



# Science Curriculum & Progression

Our school is a beacon of light. A place where every child and adult is encouraged to shine brightly and reach their full potential. Through curiosity, courage, and compassion, we shine like a lamp in our classrooms, like a village on a hill in our community, and like shining stars across the wider world.



| Year A Curriculum Overview |                                                                                      |                      |                                                                                                         |                               |                                                                                     |                                        |
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|                            | Autumn                                                                               |                      | Spring                                                                                                  |                               | Summer                                                                              |                                        |
|                            | Impact & Power                                                                       |                      | Perspective & Empathy                                                                                   |                               | Celebration & Change                                                                |                                        |
| Year 5/6                   | Light<br><br>Properties and Changes of Materials                                     |                      | Living Things & Their Habitats (Reproduction)<br><br>Animals, Including Humans (The Circulatory System) |                               | Animals, Including Humans (The Circulatory System)<br><br>Evolution and Inheritance |                                        |
| Year 3/4                   | States of Matter<br><br>Animals including Humans ((Digestion, Teeth and Food chains) |                      | Plants<br><br>Light                                                                                     |                               | Rocks & Soils<br><br>Animals Including Humans ((Healthy Diet, Skeleton and Muscles) |                                        |
| Year 1/2                   | Everyday Materials                                                                   |                      | Plants<br><br>Living Things & Their Habitats                                                            |                               | Plants<br><br>Animals including Humans                                              |                                        |
| EYFS                       | What is your superpower?                                                             | Why am I marvellous? | What tales do we enjoy?                                                                                 | Why do we celebrate everyone? | What is it like in the great outdoors?                                              | Where have I been and where will I go? |

| Year B Curriculum Overview |                                                                        |                                        |                                    |                                      |                                                                                            |                                   |
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|                            | Autumn                                                                 |                                        | Spring                             |                                      | Summer                                                                                     |                                   |
|                            | Responsibility & Risk                                                  |                                        | Culture & Diversity                |                                      | Reflection & Legacy                                                                        |                                   |
| Year 5/6                   | Electricity<br><br>Animals Including Humans (Human change and puberty) |                                        | Earth & Space<br><br>Forces        |                                      | Forces<br><br>Living Things & Their Habitats                                               |                                   |
| Year 3/4                   | Sound                                                                  |                                        | Forces & Magnetism                 |                                      | Living Things and Their Habitats (Classification and local environment)<br><br>Electricity |                                   |
| Year 1/2                   | Animals including Humans<br><br>Uses of Everyday Materials             |                                        | Plants                             |                                      | Living Things and their Habitats<br><br>Animals including Humans                           |                                   |
| EYFS                       | Where will our adventures take us?                                     | How can we take care of living things? | What is lifelike around the world? | What makes us wonderfully different? | What is beyond our world?                                                                  | How can we make our world better? |

