



Year 1:

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:

- Sc1/I.1 asking simple questions and recognising that they can be answered in different ways
- Sc1/I.2 observing closely, using simple equipment
- Sc1/I.3 performing simple tests
- Sc1/I.4 identifying and classifying
- Sc1/I.5 using their observations and ideas to suggest answers to questions
- Sc1/I.6 gathering and recording data to help in answering questions

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Name/identify common examples and some common features (Y1/2). - With help, decide how to sort and group objects, materials or living things. - Say/identify how different things change objects, materials or living things. - Make comparisons between simple observable features/characteristics of objects, materials and living things. - Say how things are similar or different. - Recognise basic features of objects, materials and living things.	- Find out about the work of famous scientists (historical & modern day) (Y1/2). - Use simple and appropriate secondary sources (such as books, photographs and videos) to find things out / find answers. (Y1/2). - Ask people questions (Y1/2).		- Begin to communicate and record their findings using simple scientific language. - Begin to use simple scientific language to talk about what they have. - Use their own ideas to offer answers to questions. - Observe and discuss / talk about / draw/ keep records of changes over different periods of time. - Observe closely and discuss / talk about / draw /record the features/properties of things in the real world.	- Ask simple questions stimulated by the world around them. - Demonstrate curiosity by the questions they ask.	- Begin to choose/suggest ways to find answers. - Perform simple tests/comparative tests. - Talk about ways of answering their questions. - Use different types of scientific enquiry. - Experiment with a wide variety of things.
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Observe using non-standard units e.g. how many lolly sticks/cubes/handfuls, etc. - Observe closely, using simple equipment (e.g. hand lenses, egg timers). - Observe closely using their senses (Y1).	- Present their findings in a range of ways using templates where necessary e.g. talk/discuss; write/describe; draw pictures; annotated photographs; video; make/construct tables, charts and displays. - Communicate their ideas to a range of audiences in a variety of ways. - Begin to use some simple scientific language.	- Sequence photographs of an event/observation. - Observe changes over different periods of time and discuss/talk/record about what has happened. - Talk/ discuss/ describe/record about what they have seen/ what has happened.	- Read and spell scientific vocabulary (Y1/2). - Suggest how things happen. - Use their observations and ideas to suggest answers to questions. - Begin to use simple scientific language to talk about what they have found out. - Talk about what they have found out.		

Year 2:

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:

Sc2/I.1 asking simple questions and recognising that they can be answered in different ways

Sc2/I.2 observing closely, using simple equipment

Sc2/I.3 performing simple tests

Sc2/I.4 identifying and classifying

Sc2/I.5 using their observations and ideas to suggest answers to questions

Sc2/I.6 gathering and recording data to help in answering questions

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Compare and contrast... a variety of things - focusing on the similarities as well as the differences] including how different things change over different periods of time [objects, materials or living things]. - Sort and classify things according to a variety of different features (e.g. "I know it is living because it ... and it...). - Decide how to sort and group objects, materials or living things. - Name/identify a variety of common features and/or uses for objects, materials or living things. - Name/identify common examples and some common features.	- Find out about the work of famous scientists - historical & modern day (Y1/2). - Use simple and appropriate secondary sources (such as books, photographs and videos) to find things out / find answers. (Y1/2). - Ask people questions (Y1/2).		- Record and communicate their findings using simple scientific language. - Use their own ideas and their observations to offer answers to questions. - Observe and describe simple processes/cycles with several steps e.g. growth cycle, simple food chain, saying how living things depend on one another. - Recognise and describe a series of changes over time (e.g. growth). - Observe, and record make drawings to represent things in the real world with some accuracy.	Raise their own questions based on or linked to things they have observed.	- Set up a comparative test. - In a group choose/suggest ways in which they might answer scientific questions. - Suggest a [practical way] to find answers to their questions [and listen to the suggestions of others. - Use different types of scientific enquiry to answer their own questions.
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Observe more accurately by measuring non-standard and standard units. - Use their senses, simple measurements and equipment to gather data with increasing independence. - Gather data to help in answering questions.	- Record and communicate their findings in a range of ways with increasing independence e.g. talk/discuss; write/describe; draw pictures; take photographs; video; make/construct a variety of tables, charts [including simple, bar charts produced as a group and displays. - Make some choices on how to communicate their ideas to a range of audiences in a variety of ways. - Use simple scientific language in their recording. - Record simple data with some accuracy. - Record data to help in answering questions.	- With guidance, begin to notice patterns and relationships. - Order their findings. - Recognise if results matched predictions. - Talk/ discuss/ describe/record with some accuracy what they have seen/ what has happened.	- Begin to explain how they know...use the word because "it is because..." (Y2) / suggest how and/or why things happen. - Draw on use their results and their own experience to answer their questions. - Begin to use simple scientific language to describe or explain what they have found out. - Read and spell scientific vocabulary.		Listen to the suggestions of others.

