Scientific Enquiry Progression of skills

| EYFS | KS1 | Lower KS2 | Upper KS2 |
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| N - Uses talk to connect ideas, explain what is happening and anticipate what might happen next, recall and relive past events.  R - Links statements and sticks to a main theme or intention.  Uses talk to organise, sequence and clarify thinking, ideas, feelings and events. | Explore the world around them and raise their own simple questions | Raise their own relevant questions about the world around them. | Use their scientific experiences to explore ideas and raise different questions |
| N - Talks about some of the things they have observed such as plants, animals, natural and found objects.  Talk about why things happen and how things work.  R - Looks closely at similarities, differences, patterns and change. | Experience different types of science enquiries, including practical activities | Should be given a range of scientific experiences including different types of scientific enquiries to answer questions | Talk about how scientific ideas have developed over time. |
| N - Begins to understand ‘why’ and ‘how’ questions  R - Listens and responds to ideas expressed by others in conversation or discussion | 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 |
| N - Talks about why things happen and how things work.  R - Looks closely at similarities, differences, patterns and change. | 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. |
| R - Looks closely at similarities, differences, patterns and change. | Use simple features to compare objects, materials and living things, and decide how to sort and group them. | 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. |
| N - Questions why things happen and gives explanations.  R - Uses talk to organise, sequence and clarify thinking, ideas, feelings and events. | 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 the most useful to research their ideas and begin to separate opinion from fact. |
| N - Develops an understanding of growth, decay and changes over time.  R - Looks closely at similarities, differences, patterns and change. | Observe closely using simple equipment.  With help, observe changes over time. | Make systematic and careful observations.  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 their own decisions about what observations to make, what measurements to use and how long to make them for. |
| N - Talk about why things happen and how things work.  R - Looks closely at similarities, differences, patterns and change. | With guidance, they should 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 at different causal relationships in their data and identify evidence that refutes or supports their ideas |
| R - Measures short periods of time in simple ways. | 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. |
| N - Shows an interest in representing numbers  R - Records using marks they can interpret and explain. | Record simple data | Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data | Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. |
| N - Begins to understand ‘why’ and ‘how’ questions  R - Listens and responds to ideas expressed by others in conversation or discussion | Use their observations and ideas to suggest answers to questions.  Talk about what they have found out and how they found it out. | With help, 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. |
| N - Builds up vocabulary that reflects the breadth of their understanding  R - Extends vocabulary by grouping and naming, exploring the meaning and sounds of new words. | 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 support, 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. |