## An inclusive Science Curriculum: Supporting Children with SEND

At Stelling Minnis CE Primary School, we believe all pupils should have the opportunity to learn to the best of their capabilities through a broad and balanced, inclusive curriculum. For our pupils with a Special Educational Need, we scaffold their learning to provide them with the strongest opportunities for success in our school. We believe firmly in the SEND Code of Practice's statement that 'every teacher is a teacher of SEN' and that our pupils with SEN should be provided with the same opportunities as their peers in our school. This means that, with their learning being personalised to meet their areas of need, they feel included in the classroom and make progress year on year. Reasonable adjustments are made in all lessons to enable this. When planning for Science, class teachers will adapt their lessons where necessary using ideas taken from this list, however it is important to remember this list is not exhaustive and other adaptations may be needed for children with specific needs

| Resources                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Multi Sensory                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Teacher Communication                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <ul style="list-style-type: none"> <li>• Use labelled life-cycle charts, habitat mats and investigation vocabulary cards.</li> <li>• Provide symbol-supported method sheets for experiments.</li> <li>• Use colour-coded equipment trays for fair tests.</li> <li>• Offer adapted recording grids for observations.</li> <li>• Provide enlarged diagrams of plants, forces and the human body.</li> <li>• Use talking timers and visual countdowns during practical work.</li> </ul> | <ul style="list-style-type: none"> <li>• Handle real plants, rocks, magnets and fossils.</li> <li>• Act out scientific processes such as pollination or the water cycle.</li> <li>• Use tasting, smelling and touching activities where safe and appropriate.</li> <li>• Combine demonstrations with visuals and practical exploration.</li> <li>• Use songs and actions to reinforce key vocabulary.</li> <li>• Allow children to build models to show understanding.</li> </ul> | <ul style="list-style-type: none"> <li>• Give instructions one step at a time before investigations.</li> <li>• Demonstrate each stage of an experiment rather than relying on written instructions.</li> <li>• Pre-teach science vocabulary such as predict, observe and conclude.</li> <li>• Use questioning scaffolds to support scientific thinking.</li> <li>• Repeat and rephrase key learning points during practical tasks.</li> <li>• Check understanding before pupils collect equipment or begin tasks.</li> </ul> | <ul style="list-style-type: none"> <li>• Assess through practical demonstrations and discussion.</li> <li>• Accept photographs, labelled diagrams or voice recordings as evidence.</li> <li>• Use observation checklists during investigations.</li> <li>• Provide sentence stems for predictions and conclusions.</li> <li>• Break assessments into small stages across a lesson.</li> <li>• Measure progress against individual SEND targets as well as science objectives.</li> </ul> |

## Science Skills overview

|                                                                                                                               | EYFS                                                    | Year 1                                           | Year 2                                             | Year 3                                                 | Year 4                                               | Year 5                                                         | Year 6                                                                 |
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| <b>Asking Questions</b><br>                  | Shows curiosity and talks about what they notice        | Asks simple questions about everyday phenomena   | Suggests questions that can be explored            | Asks relevant scientific questions about observations  | Refines questions and identifies what to investigate | Generates testable questions independently                     | Develops precise questions and recognises variables involved           |
| <b>Making Predictions</b><br>                | Shares ideas about what might happen next               | Makes simple predictions from experience         | Predicts outcomes using observations               | Uses scientific knowledge to justify predictions       | Links predictions to prior learning and patterns     | Uses evidence and scientific understanding to predict outcomes | Explains predictions using scientific concepts and reasoning           |
| <b>Observing &amp; Measuring</b><br>         | Uses senses to explore and notice changes               | Observes closely using simple equipment          | Makes careful observations and simple measurements | Uses standard units and equipment accurately           | Collects measurements systematically and precisely   | Chooses suitable equipment and takes repeat readings           | Measures accurately, recognises anomalies and improves accuracy        |
| <b>Planning Investigations</b><br>           | Explores through play and guided enquiry                | Follows simple investigation instructions        | Contributes ideas when planning tests              | Identifies variables with support and plans fair tests | Selects appropriate ways to gather evidence          | Plans comparative, pattern-seeking and fair test enquiries     | Selects the most suitable enquiry type independently                   |