Year 3:

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:

Sc3/I.1 asking relevant questions and using different types of scientific enquiries to answer them

Sc3/I.2 setting up simple practical enquiries, comparative and fair tests

Sc3/I.3 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Sc3/I.4 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Sc3/I.5 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Sc3/I.6 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Sc3/I.7 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Sc3/I.8 identifying differences, similarities or changes related to simple scientific ideas and processes

Sc3/I.9 using straightforward scientific evidence to answer questions or to support their findings.

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Compare and contrast functions, diets, teeth, changes over time. - Record similarities and differences. - Decide ways and give reasons for sorting, grouping, classifying, identifying things/objects, living things, processes or events based on specific characteristics.	- Create/invent design something based on what they have found out applying both research and/or practical experiences (Y3/4). - Find out about the work of famous scientists historical and modern day (Y3/4). - Finding things out using secondary sources of information (Y3/4).	Act out something to represent something else about the world around us.	- Observe and record relationships between structure and function (Y3/4). - Observe and record changes /stages over time (Y3/4). - Explore / observe things in the local environment / real contexts and record observations (Y3/4). - Record observations/explorations/ processes using simple scientific language.	- Explore their own ideas about 'what if....?' scenarios e.g. humans did not have skeletons. - Begin to understand that some questions are testable/ can be tested in the classroom and some cannot. - Within a group suggest relevant questions about what they observe and about the world around them.	- Help to decide about how to set up a simple fair test and begin to recognise when a test is not fair. - As a group, begin to make some decisions about the best way of answering their questions. - With support/as a group, set up simple practical enquiries incl. comparative and fair tests e.g. make a choice from a list of at least one variable that needs to be kept the same when conducting a fair test. - Find/suggest a way to compare things e.g. materials, magnets.
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Collect data from their own observations and measurements, using notes/ simple tables/standard units. - Help to make some decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. - Make simple accurate measurements using whole number standard units, using a range of equipment. - Gathering data in a variety of ways to help in answering questions. - Learn how to use new equipment, e.g. data loggers. - Explore observe with increased	- Record and present findings using simple scientific language and vocabulary, including discussions, oral and written explanations, notes, drawings annotated, pictorial representations, labelled diagrams, simple tables, bar charts (using ranges and intervals (scales) chosen for them) displays or presentations. - Record, classify and present data in a variety of ways to help in answering questions. - Communicate their findings in ways that are appropriate for different audiences. (Y3/4).	- Describe and compare the effect of different factors on something. - With help, look for changes and patterns in their observations and data. - Use their results to consider whether they meet predictions.	- Read and spell scientific vocabulary correctly and with confidence (Y3/4). - Use their own experience and some evidence or results to draw simple conclusions and answer questions. - Talk about and record their findings using simple scientific language. - Explain why things have happened.	- Say whether what happened was what they expected and notice any odd results that seem odd. - Begin to recognise when a test is not fair and suggest improvements.	Act out something to represent something else about the world around us.

Year 4:

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:

Sc4/I.1 asking relevant questions and using different types of scientific enquiries to answer them

Sc4/I.2 setting up simple practical enquiries, comparative and fair tests

Sc4/I.3 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Sc4/I.4 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Sc4/I.5 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Sc4/I.6 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Sc4/I.7 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Sc4/I.8 identifying differences, similarities or changes related to simple scientific ideas and processes

Sc4/I.9 using straightforward scientific evidence to answer questions or to support their findings.

