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

		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 Know how to use diagrams, keys, bar charts and tables; using scientific language Know how to use findings of a report in different ways, including oral and written explanations, presentations. Know how to draw conclusions and suggest improvements Know how to make a prediction with a reason Know how to identify differences, similarities and changes related to an enquiry	Know how to explain a conclusion from an enquiry Know how to explain causal relationships in an enquiry 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 Read, spell and pronounce scientific vocabulary accurately

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	
❑ Ask questions such as: • 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?	❑ Use a thermometer to measure temperature and know there are two main scales used to measure temperature ❑ Gather and record information using a chart, matrix or tally chart, depending on what is most sensible
❑ Observe at what time of day a shadow is likely to be at its longest and shortest	❑ Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens
❑ Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc.	❑ Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings
❑ Use research to find out how reflection can help us see things that are around the corner	❑ Know how to use a key to help understand information presented on a chart
❑ Use research to find out what the main differences are between sedimentary and igneous rocks	❑ Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape

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

<table>
<tr><th colspan="2">Year 4</th></tr>
<tr><th colspan="2">Working Scientifically</th></tr>
<tr><td rowspan="2">❑ Ask questions such as:
• 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?</td><td>❑ Gather and record information using a chart, matrix or tally chart, depending on what is most sensible</td></tr>
<tr><td>❑ Group information according to common factors e.g. materials that make good conductors or insulators</td></tr>
<tr><td>❑ Use research to find out how much time it takes to digest most of our food</td><td>❑ Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings</td></tr>
<tr><td>❑ Use research to find out which materials make effective conductors and insulators of electricity</td><td>❑ Present findings using written explanations and include diagrams, when needed</td></tr>
<tr><td>❑ 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</td><td>❑ Write up findings using a planning, doing and evaluating process</td></tr>
<tr><td>❑ Set up a fair test with more than one variable e.g. using different materials to cut out sound</td><td>❑ Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned</td></tr>
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❑ 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	❑ When making predictions there are plausible reasons as to why they have done so
❑ Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning	❑ Able to amend predictions according to findings
❑ Use a data logger to check on the time it takes ice to melt to water in different temperatures	❑ Prepared to change ideas as a result of what has been found out during a scientific enquiry
❑ Use a thermometer to measure temperature and know there are two main scales used to measure temperature	

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

❑ Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons)	❑ 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
❑ 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	❑ Keep an on-going record of new scientific words that they have come across for the first time
❑ Make predictions based on information gleaned from investigations	❑ Able to relate causal relationships when, for example, studying life cycles
❑ Create new investigations which take account of what has been learned previously	❑ Frequently carry out research when investigating a scientific principle or theory

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

❑ 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	❑ 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
❑ Make accurate predictions based on information gleaned from their investigations and create new investigations as a result	❑ Frequently carry out research when investigating a scientific principle or theory
❑ Able to present information related to scientific enquiries in a range of ways including using IT such as power-point, animoto and iMovie	