| <b>Recording &amp; Presenting Data</b><br> | Communicates findings through talk, drawings and models | Records using pictures, labels and simple charts | Uses tables, tally charts and simple graphs        | Records data in tables and bar charts                  | Uses classification keys and a wider range of graphs | Selects effective ways to present data                         | Presents data clearly using appropriate tables, graphs and diagrams    |
| <b>Interpreting Results</b><br>            | Describes what happened and what they noticed           | Identifies obvious patterns and changes          | Explains findings using observations               | Uses evidence to answer questions                      | Identifies patterns, trends and relationships        | Draws conclusions supported by evidence                        | Explains relationships, trends and causal links using evidence         |
| <b>Evaluating &amp; Concluding</b><br>     | Shares opinions about activities and discoveries        | Says what worked well or could be improved       | Comments on methods and results with support       | Identifies improvements and possible errors            | Recognises reliability and fairness issues           | Evaluates methods, evidence and accuracy                       | Assesses validity, reliability, precision and limitations of enquiries |

| Year Group | Science Year A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|            | Impact & Power<br>(Term 1 and 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Perception & Empathy<br>(Term 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                               | Celebration & Change<br>(Term 5 and 6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| EYFS       | EYFS- Understanding the World                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|            | 3-4 Year Olds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Reception                                                                                                                                                                                                                                                                                                                                                                                                                                            | Early Learning Goal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|            | <ul style="list-style-type: none"> <li>Use all their senses in hands-on exploration of natural materials.</li> <li>Explore collections of materials with similar and/ or different properties.</li> <li>Talk about what they see, using a wide vocabulary.</li> <li>Explore how things work.</li> <li>Plant seeds and care for growing plants.</li> <li>Understand the key features of the life cycle of a plant and an animal.</li> <li>Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>Explore and talk about different forces they can feel.</li> <li>Talk about the differences between materials and changes they notice.</li> </ul> | <ul style="list-style-type: none"> <li>Recognise some similarities and differences between life in this country and life in other countries.</li> <li>Explore the natural world around them.</li> <li>Describe what they see, hear and feel whilst outside.</li> <li>Recognise some environments that are different from the one in which they live.</li> <li>Understand the effect of changing seasons on the natural world around them.</li> </ul> | <p><u>People, Culture and Communities</u></p> <ul style="list-style-type: none"> <li>Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.</li> <li>Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts, and when appropriate, maps.</li> </ul> <p><u>The Natural World</u></p> <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>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.</li> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul> |
|            | <b>Vocabulary</b><br>calm feelings change notice strong fast lift push power roll slide freeze melt healthy habitat forest creature dark explore wood rough float sink bendy movement force strength change emotions nature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Vocabulary</b><br>pull grow roots teamwork hungry habitat food senses build strong weak change sound loud quiet vibrations listen bloom flower seasons grow care.                                                                                                                                                                                                                                                                                 | <b>Vocabulary</b><br>grow roots sunlight healthy seed flower life cycle seasons caterpillar cocoon butterfly healthy feelings calm worry notice habitat cold float sink shelter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| Year 1<br>& 2 | <b>Topic:</b><br><b>Everyday Materials</b><br><br><b>Key Scientists:</b><br>Charlotte McCurdy<br>(unknown-present)                                                                                                   | <b>Topic:</b><br><b>Everyday Materials</b><br><br><b>Key Scientists:</b><br>Charles Macintosh (1766-1843)                                                                                                                              | <b>Topic:</b><br><b>Plants</b><br><br><b>Key Scientists:</b><br>Jane Colden (1724 - 1766)                                                                                                       | <b>Topic:</b><br><b>Living Things and Their Habitats</b><br><br><b>Key Scientists:</b><br>David Attenborough (1926 - present)                                                                                                                                                                     | <b>Topic:</b><br><b>Plants</b><br><br><b>Key Scientists:</b><br>David Douglas (1799 - 1834)                                                                                                                                                  | <b>Topic:</b><br><b>Animals, including Humans</b><br><br><b>Key Scientists:</b><br>Steve Backshall (1973-present)                                                                                                                            |
