Overview Science Year 5

| | Autumn Term | Spring Term | Summer Term |
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| Big Question | Where do we come from? | Could we live anywhere else? | How are we similar/different? |
| Other Subject links | Vikings, Forces, Life Cycles | Maya, Space (Earth, Moon and Sun) | Brazil, changing materials, changes and reproduction |

| | Autumn 1<br>Living things and their habitats | Autumn 2<br>Forces | Spring 1<br>Earth and Space | Spring 2<br>Earth and Space | Summer 1<br>Properties and changes of materials | Summer 2<br>Animals incl humans |
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| National Curriculum<br>Working Scientifically<br>- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary<br>- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate<br>- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br>- Using test results to make predictions to set up further comparative and fair tests<br>- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and | - Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird<br>- Describe the life process of reproduction in some plants and animals | - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object<br>- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces<br>- Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect | - Describe the movement of the Earth and other planets relative to the sun in the solar system<br>- Describe the movement of the moon relative to the Earth<br>- Describe the sun, Earth and moon as approximately spherical bodies<br>- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | - 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<br>- Know that some - materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution<br>- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating<br>- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic<br>- Demonstrate that dissolving, mixing and changes of state are reversible changes<br>- Explain that some changes | - Describe the changes as humans develop to old age |

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| written forms such as displays and other presentations<br>- Identifying scientific evidence that has been used to support or refute ideas or arguments | | | | 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 | |
| Knowledge | To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.<br>Describe the life process of reproduction in some plants and animals. | Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.<br>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.<br>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.<br>Describe the movement of the Moon relative to the Earth.<br>Describe the Sun, Earth and Moon as approximately spherical bodies.<br>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. | 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.<br>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.<br>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.<br>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. | Describe the changes as humans develop to old age. |
| Skills | **Year 5 Expected:** | **Year 5 Expected:** | **Year 5 Expected:** | **Year 5 Expected;** | **Year 5 Expected:** |

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| | -I can describe the differences in the life cycles of a mammal, amphibians, insects and a bird<br>-I can explore the work of well known naturalists and animal behaviorists<br>**Year 5 Exceeding:**<br>-I can observe my local environment and draw conclusions about life cycles<br>-I can compare life cycles in my local environment to those around the world. | -I can explain that unsupported objects fall to the earth because of the force of gravity acting between the earth and the falling object.<br>-I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.<br>-I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have greater effect.<br>**Year 5 Exceeding:**<br>-I can design effective parachutes.<br>-I can explore how scientists such as Galileo and Isaac Newton helped to develop the theory of gravitation. | -I can identify the movement of the earth and other planets relative to the sun in the solar system.<br>-I can explain the seasons and how associated weather is created.<br>-I can describe and explain the movement of the Moon relative to the Earth?<br>-I can describe the Sun, Moon & Earth as spherical bodies.<br>-I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun against the sky.<br>**Year 5 Exceeding**:<br>- I can compare the different times of day across the world.<br>- I can have the ability to understand how ancient civilisations used the sun to create astronomical clocks (Stonehenge).<br>-I can research scientists: Ptolemy, Alhazen & Copernicus. | -I can compare and group everyday materials based on their properties.<br>-I can explain how some materials dissolve into a solution & I know how to recover these from a solution.<br>-I have a growing knowledge of solids, liquids & gasses.<br>-I can give reasons for fair tests and can create experiments for uses of everyday materials.<br>-I can describe changes using scientific language.<br>-I can understand the terms 'reversible' and 'irreversible'<br>-I can explain that some changes result in the formation of new materials and not all of these are reversible. | I can describe the changes as humans develop to old age.<br>-I can describe the changes in puberty.<br>-I can draw a timeline to indicate the changes in humans as they develop to old age. |
| Vocabulary | Sexual, asexual, reproduction, cell, fertilisation, pollination, male, female, pregnancy, gestation, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant. | Force, push, pull, opposing, gravity, air resistance, water resistance, friction, streamline, brake, gear, mechanism, lever, cog, pulley, machine. | Earth, sun, moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric. | Material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard. | Puberty, life cycle, gestation, growth, reproduce, fetus, baby, fertilisation, toddler, child, adult, old age, life expectancy, adolescence, childhood, adulthood, womb, life, death. |
| Experiment/s | Seed dispersal experiment - based on sycamore leaves - | Mini experiments all the way through.<br>Size of surface area | Practical work - outside use ratio to draw planets according to size and relative distance | Dissolving and separating<br>Milk and vinegar<br>Egg in vinegar | Sorting materials - experiments on conductivity responses |

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| | changing a variable to see how that changes distance from source | effect on air resistance. | STEM - maths and aDT activities to explore space | Bicarbonate and vinegar | and magnet responses |
| Extended writing | Biography on Jane Goodall<br>Explanation text about life cycles<br>Science experiment | Fact file on Issac Newton<br>Mini science experiments | Poster made with parents about how to prevent climate change - followed up in English as a letter written to the community to persuade them to make small changes<br>Explanation text about the impact Ptolemy has had on Science and on different astronauts | All science experiments and diary entry for the three states of matters particles (demonstrate what the particles are like and can do) | Report on needs of a baby |
| STEM opportunities | Using design and technology to make pulleys and lever devices for Viking goals (moving a ship over a mountain and making weapons for raids)<br>Measurements eg Newton metre, timing parachute, measuring parachute etc | | Using design and technology to make a robot space rover to work in different Space related environments - uses motor and iPad to be controlled.<br>Create graph for sunrise/set.<br>Use ratio for relative sizes of Moon, Earth and Sun and other planets/distances. | Measurements in science experiments | |
| How does it link to the big question? | Where do we come from?<br>Life cycles - how life changes<br>Forces - looking at the forces that affect the world we come from | | Could we live anywhere else?<br>Space - looking at the scientific features that effect if we could live anywhere else | How are we similar? How are we different?<br>Changing materials - how some have different reactions etc<br>Puberty - how we are all similar and some differences | |