

# Working Scientifically Progression Chart



Working scientifically specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. Types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

## Curriculum Aims

**The national curriculum for science aims to ensure that all pupils:**

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

## EYFS

### Understanding the World: The Natural World

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

### Communication and Language Listening, Attention and Understanding

- Make comments about what they have heard and ask questions to clarify their understanding

# KS1



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:

| <div>Y1</div> <div>Animals including humans</div> <div>Plants</div> <div>Materials</div> <div>Seasonal change</div> | asking <b>simple questions</b> and recognising that they can be answered in different ways; | observing <b>closely</b> , using <b>simple equipment</b> ; | performing <b>simple tests</b> ; | identifying and <b>classifying</b> ;         | using their <b>observations</b> and <b>ideas</b> to <b>suggest answers</b> to questions; | <b>gathering and recording data</b> to help in answering questions. |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
|                                                                                                                     | Lesson 2                                                                                    | Lesson 6                                                   |                                  | Lesson 1<br>Lesson 3<br>Lesson 5             | Lesson 2                                                                                 |                                                                     |
|                                                                                                                     | Lesson 5                                                                                    | Lesson 3<br>Lesson 4<br>Lesson 5                           |                                  | Lesson 1<br>Lesson 2                         | Lesson 7                                                                                 |                                                                     |
|                                                                                                                     | Lesson 4                                                                                    | Lesson 5<br>Lesson 6                                       | Lesson 4<br>Lesson 5<br>Lesson 6 | Lesson 1<br>Lesson 2<br>Lesson 3<br>Lesson 4 | Lesson 5<br>Lesson 6                                                                     | Lesson 5<br>Lesson 6                                                |
|                                                                                                                     |                                                                                             | Lesson 5                                                   | Lesson 5                         | Lesson 1<br>Lesson 2<br>Lesson 3<br>Lesson 4 | Lesson 5                                                                                 | Lesson 5                                                            |

# KS1



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:

|                                         |
|-----------------------------------------|
| <b>Y2</b>                               |
| <b>Animals including humans</b>         |
| <b>Plants</b>                           |
| <b>Living things and their habitats</b> |
| <b>Materials</b>                        |

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

# LKS2



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:

**Y3**

|                                 | asking relevant questions and using different types of <b>scientific enquiries</b> to answer them; | setting up <b>simple practical enquiries, comparative and fair tests</b> ;        |  making <b>systematic and careful observations</b> and, where appropriate, taking accurate <b>measurements</b> using <b>standard units</b> , using range of <b>equipment</b> , including <b>thermometers</b> and <b>data loggers</b> ; | <b>gathering, recording, classifying and presenting data</b> in a variety of ways to help in answering questions; | <b>recording findings</b> using simple <b>scientific language, drawings, labelled diagrams, keys, bar charts, and tables</b> ; | <b>reporting</b> on findings from enquiries, including <b>oral and written explanations, displays or presentations</b> of results and conclusions; | using results to <b>draw simple conclusions</b> , make <b>predictions</b> for new values, <b>suggest improvements</b> and raise further <b>questions</b> ; | identifying <b>differences, similarities or changes</b> related to simple scientific ideas and processes; | using straightforward <b>scientific evidence</b> to answer questions or to support their findings. |
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|                                 |                                                                                                    |  |                                                                                                                                                                                                                                       |                                                                                                                   |                                             |                                                                 |                                                                         |                        |                 |
| <b>Animals including humans</b> | Lesson 2                                                                                           | Lesson 2                                                                          | Lesson 2                                                                                                                                                                                                                                                                                                                |                                                                                                                   | Lesson 2                                                                                                                       | Lesson 2                                                                                                                                           |                                                                                                                                                            |                                                                                                           |                                                                                                    |
| <b>Plants</b>                   | Lesson 4                                                                                           | Lesson 1<br>Lesson 4                                                              | Lesson 4                                                                                                                                                                                                                                                                                                                |                                                                                                                   | Lesson 4                                                                                                                       | Lesson 4                                                                                                                                           |                                                                                                                                                            |                                                                                                           |                                                                                                    |
| <b>Light</b>                    | Lesson 5                                                                                           | Lesson 5                                                                          | Lesson 5                                                                                                                                                                                                                                                                                                                | Lesson 5                                                                                                          | Lesson 4                                                                                                                       |                                                                                                                                                    | Lesson 5                                                                                                                                                   | Lesson 4                                                                                                  | Lesson 4<br>Lesson 5                                                                               |
| <b>Rocks</b>                    | Lesson 5                                                                                           | Lesson 2<br>Lesson 5                                                              | Lesson 1<br>Lesson 2<br>Lesson 5                                                                                                                                                                                                                                                                                        |                                                                                                                   | Lesson 2<br>Lesson 5                                                                                                           | Lesson 2                                                                                                                                           | Lesson 5                                                                                                                                                   |                                                                                                           |                                                                                                    |
| <b>Forces and magnets</b>       |                                                                                                    | Lesson 2                                                                          | Lesson 4<br>Lesson 5                                                                                                                                                                                                                                                                                                    | Lesson 2                                                                                                          | Lesson 3                                                                                                                       | Lesson 2                                                                                                                                           | Lesson 2                                                                                                                                                   | Lesson 2<br>Lesson 5                                                                                      | Lesson 2<br>Lesson 5                                                                               |