|               | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What materials are these objects made from?</li> <li>2. What properties do materials have?</li> <li>3. What material is best at absorbing water? (E)</li> <li>4. What is our local area like in each season? (Autumn)</li> </ol> | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What material is best at keeping us dry - is waterproof?</li> <li>2. Can solid objects change shape? (E)</li> <li>3. Which fabric is the stretchiest?</li> <li>4. Are days always the same length? Is the weather always the same here?</li> </ol> | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What do plants grow from? (E) (flower seeds)</li> <li>2. How do bulbs and seeds grow?</li> <li>3. What does a seed need to grow?</li> <li>4. What is our local area like in each season? (Winter)</li> </ol> | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What examples can I find of living things, things that are no longer alive and things that have never been alive?</li> <li>2. What microhabitats can we find in our school?</li> <li>3. Do plants need particular habitats too? (E)</li> <li>4. What is our local area like in each season? (Spring)</li> </ol> | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What plants do we know and where can we find them?</li> <li>2. What part of a plant is under the ground? (E)</li> <li>3. Can we use a flower to name a plant?</li> <li>4. Are days always the same length? Is the weather always the same here?</li> </ol> | <b>Learning Objectives</b> <ol style="list-style-type: none"> <li>1. What parts make up the human body?</li> <li>2. Which parts of our bodies do we need to see, hear, smell, taste and touch? (E)</li> <li>3. Do human body parts change with age?</li> <li>4. What is our local area like in each season? (Summer)</li> </ol> |

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|  | <b>Disciplinary Knowledge</b><br>I can classify objects and materials by comparing their observable properties.<br>I can predict which materials will absorb the most or least water and explain my thinking.<br>I can test different materials fairly to compare how well they absorb water.<br>I can use my results as evidence to decide which material is most suitable for a particular purpose. | <b>Disciplinary Knowledge</b><br>I can predict which materials will be waterproof, flexible or stretchy based on their properties.<br>I can investigate how solid objects change shape when they are bent, twisted, squashed or stretched.<br>I can compare materials by testing their waterproofness or stretchiness in a consistent way.<br>I can use evidence from my tests to explain why a material is suitable for a particular purpose. | <b>Disciplinary Knowledge</b><br>I can compare seeds and bulbs, identifying similarities and differences.<br>I can predict what might happen when seeds are grown in different conditions.<br>I can track and record how a seed or bulb changes as it begins to grow.<br>I can use evidence from seasonal observations to describe how plants change from autumn to winter. | <b>Disciplinary Knowledge</b><br>I can classify examples as living, dead or never alive by using their observable features.<br>I can explore and compare microhabitats in the school grounds, recording the living things and conditions I find.<br>I can investigate where different plants grow and use my findings to suggest why particular habitats suit them.<br>I can use evidence from seasonal observations to identify changes in plants and habitats from winter to spring. | <b>Disciplinary Knowledge</b><br>I can identify and group plants found in different places using their observable features.<br>I can investigate roots by carefully examining and comparing the parts of plants found below the ground.<br>I can use the features of flowers to compare and identify different plants.<br>I can use weather and daylight observations collected over time to identify patterns and seasonal changes. | <b>Disciplinary Knowledge</b><br>I can identify and group parts of the human body according to their functions.<br>I can investigate the five senses through simple tests and link each sense to the correct body part.<br>I can compare humans at different ages and recognise patterns in how our bodies change as we grow.<br>I can use seasonal observations to describe and record changes in our local area from spring to summer. |
|  | <b>Substantive Knowledge</b><br>I know the name of a variety of everyday materials.<br>I know that objects are made from materials such as wood, plastic and metal.<br>I know the simple physical properties of a variety of everyday materials.<br>I know that materials can be changed by squashing,                                                                                                | <b>Substantive Knowledge</b><br>I know the term absorbent/not absorbent.<br>I know that weather changes as the year changes.<br>I know that some materials, such as plastic, are waterproof and others, such as fabric, allow water through.<br>I know that waterproofness is a property that can make a                                                                                                                                       | <b>Substantive Knowledge</b><br>I know that seeds and bulbs can grow into plants.<br>I know a variety of plants and trees and that they need sunlight, water and air to grow.