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| **Key Stage 2 National Curriculum Objectives** |
| **Working Scientifically Years 3 and 4****Pupils should be taught to:**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.
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| **Working Scientifically Years 5 and 6****Pupils should be taught to:**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 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.
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| C:\Users\LGregory2\OneDrive\Documents\Desktop\Federation logo 7 (2).png |  | **Y3** | **Y4** | **Y5** | **Y6** |
| Testing | Set up simple practical enquiries, comparative and fair tests e.g. • To see which type of soil is most suitable when growing two similar plants? • To see if their right hand is as efficient as their left. • Set up a fair test with different variables e.g. the best conditions for a plant to grow. • Can explain to a partner why a test is a fair one. | Set up simple practical enquiries, comparative and fair tests e.g. • Which of two instruments make the highest or lowest sound and does a glass of ice weigh more than a glass of water. • Set up a fair test with more than one variable e.g. using different materials to cut out sound. • Can explain to others why a test is fair e.g. discover how fast ice melts in different temps. | Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not. Set up a fair test when needed e.g. • Which surfaces create most friction? Set up an enquiry-based investigation e.g. • Find out what adults/ children can do now that they couldn’t do when they were a baby. Know what variables are in a given enquiry and can isolate each one when investigating. e.g. • Finding out how effective parachutes are when made with different materials. | Know which type of investigation is needed to suit a particular scientific enquiry e.g. • Looking at the relationship between pulse and exercise. Set up a fair test when needed e.g. • Does light travel in straight lines? Know how to set up an enquiry-based investigation e.g. • What is the relationship between oxygen and blood? |
| Scientific Questioning | Ask relevant questions and use different types of scientific enquiries to answer them e.g. • Why does the moon appear as different shapes in the night sky? • Why do shadows change during the day? • Where does a fossil come from? | Ask relevant questions and use different types of scientific enquiries to answer them e.g. • Why are steam and ice the same thing? • Why is the liver important in the digestive system? • What do we mean by pitch when it comes to sound? | Plan different types of scientific enquires to answer given questions. | Plan different types of scientific enquiries to answer their own or others' questions. |
| Measuring | Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Year 3 focus)  |  Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Year 4 focus) | Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Y5 maths focus including capacity and mass)  | Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Y6 focus including capacity, mass, ratio and proportion)  |
| Gathering and Recording | Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables (Year 3 focus)  | Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables (Year 4 focus)  | Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 focus)  | Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 6 focus) |
| Communicating Findings | Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (Year 3 focus)  | Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (Year 4 focus) | Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations (Year 5 focus)  | Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations (Year 6 focus) |
| Classifying | Group information according to common factors e.g. plants that grow in woodlands/plants that grow in gardens. (Year 3 focus) e.g. Venn Diagrams with bisecting sets or Carroll Diagrams | Group information according to common factors e.g. Venn Diagrams with bisecting sets or Carroll Diagrams Group information according to common factors e.g. materials that make good conductors or insulators. (Year4 focus)  | Group and classify things and recognise patterns using appropriate ways of presenting e.g. classification keys.  | Group and classify things and recognise patterns using appropriate ways of presenting e.g. classification keys |
| Scientific Research | Use research to find out a range of things e.g. • How reflection can help us see things that are around the corner. • What are the main differences between sedimentary and igneous rocks?  | Use research to find out a range of things e.g. • Which materials make effective conductors and insulators of electricity? • How much time it takes to digest our food.  | Find things out using a wide range of secondary sources of information. | Find things out using a wide range of secondary sources of information. |
| Concluding and Questioning | Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 3 focus)  | Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 4 focus)  | Use results to draw conclusions. Is evaluative when explaining findings from scientific enquiries and is clear about what has happened in recent enquiries and can relate this to other enquiries where appropriate (Year 5 focus)  | Use results to draw conclusions. Is evaluative when explaining findings from scientific enquiries and is clear about what has happened in recent enquiries and can relate this to other enquiries where appropriate (Year 6 focus) |
| Using Scientific Evidence | Use straightforward scientific evidence to answer questions or to support his/her findings (Year 3 focus) | Use straight forward scientific evidence to answer questions or to support his/her findings (Year 4 focus) | Identify scientific evidence that has been used to support or refute ideas or arguments (Year 5 focus) | Identify scientific evidence that has been used to support or refute ideas or arguments (Year 6 focus) |