# LKS2



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:

Y4

|                                         | asking relevant questions and using different types of <b>scientific enquiries</b> to answer them; | setting up <b>simple practical enquiries, comparative and fair tests</b> ;<br> |  making <b>systematic and careful observations</b> and, where appropriate, taking accurate <b>measurements</b> using <b>standard units</b> , using range of <b>equipment</b> , including <b>thermometers</b> and <b>data loggers</b> ; | <b>gathering, recording, classifying and presenting data</b> in a variety of ways to help in answering questions;<br> | <b>recording findings</b> using simple <b>scientific language, drawings, labelled diagrams, keys, bar charts, and tables</b> ;<br> | <b>reporting</b> on findings from enquiries, including <b>oral and written explanations, displays or presentations</b> of results and conclusions; | using results to <b>draw simple conclusions</b> , make <b>predictions</b> for new values, <b>suggest improvements</b> and raise further <b>questions</b> ;<br> | identifying <b>differences, similarities or changes</b> related to simple scientific ideas and processes; | using straightforward <b>scientific evidence</b> to answer questions or to support their findings.<br> |
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| <b>Animals including humans</b>         |                                                                                                    | Lesson 3                                                                                                                                                        | Lesson 3                                                                                                                                                                                                                                                                                                                | Lesson 3                                                                                                                                                                                                | Lesson 3                                                                                                                                                                                                              | Lesson 3                                                                                                                                           | Lesson 3                                                                                                                                                                                                                                          |                                                                                                           |                                                                                                                                                                                           |
| <b>Living things and their habitats</b> |                                                                                                    |                                                                                                                                                                 | Lesson 4                                                                                                                                                                                                                                                                                                                | Lesson 4                                                                                                                                                                                                | Lesson 4<br>Lesson 5                                                                                                                                                                                                  | Lesson 4                                                                                                                                           |                                                                                                                                                                                                                                                   |                                                                                                           |                                                                                                                                                                                           |
| <b>Electricity</b>                      | Lesson 4                                                                                           | Lesson 4                                                                                                                                                        | Lesson 4                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                         | Lesson 5                                                                                                                                                                                                              | Lesson 5                                                                                                                                           | Lesson 4                                                                                                                                                                                                                                          |                                                                                                           | Lesson 5                                                                                                                                                                                  |
| <b>Sound</b>                            | Lesson 7                                                                                           | Lesson 4<br>Lesson 7                                                                                                                                            | Lesson 6<br>Lesson 7                                                                                                                                                                                                                                                                                                    | Lesson 7                                                                                                                                                                                                |                                                                                                                                                                                                                       | Lesson 1<br>Lesson 4<br>Lesson 6<br>Lesson 7                                                                                                       | Lesson 4<br>Lesson 7                                                                                                                                                                                                                              | Lesson 4                                                                                                  | Lesson 5<br>Lesson 6                                                                                                                                                                      |
| <b>States of matter</b>                 |                                                                                                    | Lesson 2<br>Lesson 4<br>Lesson 6                                                                                                                                | Lesson 2<br>Lesson 3<br>Lesson 4<br>Lesson 6<br>Lesson 7                                                                                                                                                                                                                                                                | Lesson 2<br>Lesson 3<br>Lesson 4<br>Lesson 6<br>Lesson 7                                                                                                                                                | Lesson 4<br>Lesson 6                                                                                                                                                                                                  | Lesson 2<br>Lesson 4<br>Lesson 6<br>Lesson 7                                                                                                       | Lesson 6<br>Lesson 7                                                                                                                                                                                                                              | Lesson 6<br>Lesson 7                                                                                      | Lesson 6<br>Lesson 7                                                                                                                                                                      |

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:

