|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| National Curriculum Subject Content **Living things and their habitats**  - describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird **1**  - describe the life process of reproduction in some plants and animals. **2**  **Animals including humans**  - describe the changes as humans develop to old age. **3**  **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 **4**  - know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution **5**  - use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating **6**  - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic  **7**  - demonstrate that dissolving, mixing and changes of state are reversible changes **8**  - 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. **9**  **Earth and space**  - describe the movement of the Earth, and other planets, relative to the Sun in the solar system **10**  - describe the movement of the Moon relative to the Earth **11**  - describe the Sun, Earth and Moon as approximately spherical bodies **12**  - use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. **13**  **Forces**  - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object **14** | | | | **Forces (continues)**  - identify the effects of air resistance, water resistance and friction, that act between moving surfaces **15**  - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **16**  **Light (Year 6)**  - recognise that light appears to travel in straight lines **17**  - use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye **18**  - explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes **19**   - use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **20**  **Working Scientifically**  **Working Scientifically**  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 **1**  - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate **2**  - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs **3**  - using test results to make predictions to set up further comparative and fair tests **4**  - 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 **5**  - identifying scientific evidence that has been used to support or refute ideas or arguments. **6** | | |
|  | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Year 5** | **Revision of Y4 to check understanding and knowledge**  **Properties and changes in materials 4 7**  - Compare and group together everyday materials on the basis of their properties ,including hardness, solubility, transparency, conductivity (electrical and thermal),and response to magnets  - Give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic | **Properties and changes in materials 5 6 8 9**  - Explain how some materials dissolve in liquid to form a solution  - Describe how to recover a substance from a solution  - Use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating  - 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  - Use the terms ‘reversible’ and ‘irreversible’  - Describe methods for separating mixtures (filtration, distillation)  - Use their knowledge of materials to suggest ways to classify (solids, liquids, gases) | **Forces 14 15 16**  - 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  - Describe and explain how motion is affected by forces (including gravitational attractions, magnetic attraction and friction)  - Explore how scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation | **Earth and space 10 11 12 13**  - Identify and explain the movement of the Earth and other plants relative to the sun in the solar system  - Explain how seasons and the associated weather is created  - Describe and explain 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  - Compare the time of day at different places on the earth | **Light 17 18 19 20**  - Recognise that light appears to travel in straight lines  - Use that light travels in straight lines to explain objects are seen because they give out or reflect light into the eye  - Explain that we see things because light travels from light sources to our eyes or from light sources to object s and then to our eyes  - Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them  - Explain how different colours of light can be created  - Use and explain how simple optical instruments work (periscope, telescope, binoculars, mirror, magnifying glass)  - Explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters. | **Animals including humans** **3**  - Describe the changes as humans develop to old age using a timeline  - Understand the changes experienced in puberty  - Research gestation periods of other animals and compare with humans |
|  |
|  | **Working Scientifically; 1, 2, 3, 4, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Use test results to make predictions to set up further comparative and fair tests  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas | **Working Scientifically; 1, 2, 3, 4, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Use test results to make predictions to set up further comparative and fair tests  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas | **Working Scientifically; 1, 2, 3, 4, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Use test results to make predictions to set up further comparative and fair tests  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas | **Working Scientifically; 1, 2, 3, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas | **Working Scientifically; 1, 2, 3, 4, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Use test results to make predictions to set up further comparative and fair tests  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas | **Working Scientifically; 1, 2, 3, 4, 5, 6**  - Recall and use specific scientific vocabulary accurately (year group key vocabulary)  - Plan different types of scientific enquiries to answer questions, include recognise and control variables where necessary  - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why  - Take measurements, use a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate  - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  - Use test results to make predictions to set up further comparative and fair tests  - Report and present findings from enquiries, include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  - Identify scientific evidence that has been used to support or refute ideas or arguments.  - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas |
| **Possible Investigations** | Investigate: properties of different materials 1 2 3 4 5 6   * Use evidence from above investigation to give reasons about materials suitability 5 6 | Investigate: how sugar, sand, salt, iron fillings or flour dissolve in water 1 2 3 4 5 6  Investigate: different methods of separation including; picking out by hand, decanting, sieving, filtering, using a magnet and evaporation. | Investigate: how surface area impacts a parachute descent 1 2 3 4 5 6  Investigate: the best material to make a wet room floor from (force and water resistance) 1 2 3 4 5 6 | Investigate: create a sun dial and use accurately 1 2 3 5 6 | * explain how a periscope works 6 * create light spectrum spinner 6   Investigate: the impact on an object’s shadow of moving closer to the light source 1 2 3 4 5 6 | Investigate: which parts of a potato plant will grow into an individual 1 2 3 4 5 6 |