<br>I know how to identify and describe flowers, petals, roots, stem and                                                                                                                       | <b>Substantive Knowledge</b><br>I know how to identify whether something is living (can move, feed, grow, reproduce and use their senses).<br>I know that a habitat is an environment where an animal lives. It contains all the things that animal needs to survive.<br>I know that different plants grow well in different places.                                                                                                                                                   | <b>Substantive Knowledge</b><br>I know there are different types of plants, including wild plants and garden plants.<br>I know the roots are underground.<br>I know plants grow differently depending on their environment and care.                                                                                                                                                                                                 | <b>Substantive Knowledge</b><br>I know where parts of the body are e.g. hair is on our head; fingers are at the end of our arms.<br>I know that humans begin as babies and grow into adults; we go through different stages of growth.<br>I know our senses work together to help us                                                                                                                                                     |

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|                       | bending, twisting and stretching.                                                                                                                                                                                               | material suitable for particular uses.                                                                                                                                                                                                                                               | leaves of flowering plants.<br>I know that light is not required for a seed to begin germinating.                                                                                                                          | I know that seasonal changes affect the conditions within habitats.                                                                                                                                                                                                                                                                                               | I know that observations collected over time can show patterns.                                                                                                                                                          | understand the world around us.<br>I know humans have five senses: sight, hearing, smell, taste and touch.                                                                                                                                                                         |
|                       | <b>Links with NC:</b><br>Describe the simple physical properties of a variety of everyday materials.                                                                                                                            | <b>Links with NC:</b><br>Understand that different materials can be used for different jobs.                                                                                                                                                                                         | <b>Links with NC:</b><br>Identify a variety of common wild and garden plants, as well as deciduous and evergreen trees.                                                                                                    | <b>Links with NC:</b><br>Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. | <b>Links with NC:</b><br>Identify and describe the basic structure of a variety of common flowering plants, including trees. Observe and describe how seeds and bulbs grow into mature plants.                           | <b>Links with NC:</b><br>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.                                                                                                                            |
|                       | <b>Vocabulary</b><br>material, object, wood, plastic, metal, rock, water, object, material, properties, hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; opaque/transparent, season, changes, autumn.      | <b>Vocabulary</b><br>absorbent / not absorbent, waterproof/not waterproof, winter, spring, summer, weather.                                                                                                                                                                          | <b>Vocabulary</b><br>plants, wild plants, garden plants, weeds, trees, seeds, root, shoot, soil, magnifying glass, flower, petal, stem, leaf/leaves, tree, trunk, bark, branch, blossom, acorn, deciduous, evergreen.      | <b>Vocabulary</b><br>living, features, move, feed, grow, reproduce, senses (light, sound, temperature), habitat, environment, microhabitat, shelter, survive, suitability.                                                                                                                                                                                        | <b>Vocabulary</b><br>Plant, seed, bulb, grow, water, light, sun, soil, leaf, flower, tree, wild plant, garden plant, healthy, temperature, environment, suitable.                                                        | <b>Vocabulary</b><br>head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth, human lifecycle, child, toddler, teenager, adult, limbs.                                                                                                                         |