**Y5**

|                                         | <b>planning</b> different types of <b>scientific enquiries</b> to answer questions, including <b>recognising</b> and <b>controlling variables</b> where necessary;<br> | taking <b>measurements</b> , using a range of <b>scientific equipment</b> , with increasing accuracy and precision, taking <b>repeat readings</b> when appropriate;<br> | <b>recording data</b> and results of increasing complexity using <b>scientific diagrams</b> and <b>labels</b> , <b>classification keys</b> , <b>tables</b> , <b>scatter graphs</b> , <b>bar</b> and <b>line graphs</b> ;<br> | using test results to make <b>predictions</b> to set up further comparative and fair tests;<br> | <b>reporting</b> and <b>presenting</b> findings from enquiries, including <b>conclusions</b> , <b>causal relationships</b> and <b>explanations</b> of and a degree of trust in results, in <b>oral</b> and <b>written forms</b> such as displays and other presentations;<br> | identifying <b>scientific evidence</b> that has been used to support or refute ideas or arguments.<br> |
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| <b>Animals including humans</b>         |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                           |
| <b>Living things and their habitats</b> |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                          | Lesson 2                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    | Lesson 2                                                                                                                                                                                                                                                                      |                                                                                                                                                                                           |
| <b>Materials</b>                        | Lesson 3<br>Lesson 4                                                                                                                                                                                                                                    | Lesson 3<br>Lesson 4                                                                                                                                                                                                                                     | Lesson 3<br>Lesson 4                                                                                                                                                                                                                                                                                           | Lesson 3                                                                                                                                                                           | Lesson 3                                                                                                                                                                                                                                                                      |                                                                                                                                                                                           |
| <b>Forces and magnets</b>               | Lesson 1<br>Lesson 3<br>Lesson 4                                                                                                                                                                                                                        | Lesson 1<br>Lesson 3<br>Lesson 4<br>Lesson 5                                                                                                                                                                                                             | Lesson 1<br>Lesson 3                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                    | Lesson 1<br>Lesson 5                                                                                                                                                                                                                                                          | Lesson 1                                                                                                                                                                                  |
| <b>Earth and space</b>                  | Lesson 5                                                                                                                                                                                                                                                | Lesson 5                                                                                                                                                                                                                                                 | Lesson 5                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    | Lesson 5                                                                                                                                                                                                                                                                      | Lesson 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:

Y6

|                                  | <b>planning</b> different types of <b>scientific enquiries</b> to answer questions, including <b>recognising</b> and <b>controlling variables</b> where necessary;<br> | <b>taking measurements</b> , using a range of <b>scientific equipment</b> , with increasing accuracy and precision, taking <b>repeat readings</b> when appropriate;<br> | <b>recording data</b> and results of increasing complexity using <b>scientific diagrams</b> and <b>labels</b> , <b>classification keys</b> , <b>tables</b> , <b>scatter graphs</b> , <b>bar</b> and <b>line graphs</b> ;<br> | using test results to make <b>predictions</b> to set up further comparative and fair tests;<br> | <b>reporting</b> and <b>presenting</b> findings from enquiries, including <b>conclusions</b> , <b>causal relationships</b> and <b>explanations</b> of and a degree of trust in results, in <b>oral</b> and <b>written forms</b> such as displays and other presentations;<br> | identifying <b>scientific evidence</b> that has been used to support or refute ideas or arguments. |
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| Animals including humans         | Lesson 3                                                                                                                                                                                                                                                | Lesson 3                                                                                                                                                                                                                                                 | Lesson 3                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    | Lesson 3                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |
| Living things and their habitats |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                          | Lesson 4                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                    | Lesson 4                                                                                                                                                                                                                                                                                                                                                         | Lesson 4                                                                                           |
| Light                            | Lesson 4                                                                                                                                                                                                                                                | Lesson 4                                                                                                                                                                                                                                                 | Lesson 4                                                                                                                                                                                                                                                                                                       | Lesson 2                                                                                                                                                                           | Lesson 4                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |
| Electricity                      | Lesson 2<br>Lesson 3                                                                                                                                                                                                                                    | Lesson 2<br>Lesson 4                                                                                                                                                                                                                                     | Lesson 4                                                                                                                                                                                                                                                                                                       | Lesson 2                                                                                                                                                                           | Lesson 2<br>Lesson 4                                                                                                                                                                                                                                                                                                                                             | Lesson 4<br>Lesson 5                                                                               |
| Evolution                        | Lesson 4                                                                                                                                                                                                                                                | Lesson 4                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                    | Lesson 4                                                                                                                                                                                                                                                                                                                                                         | Lesson 3<br>Lesson 4<br>Lesson 6                                                                   |

