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| **Happiness** | **Responsibility** | **Friendship** | **Respect** | **Courage** |
| **Science – Year 5** |
| **Autumn Term** |
| Unit | Planning and teaching sequence | Work Scientifically Opportunities | National Curriculum Objectives |
| Forces(Physics) | Friction | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). | * 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.
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| Air resistance | Working scientifically – Recognise which secondary sources will be most useful to research their ideas (non-statutory). |
| Plan – parachute experiment | Working scientifically − Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. |
| Investigate – parachute experiment | Working scientifically − using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. |
| Evaluate – parachute experiment | Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results.  |
| Plan – water resistance | Working scientifically − Planning different typesof scientific enquiries to answer questions, including recognising and controlling variables where necessary.  |
| Investigate – water resistance | Working scientifically − Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  |
| Explore gravity | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments. |
| Use small forces for greater effects | Working scientifically − Recognise which secondary sources will be most useful to research their ideas (non-statutory).  |
| Space(Physics) | The Solar System | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments.  | * 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.
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| The planets | Working scientifically – Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time (non-statutory). |
| Modelling | Working scientifically − Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. |
| Motion of the Earth and planets | Working scientifically − Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs |
| The Solar System – ideas over time | Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. |
| Planet Earth | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments. |
| Night and day | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments. |
| The Moon | Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. |
| Global warming(Sustainability) | What is global warming? | Working scientifically – Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact (non-statutory).  |  |
| What are the impacts of global warming on living things? | Working scientifically – Identifying scientific evidence that has been used to support or refute ideas or arguments.  |
| Spring Term |
| Properties of materials(Chemistry) | Test materials – magnetic, transparency and hardness | Working scientifically − Use and develop keys and other information records to identify, classify and describe living things and materials (non-statutory).  | * 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.
* give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
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| Test materials – electrical conductivity | Working scientifically − Recording data and resultsof increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Plan – insulating heat experiment | Working scientifically − Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  |
| Investigate – insulating heat experiment | Working scientifically − Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  |
| Evaluate – insulating heat experiment | Working scientifically − Using test results to make predictions to set up further comparative and fair tests.  |
| Uses of everyday materials – plastic, wood and metal | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory).  |
| Animals including humans(Biology) | The human life cycle | Working scientifically – Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  | * 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.
* describe the changes as humans develop to old age.
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| Babies and children | Working scientifically – Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Adolescence and puberty | Covered in RHE |
| Adults and the elderly | Working scientifically – Identifying scientific evidence that has been used to support or refute ideas or arguments.  |
| Gestation periods of mammals | Working scientifically – recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Gestation periods and lifespan | Working scientifically – Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.  |
| Life cycles(Biology) | Life cycles of mammals | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas’ (non-statutory).  | * 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.
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| Life cycles of amphibians (frogs) | Working scientifically − recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Life cycles of insects | Working scientifically − Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Life cycles of birds | Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.  |
| Summer |
| Reproduction A(Biology) | Sexual reproduction in mammals | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory).  | * 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.
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| Reproductive parts in plants | Working scientifically − Recording data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs.  |
| Pollination | Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.  |
| Asexual reproduction | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments. |
| Plan – clone plants | Working scientifically − Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  |
| Plant – clone plants | Working scientifically − Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  |
| Reversible and irreversible changes(Chemistry) | Dissolving | Working scientifically − Using test results to make predictions to set up further comparative and fair tests. | * 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.
* 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.
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| Separate materials – filtering and sieving | Working scientifically – Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| Solutions and evaporating | Working scientifically − Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. |
| Reversible changes | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory).  |
| Irreversible changes – burning | Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). |
| Irreversible changes - acid | Working scientifically − Identifying scientific evidence that has been used to support or refute ideas or arguments.  |
| Plastic pollution(Sustainability) | What is plastic pollution? |  |  |
| What are the impacts of plastic pollution on the planet? |  |
| Reproduction B(Biology) | Findings – clone plants | Working scientifically − Using test results to make predictions to set up further comparative and fair tests.  | * 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.
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| Interpret data | Working scientifically − Using test results to make predictions to set up further comparative and fair tests. |