| <b>Year 3 &amp; 4</b> | <b>Topic:</b><br><b>States of Matter</b><br><br><b>Key Scientists:</b><br>Anders Celsius (1707 - 1744)<br>Heston Blumenthal (1966 - present) | <b>Topic:</b><br><b>Animals, including humans</b><br><b>(Digestion, Teeth and Food chains)</b><br><br><b>Key Scientists:</b><br>Pierre Fauchard (1679 - 1761)<br>Zhaoming Liu (unknown - present) | <b>Topic:</b><br><b>Plants</b><br><br><b>Key Scientists:</b><br>George W. Carver (1864 - 1943)<br>Luciano Scandian (unknown - present) | <b>Topic:</b><br><b>Light</b><br><br><b>Key Scientists:</b><br>Thomas Edison (1847 - 1931)<br>Isamu Akasaki (1929 - 2021)                                                                                                                                                    | <b>Topic:</b><br><b>Rocks and Soil</b><br><br><b>Key Scientists:</b><br>Mary Anning (1799 - 1847)<br>Sanjeev Gupta (1971 - present) | <b>Topic:</b><br><b>Animals, including humans</b><br><b>(Healthy Diet, Skeleton and Muscles)</b><br><br><b>Key Scientists:</b><br>Louis Pasteur (1822-1895)<br>Charlotte Armah (1970-present) |



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|  | <p>I know how to group and classify materials based on their state (solid, liquid, gas) and explain simple scientific definitions.</p> <p>I know how to set up fair, comparative tests using equipment like thermometers and data loggers to take accurate measurements in standard units.</p> <p>I know how to record data systematically using tables and line graphs to track changes over time.</p> <p>I know how to write conclusions based on my results, create models like the water cycle, and raise further scientific questions.</p> | <p>I know how to identify the different types of human and animal teeth and explain their simple functions.</p> <p>I know the main parts of the human digestive system and their simple functions.</p> <p>I know how to construct and interpret food chains using arrows to show how energy flows from producers to predators and prey.</p> <p>I know how to sort and classify living things based on their habitat and their role within a food chain.</p> | <p>I know the main parts of a flowering plant—including roots, stems, leaves, and flowers—and explain their key functions.</p> <p>I know how roots, stems, and leaves work together to absorb and transport water and nutrients so the plant can make food.</p> <p>I know what plants need to stay alive and healthy (air, light, water, nutrients, and space to grow) and know that requirements vary by plant.</p> <p>I know the plant life cycle, explaining how flowers, pollination, and seed formation allow plants to reproduce.</p> | <p>I know how we see light directly from sources or as straight lines reflecting off surfaces, mirrors, and objects into our eyes.</p> <p>I know how shadows form when opaque or transparent objects block light, and how distance, angles, and sun height change a shadow's size and length.</p> <p>I know how shadow lengths change throughout the day as the Earth rotates and the sun's position shifts in the sky.</p> <p>I know why looking directly at bright light or the sun damages our eyes, and how sunglasses and hats help protect our vision.</p> | <p>I know how to group and classify rocks based on their appearance and physical properties, such as permeability and durability, and explain how these properties determine their uses.</p> <p>I know the three main ways rocks form—igneous, sedimentary, and metamorphic—and explain how formation affects a rock's characteristics.</p> <p>I know how fossils are formed over time when living things become trapped inside layers of rock.</p> <p>I know that soil is created from a mixture of broken-down rocks and organic matter.</p> | <p>I know the five main food groups and why humans and animals need a balanced diet to stay healthy.</p> <p>I know the responsibilities of pet ownership, including providing for different dietary and care needs.</p> <p>I know the main functions of skeletons—support, protection, and movement—and recognize that not all animals have bony skeletons.</p> <p>I know how muscles work in pairs by contracting and relaxing to move the skeleton, and how physical activity builds strength and fitness.</p> |
|  | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Compare and group materials together, according to whether they are solids, liquids or gases</li> <li>• Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>                                           | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Describe the simple functions of the basic parts of the digestive system in humans</li> <li>• Identify the different types of teeth in humans and their simple functions</li> <li>• Construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>                                                                                             | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li>• Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</li> <li>• Investigate the way in which water is transported within plants.</li> <li>• Explore the part that flowers play in the life cycle of flowering plants,</li> </ul>     | <p><b>Links with NC</b></p> <p>Recognise that they need light in order to see things and that dark is the absence of light</p> <ul style="list-style-type: none"> <li>• Notice that light is reflected from surfaces</li> <li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• Recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>• Find patterns in the way that the size of shadows change</li> </ul>                                   | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>• Recognise that soils are made from rocks and organic matter.</li> </ul>                                                                                                                                                   | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>                                                                                                                                   |



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|            |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | including pollination, seed formation and seed dispersal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|            | <b>Vocabulary</b><br>Temperature, freeze, melt, states of matter, solid, liquid, gas, matter, mass, volume, particles, properties, water vapour, melting point, freezing point, condensation, evaporation, water cycle, precipitation.                                                                                                                                          | <b>Vocabulary</b><br>Teeth, digestive system, mouth, tongue, stomach, adaptation, energy, prey, predator, incisor, canine, molar, premolar, carnivore, omnivore, herbivore, oesophagus, small and large intestine, food chain, producer, primary/secondary/ tertiary consumer.                                                                                                                                                                                                                                                                                                    | <b>Vocabulary</b><br>Seed, parent plant, roots, stem, leaves, trunk/branches, flowers, transport, absorb, tubes, flower, pollen, nectar, attract, dispersal, germination, root hair, function, nutrients, <i>carbon dioxide</i> , <i>growth rate</i> , nutrient, drought, climate, pollination, reproduce.                                                                                                                                                                                                                                                                                       | <b>Vocabulary</b><br>Light, reflect, visible, visibility, dark, shiny, bright, dull, matt, mirror, angle, shadows, position, direction, damage, protection, sunrise, sunset, rotation, compass direction, Light source, opaque, translucent, transparent.                                                                                                                                                                                                                                                                                                                 | <b>Vocabulary</b><br>Rock, material, Earth, remains, heat, pressure, durable, preserve, decay, earthworm, leaves, soil, mineral, crust, formation, physical properties, metamorphic, sedimentary, igneous, grains, molten, magma, lava, crystals, permeable, impermeable, sediment, fossil, palaeontologist, fossilisation, organic matter, erode.                                                                                                                                                                                                                   | <b>Vocabulary</b><br>Growth, carbohydrate, fat, protein, dairy, domestic, pet, environment, diet, behaviour, company, health and welfare, skeleton, skull, ribcage, spine, muscle, relax, contract, nutrition, energy, calcium, joints, organs, triceps, bicep.                                                                                                                                                                                                                                 |
| Year 5 & 6 | <b>Topic:</b><br><b>Light</b><br>  <br><b>Key Scientists:</b><br>Ibn al-Haytham (965 – 1040)<br>Jo Shien Ng (1975 - present) | <b>Topic:</b><br><b>Properties and Changes of Materials</b><br>    <br><b>Key Scientists:</b><br>Albert Einstein (1879 - 1955)<br>Hugh Bradner (1915 - 2008) | <b>Topic:</b><br><b>Living Things and Their Habitats (Reproduction)</b><br>    <br><b>Key Scientists:</b><br>Gregor Mendel (1822 - 1884)<br>Jane Goodall (1934 - 2026) | <b>Topic:</b><br><b>Animals, Including Humans (The Circulatory System)</b><br>    <br><b>Key Scientists:</b><br>William Harvey (1578-1657) | <b>Topic:</b><br><b>Animals, Including Humans (The Circulatory System)</b><br>    <br><b>Key Scientists:</b><br>Donald Palmer (1962-) | <b>Topic:</b><br><b>Evolution and Inheritance</b><br>   <br><b>Key Scientists:</b><br>Charles Darwin (1809 – 1882)<br>Sylvia Earle (1935 – present) |
|            | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How does light travel?</li> <li>Is a shadow always the same shape as the object that casts it?</li> <li>How does a mirror reflect light?</li> <li>What is refraction and why is it a phenomenon? (E)</li> <li>What colour is light? Is this a phenomenon?</li> </ol>                                          | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What Material Is Most Effective in Keeping a Cup of Tea Warm? (E)</li> <li>What Materials Make the Best Thermal Insulators?</li> <li>When We Change a Material, Is It Always Forever?</li> </ol>                                                                                                                                                                                                                                                                                                                | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>Are there any differences between the lifecycles of mammals, amphibians, insects and birds?