

	KS1		Lower KS2		Upper KS2	
Working scientifically	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - asking simple questions and recognising that they can be answered in different ways; - observing closely, using simple equipment; - performing simple tests; - identifying and classifying; - using their observations and ideas to suggest answers to questions; - gathering and recording data to help in answering questions.		During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - asking relevant questions and using different types of scientific enquiries to answer them; - setting up simple practical enquiries, comparative and fair tests; - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; - identifying differences, similarities or changes related to simple scientific ideas and processes; - using straightforward scientific evidence to answer questions or to support their findings.		During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; - using test results to make predictions to set up further comparative and fair tests; - reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; - identifying scientific evidence that has been used to support or refute ideas or arguments.	
Asking questions and carrying out fair and comparative tests	Explore the world around them asking simple scientific questions. Encourage children to ask adults questions about why things happens. Carry out simple practical tasks and talk about what they are doing.	Children encouraged to ask simple scientific questions about how and why things happen. Recognise ways in which they might answer scientific questions. Use secondary sources to find out answers. Use simple equipment to carry out practical tasks. Talk about the aim of the scientific tests they are working on. Begin to recognise a fair test.	Raise their own relevant questions about the world around them in response to a range of scientific experiences. Recognise when a fair test is necessary. Set up and carry out simple comparative and fair tests	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions. Help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.	With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences. Explore and talk about their ideas, raising different kinds of scientific questions. Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions. Plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.	Make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions. Ask their own questions about scientific phenomena. Make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them. Use their test results to identify when further tests and observations may be needed and to make predictions for further tests.
Observing and measuring changes	Using simple equipment, children observe the natural and humanly constructed world around them. Use simple measurements and equipment.	Using simple equipment children observe changes over time. Make careful observations, sometimes using equipment to help them observe carefully.	Make systematic and careful observations and observe changes over time. Ask their own questions about what they observe.	Use a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units using a range of equipment.	Choose the most appropriate equipment to make measurements and explain how to use it accurately. Take repeat readings when appropriate.	Take measurements using a range of scientific equipment with increasing accuracy and precision. Understand why we take an average in repeat readings.

Identifying, classifying, recording and presenting data	Use simple features to compare objects, materials and living things. Communicate findings in a range of ways with support.	Decide how to sort and classify objects into simple groups with some help. With support, record findings in different ways. Sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.	Talk about criteria for grouping, sorting and classifying. Collect data from their own observations and measurements. Use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling Knowledge.	Independently group and classify things. Collect and present data in a variety of ways to help in answering questions. Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Independently group, classify and describe living things and materials. Decide how to record data from a choice of familiar approaches.	Use and develop keys and other information records to identify, classify and describe living things and materials. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.
Drawing conclusions, noticing patterns and presenting findings	Notice links between cause and effect with support. Begin to draw simple conclusions. Use simple and scientific language.	Begin to notice patterns and relationships with support. Identify and discuss differences between their results. Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1. Talk about their findings to a variety of audiences in a variety of ways.	Draw simple conclusions from their results. Suggest improvements to investigations. First talk about, and then go on to write about, what they have found out.	Make predictions. Raise further questions which could be investigated. Report and present their results and conclusions to others in written and oral forms with increasing confidence.	Notice patterns. Draw conclusions based in their data and observations. Identify patterns that might be found in the natural environment. Discuss the degree of trust they can have in a set of results.	Use their scientific knowledge and understanding to explain their findings. Read, spell and pronounce scientific vocabulary correctly. Look for different causal relationships in their data. Independently report and present their conclusions to others in oral and written forms.
Using scientific evidence and secondary sources of information			Make links between their own science results and other scientific evidence. Identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.	Use straightforward scientific evidence to answer questions or support their findings. Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.	Use primary and secondary sources evidence to justify ideas. Recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact.	Identify evidence that refutes or supports their ideas. Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Talk about how scientific ideas have developed over time.