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Make a simple guide to local living things. - Use guides or simple keys to classify / identify [local small invertebrates]. - Use their observations] to identify and classify. - Record similarities, differences or changes related to simple scientific ideas or processes or more complex groups of objects/living things/events and begin to give reasons for these.	- Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. - Create/invent/ design something based on what they have found out applying both research and/or practical experiences. (Y3/4). - Find out about the work of famous scientists (historical & modern day) (Y3/4).	- Make a visual representation or a model of something to represent something they have seen or a process that is difficult to see. - Suggest their own ideas on a concept and compare these with models or images.	- Suggest their own ideas on a concept and compare these with what they observe / find out. - Develop simple descriptions from their observations use relevant scientific language to discuss their ideas. - Observe and record relationships between structure and function (Y3/4). - Observe and record changes /stages over time (Y3/4). - Explore / observe things in the local environment / real contexts and record observations (Y3/4).	- Choose/select a relevant question that can be answered [by research or experiment/test]. - Ask/raise their own relevant questions with increasing confidence and independence about what they observe and about the world around them.	- Investigate the effect of something on something else. - Start to make their own decisions about the most appropriate type of science enquiry they might use to answer scientific questions [is a fair test the best way to investigate their question]. - Recognise when a test is necessary. - Carry out simple fair tests [with increasing confidence and make some of the planning decisions about what to change and measure/observe].
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Begin to identify where patterns might be found and use this to begin to identify what data to collect. - Make more of the decisions about what observations to make, how long to make them for and the type of equipment that might be used. - Learn how to use new equipment, such as data loggers & measure temperature in degrees Celsius (°C) using a thermometer. - Understand precautions for working safely. - Collect and record data from their own observations and measurements, using notes/simple tables/standard units, to help to make decisions. - Make accurate measurements using standard units [and more complex units and parts of units] using a range of equipment.	- Record findings using simple scientific language and vocabulary, including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts [where intervals and ranges agreed through discussion], displays or presentations. - Begin to select the most useful ways to record, classify and present data from a range of choices. - Make decisions on how best to communicate their findings in ways that are appropriate for different audiences. (Y3/4)	- Notice/find patterns in their observations and data. - Describe the effect of something/different factors on something else. - Help to make decisions about how to analyse their data.	- Begin to develop their ideas about relationships and interactions. - Reporting on findings from enquiries [beginning to identify the scientific facts in their data]. - Use relevant scientific language to discuss, communicate, report their findings. - Read and spell scientific vocabulary correctly and with confidence (Y3/4).	- Use results to suggest improvements, new questions and predictions for setting up further tests. - With help, pupils should look for similarities and differences in their data [between different groups of results].	- Make a visual representation or a model of something to represent something they have seen or a process that is difficult to see. - Suggest their own ideas on a concept and compare these with models or images.

Year 5:

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:

Sc5/I.1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Sc5/I.2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision

Sc5/I.3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs

Sc5/I.4 using test results to make predictions to set up further comparative and fair tests

Sc5/I.5 reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations

Sc5/I.6 identifying scientific evidence that has been used to support or refute ideas or arguments.

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Compare and contrast things beyond their locality. - Compare more complex processes, systems, functions (e.g. life cycles of different living things, organ systems of different animals). - Suggest reasons for similarities and differences.	- Research the work of famous scientists (historical and modern day) and use this to find out how scientific ideas have changed over time. - Find things out using a wide range of secondary sources of information.	- Create simple models to describe scientific ideas (e.g. circulatory system). - Use simple models to describe scientific ideas (e.g. of movements of the Sun and Earth, solar system, shadow clocks, magnetic compasses for navigation).	- Read, spell and pronounce scientific vocabulary correctly (Y5/6). - Use their developing scientific knowledge and understanding and relevant scientific language to discuss, communicate and explain their findings. - Explore more abstract systems/functions/changes and record their understanding of these (e.g. circulatory system). - Observe changes over different periods of time.	- Raise different kinds of questions (Y5/6) - Refine a scientific questions so that it can be investigated. - Ask their own pertinent questions.	- Explain which variables need to be controlled and why. - Make most of the planning decisions about] and carry out fair tests. - Recognise when it is appropriate to carry out a fair test and plan how to set it up.
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Recording data and results of increasing complexity (Y5/6). - Follow safety guidelines (Y5/6). - Make their own decisions about what observations to make or measurements to use and how long to make them for [recognising the need for repeat readings on some occasions]. - Decide how to record data from a choice of familiar approaches. - Choose the most appropriate equipment to make measurements. - Explain how to use equipment accurately.	- Record data and results of increasing complexity using tables, bar and line graphs, and models. - Report findings from enquiries using discussion, drawings [annotated], oral and written explanations of results, and conclusions. - Present findings in written form, displays and other presentations (Y5/6)	- Identify patterns that might be found in the natural environment. - Look for patterns and notice relationships between things [and describe these].	- Use their developing scientific knowledge and understanding and relevant scientific language to explain their findings. - Draw conclusions based on their data and observations. - Read, spell and pronounce scientific vocabulary correctly (Y5/6).	- Use test results to make predictions to set up further comparative and fair tests. - Comment on how reliable their data is.	

