



National Curriculum – Scientific Enquiry (observing, classifying, pattern seeking, testing and research)			
Reception	KS1	LKS2	UKS2
Show curiosity about objects, events & people Question why things happen	Explore the world around them and raise their own simple questions	Raise their own relevant questions about the world around them	Use their science experiences to explore ideas and raise different types of questions
Engage in open-ended activities	Experience different types of science enquiries, including practical activities	Should be given a range of scientific experiences including different types of science enquiries to answer questions	Talk about how scientific ideas have developed over time
Take a risk, engage in new experiences and learn by trial and error	Begin to recognise different ways in which they might answer scientific questions	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
Find ways to solve problems/find new ways to do things/test their ideas	Carry out simple tests Set up simple practical enquiries, comparative and fair tests	Recognise when a simple fair test is necessary and help to decide how to set it up	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why
Develop ideas of grouping, sequences, cause and effect Know about similarities and differences in relation to the natural world around them and contrasting environments whilst drawing on their experiences	Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)	Talk about criteria for grouping, sorting and classifying and use simple keys	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment
Comment and ask questions about aspects of their familiar world such as the place where they live or the natural world	Ask people questions and use simple secondary sources to find answers	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact
Closely observe what animals, people and vehicles do Use senses to explore the world around them and describe what they see, hear and feel whilst outside	Observe closely using simple equipment With guidance, observe changes over time	Make systematic and careful observations Make their own decisions about what observations to make, what measurements to use and how long to make them for	Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
Make links and notice patterns in their experience	With guidance, begin to notice patterns and relationships	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Look for different causal relationships in their data and identify evidence that refutes or supports their ideas
Choose the resources they need for their chosen activities Handle equipment and tools safely and effectively	Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data	Take accurate measurements using standard units Learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately	Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately Take repeat measurements where appropriate
Create simple representations of events, people and objects	Record simple data	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard	Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels,



Make observations and draw pictures of animals and plants to record these		units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data	classification keys, tables, scatter graphs, bar and line graphs
Answer how and why questions about their experiences Explore the natural world and make observations of animals and plants and explain why some things occur Talk about changes such as the seasons and changing states of matter	Use their observations and ideas to suggest answers to questions Talk about what they have found out and how they found it out	With guidance, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions	Identify scientific evidence that has been used to support or refute ideas or arguments
Develop their own narratives and explanations by connecting ideas or events and drawing on their experiences and what has been read in class Build up vocabulary that reflects the breadth of their experience	With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language	Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results
		With guidance, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done	Use their results to make predictions and identify when further observations, comparative and fair tests might be needed

Scientific Enquiry Vocabulary

Reception	KS1	LKS2	UKS2
look, see, hear, read, describe, similar, different, change, understand, world, science, scientist	scientist, scientific, question, observe, observation, reading, equipment, test, identify, compare, sort, group, classify, gather/collect, record, data, similarities, differences, changes, patterns, relationships, measure, measurement, chart, graph, table, diagram, labels, drawing, findings, results, explanation	scientist, scientific, question, enquiry, investigate, investigation, practical, observe, observation, equipment, fair test, variables, method, prediction, identify, compare, sort, group, classify, gather/collect, record, present, data, changes, patterns, relationships, process, measure, measurement, units, values, diagram, labels, chart, graph, table, classification key, results, explanation, conclusion, source, evidence, findings, information, evaluate	scientist, scientific, scientific method, question, enquiry, investigate, investigation, practical, observe, observation, equipment, comparative test, fair test, method, hypothesis, prediction, identify, compare, sort, group, classify, gather/collect, record, present, data, changes, patterns, relationships, process, measure, measurement, units, values, diagram, chart, graph, table, classification key, results, explanation, conclusion, source, evidence, repeat readings, findings, information, control/dependent/independent variables, report, causal relationship, degree of trust, support/refute argument, evaluate