**Science Skills and Knowledge Progressions for Year 5**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Skills Objectives** | | Topic covered in | Pupils Working Towards Expectations | Pupils Exceeding Expectations |
| Observe and explain | - from observations, develop their own explanations using scientific vocabulary, including for more abstract ideas (e.g. air resistance)  - observe and record changes over time and suggest a reason for what they notice |  |  |  |
| Grouping and classifying | - Compare and contrast things beyond their local environment and use these similarities and differences to help classify  - Suggest reasons for similarities and differences  - Use secondary sources of information to identify and classify |  |  |  |
| Questioning | -Refine a scientific question so that it can be tested  -Independently ask their own scientific questions taking some ownership for finding out the answer (research or experiment)  -Recognise that some scientific questions do not yet have definitive answers (e.g. how big is the universe?) |  |  |  |
| Planning and predict | -Make decisions about which variables to change, measure and keep the same  -Make most of the planning decisions for an investigation, ensuring it is a fair test  -Suggest more than one possible prediction and begin to suggest which is most likely. Justify with some knowledge/understanding of scientific concepts. |  |  |  |
| Test and use equipment | -Carry out a fair test with increasing independence  - Make decisions about the most appropriate type of equipment to use and how long to take measurements for  -Take accurate measurements using a range of scientific equipment, with increasing accuracy and with a variety of scales  -Recognise risks and how explain how to keep themselves safe |  |  |  |
| Reporting and recording | - Record and present findings using relevant scientific language (from Year 5 PoS), including for more abstract concepts.  -Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, bar graphs. Some of these should be produced using ICT.  -Discuss the most appropriate way for recording data. |  |  |  |
| Analysing and explaining results | -Describe patterns and results, linking cause and effect e.g. The longer, thinner shapes move through the water faster.  -Draw a conclusion linking back to their prediction  -Using their scientific knowledge and terminology, write an explanation of why something happened. |  |  |  |
| Evaluating | -Use results to suggest improvements, new questions and/or predictions for further tests.  -Begin to recognise how repeated readings improve the reliability of results.  -Compare results with others and comment how reliable they are. |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Knowledge Objectives** | | Topic covered in | Pupils Working Towards Expectations | Pupils Exceeding Expectations |
| Living things and their habitats | -describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird  -describe the life process of reproduction in some plants and animals. |  |  |  |
| Animals including humans | describe the changes as humans develop to old age |  |  |  |
| Properties and changes of materials | -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets  -know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution  -use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating  -give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic  -demonstrate that dissolving, mixing and changes of state are reversible changes  -explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda |  |  |  |
| Earth and space | -describe the movement of the Earth and other planets relative to the sun in the solar system  -describe the movement of the moon relative to the Earth  -describe the sun, Earth and moon as approximately spherical bodies  -use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky |  |  |  |
| Forces | -explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object  -identify the effects of air resistance, water resistance and friction, that act between moving surfaces  -recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect |  |  |  |