Year 6:

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:

Sc6/I.1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Sc6/I.2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision

Sc6/I.3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs

Sc6/I.4 using test results to make predictions to set up further comparative and fair tests

Sc6/I.5 using simple models to describe scientific ideas

Sc6/I.6 reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations

Sc6/I.7 identifying scientific evidence that has been used to support or refute ideas or arguments

Sort / group / compare / classify / identify	Research <i>finding things out using a wide range of secondary sources of information and recognising that scientific ideas change and develop over time</i>	Modelling	Recording of 'Explore / Observe' <i>developing a deeper understanding of a wide range of scientific ideas encountering more abstract ideas</i>	Questioning <i>asking their own questions about scientific phenomena</i>	Planning <i>using different types of scientific enquiry making decisions about and explaining choices for testing</i>
- Compare and contrast things beyond their locality and analyse advantages/disadvantages, pros/cons of their findings. - Use and develop classification systems, keys and other information records (databases) to classify or identify. - Compare and contrast more complex processes, systems, functions (e.g. sexual and asexual reproduction).	- Research the work of famous scientists (historical & modern day) and use this to explain how scientific ideas have developed over time and had an impact on our lives. - Interview [people to find out information and collect data]. - Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.	[Identify some positives and some limitations of models used to describe/explain scientific ideas]. - Use and make own versions of simple models to describe and explain scientific ideas (e.g. periscopes, simple lever, burglar alarm).	- Encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. - Use correct scientific knowledge and understanding and relevant scientific language to explain their findings and justify their scientific ideas. - Explore more abstract systems/functions /changes/behaviours and record their understanding of these (e.g. the relationship between diet, exercise, drugs, lifestyle and health; evolutionary changes; burning, rusting; reflection and refraction of light; friction, air resistance, gravity). - Read, spell and pronounce scientific vocabulary correctly.	- Recognise scientific questions that do not yet have definitive answers. - Use observations/data gathered to construct a further (testable or research) question. - Raise different kinds of questions (Y5/6).	- Plan enquiries, including recognising and controlling variables where necessary. - Select and plan the most appropriate type of science enquiry to use to answer scientific questions.
Equipment and measurement <i>increasing complexity with increasing accuracy and precision make their own decisions about the data to collect</i>	Communicating Recording <i>recording data, reporting findings, presenting findings</i>	Considering the results of an investigation / writing a conclusion			Collaborating
		Describe results <i>Looking for patterns analysing functions, relationships and interactions more systematically</i>	Explain results <i>Draw conclusions based on evidence</i>	Trusting my results	
- Recognise that data might be unreliable and describe how to make it more reliable. - Make their own decisions about what measurements to take [and identify the ranges and intervals used]. - Take measurements, using a range of equipment, with increasing accuracy and precision. - Choose and use the most appropriate equipment to support observation, make measurements, collect data. - Record data and results of increasing complexity (Y5/6) - Follow [and suggest] safety guidelines.	- Make decisions on the most appropriate format to present scientific data. - Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models. - Report findings from enquiries using discussion, drawings [annotated], oral and written explanations of results, explanations involving causal relationships, and conclusions. - Present findings in written form, displays and other presentations (Y5/6).	- Look for different causal (cause and effect) relationships in their data (something effecting something else) and (describe the pattern succinctly). - Identify patterns that might be found in the natural environment over long periods of time and describe how these have been used to develop scientific theories (e.g. evolution).	- Identify evidence that refutes or supports their ideas (Y5/6). - Use their evidence to justify their ideas. - Use correct scientific knowledge and understanding and relevant scientific language to explain their findings. - Read, spell and pronounce scientific vocabulary correctly (Y5/6).	- Use their results to identify when further comparative tests and observations might be needed. - Be able to explain differences in repeated measurements/readings or unexpected results. - Recognise the limitations of some data.	