes related to an enquiry</p>	<p>Know how to explain a conclusion from an enquiry Know how to explain causal relationships in an enquiry</p> <p>Know how to relate the outcome of an enquiry to scientific knowledge in order to state whether evidence supports or refutes and argument or theory</p> <p>Read, spell and pronounce scientific vocabulary accurately</p>
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Year 1



Working Scientifically

- Ask questions such as:
 - Why are flowers different colours?
 - Why do some animals eat meat and others do not?
- Set up a test to see which materials keeps things warmest, know if the test has been successful and can say what has been learned
- Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked
- Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken

Year 2



Working Scientifically

- Ask questions such as:
 - Why do some trees lose their leaves in Autumn and others do not?
 - How long are roots of tall trees?
 - Why do some animals have underground habitats?
- Use equipment such as thermometers and rain gauges to help observe changes to local environment as the year progresses
- Use microscopes to find out more about small creatures and plants
- Know how to set up a fair test and do so when finding out about how seeds grow best
- Classify or group things according to a given criteria, e.g. deciduous and coniferous trees
- Draw conclusions from fair tests and explain what has been found out
- Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with



Year 3	
Working Scientifically	
<input type="checkbox"/> Ask questions such as: <ul style="list-style-type: none">• Why does the moon appear as different shapes in the night sky?• Why do shadows change during the day?• Where does a fossil come from?	<input type="checkbox"/> Use a thermometer to measure temperature and know there are two main scales used to measure temperature
	<input type="checkbox"/> Gather and record information using a chart, matrix or tally chart, depending on what is most sensible
<input type="checkbox"/> Observe at what time of day a shadow is likely to be at its longest and shortest	<input type="checkbox"/> Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens
<input type="checkbox"/> Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc.	<input type="checkbox"/> Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings
<input type="checkbox"/> Use research to find out how reflection can help us see things that are around the corner	<input type="checkbox"/> Know how to use a key to help understand information presented on a chart
<input type="checkbox"/> Use research to find out what the main differences are between sedimentary and igneous rocks	<input type="checkbox"/> Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape



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<input type="checkbox"/> Test to see which type of soil is most suitable when growing two similar plants	<input type="checkbox"/> Present findings using written explanations and include diagrams when needed
<input type="checkbox"/> Test to see if their right hand is as efficient as their left hand	<input type="checkbox"/> Make sense of findings and draw conclusions which help them to understand more about scientific information
<input type="checkbox"/> Set up a fair test with different variables e.g. the best conditions for a plant to grow	<input type="checkbox"/> Amend predictions according to findings
<input type="checkbox"/> Explain to a partner why a test is a fair one e.g. lifting weights with right and left hand, etc.	<input type="checkbox"/> Be prepared to change ideas as a result of what has been found out during a scientific enquiry
<input type="checkbox"/> Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning	



Year 4	
Working Scientifically	
<input type="checkbox"/> Ask questions such as: <ul style="list-style-type: none">• Why are steam and ice the same thing?• Why is the liver important in the digestive systems?• What do we mean by 'pitch' when it comes to sound?	<input type="checkbox"/> Gather and record information using a chart, matrix or tally chart, depending on what is most sensible
	<input type="checkbox"/> Group information according to common factors e.g. materials that make good conductors or insulators
<input type="checkbox"/> Use research to find out how much time it takes to digest most of our food	<input type="checkbox"/> Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings
<input type="checkbox"/> Use research to find out which materials make effective conductors and insulators of electricity	<input type="checkbox"/> Present findings using written explanations and include diagrams, when needed
<input type="checkbox"/> Carry out tests to see, for example, which of two instruments make the highest or lowest sounds and to see if a glass of ice weighs the same as a glass of water	<input type="checkbox"/> Write up findings using a planning, doing and evaluating process
<input type="checkbox"/> Set up a fair test with more than one variable e.g. using different materials to cut out sound	<input type="checkbox"/> Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned



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<input type="checkbox"/> Explain to others why a test that has been set up is a fair one e.g. discover how fast ice melts in different temperatures	<input type="checkbox"/> When making predictions there are plausible reasons as to why they have done so
<input type="checkbox"/> Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning	<input type="checkbox"/> Able to amend predictions according to findings
<input type="checkbox"/> Use a data logger to check on the time it takes ice to melt to water in different temperatures	<input type="checkbox"/> Prepared to change ideas as a result of what has been found out during a scientific enquiry
<input type="checkbox"/> Use a thermometer to measure temperature and know there are two main scales used to measure temperature	



Year 5	
Working Scientifically	
<input type="checkbox"/> Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not	<input type="checkbox"/> Able to present information related to scientific enquiries in a range of ways including using IT such as power-point and iMovie
<input type="checkbox"/> Set up a fair test when needed e.g. which surfaces create most friction?	<input type="checkbox"/> Use diagrams, as and when necessary, to support writing
<input type="checkbox"/> Set up an enquiry based investigation e.g. find out what adults / children can do now that they couldn't when a baby	<input type="checkbox"/> Is evaluative when explaining findings from scientific enquiry
<input type="checkbox"/> Know what the variables are in a given enquiry and can isolate each one when investigating e.g. finding out how effective parachutes are when made with different materials	<input type="checkbox"/> Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate
<input type="checkbox"/> Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass	<input type="checkbox"/> Their explanations set out clearly why something has happened and its possible impact on other things



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<ul style="list-style-type: none"><input type="checkbox"/> Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons)	<ul style="list-style-type: none"><input type="checkbox"/> Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys
<ul style="list-style-type: none"><input type="checkbox"/> Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs	<ul style="list-style-type: none"><input type="checkbox"/> Keep an on-going record of new scientific words that they have come across for the first time
<ul style="list-style-type: none"><input type="checkbox"/> Make predictions based on information gleaned from investigations	<ul style="list-style-type: none"><input type="checkbox"/> Able to relate causal relationships when, for example, studying life cycles
<ul style="list-style-type: none"><input type="checkbox"/> Create new investigations which take account of what has been learned previously	<ul style="list-style-type: none"><input type="checkbox"/> Frequently carry out research when investigating a scientific principle or theory



Year 6	
Working Scientifically	
<input type="checkbox"/> Know which type of investigation is needed to suit particular scientific enquiry e.g. looking at the relationship between pulse and exercise	<input type="checkbox"/> Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases
<input type="checkbox"/> Set up a fair test when needed e.g. does light travel in straight lines?	<input type="checkbox"/> Clear about what has been found out from their enquiry and can relate this to others in class
<input type="checkbox"/> Know how to set up an enquiry based investigation e.g. what is the relationship between oxygen and blood?	<input type="checkbox"/> Explanations set out clearly why something has happened and its possible impact on other things
<input type="checkbox"/> Know what the variables are in a given enquiry and can isolate each one when investigating	<input type="checkbox"/> Aware of the need to support conclusions with evidence
<input type="checkbox"/> Justify which variable has been isolated in scientific investigation	<input type="checkbox"/> Keep an on-going record of new scientific words that they have come across for the first time and use these regularly in future scientific write ups
<input type="checkbox"/> Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion	<input type="checkbox"/> Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class



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<ul style="list-style-type: none"><input type="checkbox"/> Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs	<ul style="list-style-type: none"><input type="checkbox"/> Able to give an example of something they have focused on when supporting a scientific theory e.g. classifying vertebrate and invertebrate creatures or why certain creatures choose their unique habitats
<ul style="list-style-type: none"><input type="checkbox"/> Make accurate predictions based on information gleaned from their investigations and create new investigations as a result	<ul style="list-style-type: none"><input type="checkbox"/> Frequently carry out research when investigating a scientific principle or theory
<ul style="list-style-type: none"><input type="checkbox"/> Able to present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie	