Skill	KS1	Y3	Y4	Y5	Y6	KS3
Asking scientific questions	Explore the world around them, leading them to ask some simple scientific questions about how and why things happen. Begin to recognise ways in which they might answer scientific questions.	With support, generate questions about a topic based upon curiosity and previous study.	Ask relevant questions which relate directly to knowledge taught in lessons.	Ask relevant questions which are specific to developing new scientific knowledge.	Ask scientific questions which will lead to new scientific knowledge or understanding.	Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience.
		With adult support, identify questions that could be the basis of an investigation.	With guidance, develop questions which could be the basis of an investigation.	Begin to construct a testable enquiry. Identify how different types of scientific enquiry are used to answer different types of question.	Construct a testable enquiry. Identify and explain the reasons why different types of scientific enquiry are used to answer different types of question.	
Setting up practical enquiries – comparative and fair tests	With adult support, carry out simple practical tests, using simple equipment. Experience different types of scientific enquiries, including practical activities. Talk about the aim of scientific tests they are working on.	With support, set up simple practical enquiries, comparative and fair tests.	With guidance, set up simple practical enquiries, comparative and fair tests.	Begin to independently select and plan the most appropriate type of enquiry to answer scientific questions.	Independently, select and plan the most appropriate type of enquiry to answer scientific questions.	Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility. Make predictions using scientific knowledge and understanding. Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables.
		Begin to make predictions about outcomes of investigations.	Begin to make predictions about outcomes of investigations by drawing on prior knowledge.	Make predictions about outcomes of investigations by drawing on prior knowledge.	Make predictions about outcomes of investigations by drawing on knowledge of scientific processes.	
		With adult support, identify resources required, and design tests to answer questions.	Begin to identify the resources required and design tests for a specific enquiry.	With increasing independence, design tests and identify the resources required for a specific enquiry.	Independently design tests and identify the resources required for a specific enquiry.	
		Start to suggest methods to find the answer to a scientific question (may not be the most appropriate method).	Select my own methods to find the answer to a scientific question (may not be the most appropriate method).	Select my own methods to find the answer to a scientific question (must be the most appropriate method).	Select my own methods to find the answer to a scientific question (must be the most appropriate method).	
		With support, identify variables and suggest how to keep a test fair.	Begin to identify and manage variables in order to ensure a fair test.	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled.	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.	

Making systematic observations	Observe the natural and humanly constructed world around them. Observe changes over time.	Help decide what observations to make and suggest equipment to take measurements.	With support, decide what observations to make and suggest equipment to take measurements.	With increasing independence, decide what observations to make and accurately suggest equipment to take measurements.	Decide what observations to make and accurately suggest equipment to take measurements.	Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety. Make and record observations and measurements using a range of methods for different investigations.
		Begin to understand the importance of making systematic observations.	Understand the importance of making systematic observations.	Make systematic observations.	Make accurate systematic observations.	
		Begin to look for patterns and relationships. Start to group and classify with assistance.	Look for patterns and relationships. Start to group and classify according to specific criteria.	With increasing independence, identify patterns and relationships. Group and classify according to specific criteria.	With confidence and precision identify patterns and relationships. Accurately group and classify according to specific criteria.	
Gather, record and present data	Use simple measurements and equipment. Make careful observations, sometimes using equipment. Use simple features to compare objects, materials and living things. Decide how to sort and classify objects into simple groups with some help. Record and communicate findings in a range of ways with support. Sort, group, gather and record data in a variety of ways.	With support, begin to take accurate measurements using a range of equipment.	Begin to take accurate measurements using a range of equipment.	With increasing independence and precision, take accurate measurements using a range of equipment.	Independently take accurate and precise measurements using a range of equipment and understand where repeat readings are necessary.	Apply mathematical concepts and calculate results. Present observations and data using appropriate methods, including tables and graphs. Present reasoned explanations, including explaining data in relation to predictions and hypotheses. Understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature. Use and derive simple equations and carry out appropriate calculations. Undertake basic data analysis including simple statistical techniques.
		Start to understand the importance of, and begin using, standard units of measurements.	Understand the importance of, and begin using, standard units of measurements.	Understand the importance of, and accurately use, standard units of measurements.	Understand the importance of, and accurately use, standard units of measurements.	
		Begin using a range of scientific equipment.	With increasing confidence and accuracy, use a range of scientific equipment.	Independently use a range of scientific equipment.	Independently and accurately use a range of scientific equipment.	
		With support, gather and record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	With increasing independence, gather and record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Begin to gather and record findings of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.	Gather and record findings of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.	

Draw conclusions from results	Notice links between cause and effect with support. Begin to notice patterns and relationships with support. Begin to draw simple conclusions. Identify and discuss differences between results.	With support, use results to draw simple conclusions.	With increasing independence, use results to draw simple conclusions.	Draw conclusions based on data and observations.	Accurately draw conclusions based on data and observations. .	Evaluate the reliability of methods and suggest possible improvements. Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions. Evaluate risks. Identify further questions arising from their results.
		Begin to reflect on accuracy of predictions and suggest improvements to the investigation.	With guidance, reflect on accuracy of predictions and suggest improvements to the investigation.	Reflect on accuracy of predictions and suggest improvements to the investigation.	Independently reflect on accuracy of predictions and suggest improvements to the investigation	
		With support, raise questions for further investigation.	With guidance, raise questions for further investigation.	Raise questions for further investigation.	Independently raise questions for further investigation.	
Report findings from investigations	Use simple and scientific language. 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 an audience.	Pupils should pronounce, read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.	Pupils should pronounce, read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.	Pupils should pronounce, read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.	Pupils should pronounce, read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.	Evaluate data, showing awareness of potential sources of random and systematic error.
		First talk about, and then go on to write about, findings.	Talk about, and then go on to write about, findings with increasing accuracy.	With increasing independence, report and present conclusions to others in oral and written form.	Independently report and present conclusions to others in oral and written form.	
Use results to answer scientific questions	Ask people questions and use simple secondary sources to find answers.	With adult support, link the findings of investigations to scientific knowledge.	Start to link the findings of investigations to scientific knowledge.	Link the findings of investigations to scientific knowledge.	Accurately link the findings of investigations to scientific knowledge.	Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review.
		With guidance, use straightforward scientific evidence to answer questions or support findings.	Use straightforward scientific evidence to answer questions or support findings.	Use scientific evidence to answer questions or support findings.	Use scientific evidence to accurately answer questions or support findings.	

		With support, begin to identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.	Begin to identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.	With increasing independence, identify similarities, differences, patterns and changes relating to more complex scientific ideas and processes.	Independently, identify similarities, differences, patterns and changes relating to more complex simple scientific ideas and processes.	
		With support, recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	With guidance, recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	Recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	Recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	
		Acknowledge that scientific knowledge has developed over time.	Acknowledge that scientific knowledge has developed over time.	Understand that scientific knowledge has developed over time and the reasons for this.	Understand that scientific knowledge has developed over time and the reasons for this.	
		Begin to understand the difference between opinion and fact.	Start to recognise opinion from fact.	With increasing independence, recognise opinion from fact and identify evidence that supports or refutes ideas.	Recognise opinion from fact and identify evidence that supports or refutes ideas.	