</li> <li>How Can We Behave Like Naturalists? (E)</li> </ol>                                                                                                                                                                                                                                                                                                                                                                        | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What is the purpose of the circulatory system?</li> <li>Why is blood so important?</li> <li>How does exercise affect our circulatory system? (E)</li> </ol>                                                                                                                                                                                                                                                                                                                                             | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How are nutrients and water transported within animals, including humans?</li> <li>How do diet, exercise, drugs and lifestyle impact our bodies? (E)</li> </ol>                                                                                                                                                                                                                                                                                                                                    | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How Do Scientists Know That Living Things Have Changed Over Time?</li> <li>How Does Variation Explain the Different Features and Characteristics of Living Things?</li> </ol>                                                                                                                                                                                                                                                 |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <div>4. How Can We Separate a Mixture?</div> <div>5. When Does a Change Make a New Material?</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <div>3. What Is Sexual Reproduction in Plants?</div> <div>4. Can Plants Reproduce Without Seeds?</div> <div>5. Do All Animals Reproduce in The Same Way?</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <div>3. How Has Variation Led to Evolution?</div> <div>4. Do All Living Things Adapt in The Same Way?</div> <div>5. How Have Plants in The Local Area Adapted? (E)</div> |
| <div>Disciplinary Knowledge</div> <div>I can plan scientific enquiries, make careful observations, and record results using labelled diagrams, models, and precise measurements like angles.</div> <div>I can use protractors accurately to measure angles of incidence and reflection, taking repeat readings to ensure reliable data.</div> <div>I can report and present findings to explain scientific phenomena, including shadow formation, light travelling in straight lines, and light refraction.</div> <div>I can explain how scientific evidence—such as Isaac Newton's experiments with light and the spectrum of colours—is used to support or refute scientific ideas.</div> | <div>Disciplinary Knowledge</div> <div>I can plan fair tests to answer scientific questions—such as testing thermal insulators or separating mixtures—by identifying, controlling, and isolating variables.</div> <div>I can take accurate measurements with equipment like thermometers and understand why scientists take repeat readings to ensure reliability.</div> <div>I can use line graphs, test results, and past findings to draw conclusions, raise new questions, and make predictions.</div> <div>I can record, report, and present findings in oral and written forms, evaluating the accuracy and reliability of the observations.</div> | <div>Disciplinary Knowledge</div> <div>I can plan scientific enquiries, identify and control variables, and form testable hypotheses about plant growth and asexual reproduction.</div> <div>I can record and present findings using a variety of formats—such as labelled diagrams, accurate measurements, photos, and classification diagrams.</div> <div>I can compare, contrast, and draw conclusions about scientific processes, including the life cycles of animals and plant reproduction.</div> <div>I can work ethically and responsibly as a naturalist when researching and observing living things in the local environment.</div> | <div>Disciplinary Knowledge</div> <div>I can independently plan fair tests and pattern-seeking enquiries by writing hypotheses, identifying variables, and selecting suitable measuring tools like pulse meters.</div> <div>I can build accurate scientific models and use annotated diagrams to explain complex processes, such as the composition of blood.</div> <div>I can present data accurately using appropriate graphs to show relationships, such as the effect of exercise on heart rate.</div> <div>I can analyse experimental findings to draw clear conclusions and suggest relevant follow-up scientific investigations.</div> | <div>Disciplinary Knowledge</div> <div>I can explain how scientific evidence, such as William Harvey's work, has been used throughout history to support or refute scientific ideas and arguments.</div> <div>I can analyse case studies and apply scientific understanding to give informed advice.</div> <div>I can evaluate nutritional guidance to draw valid conclusions about health and diet.</div> <div>I can monitor and record data over time, such as tracking sleep for a week, to identify patterns and draw conclusions.</div> | <div>Disciplinary Knowledge</div> <div>I can explain how scientists examine fossils and identify structural changes over time to provide evidence for the evolution of different species.</div> <div>I can explain how close observation reveals inherited characteristics in living things, and how environmental factors drive natural selection and evolution.</div> <div>I can describe how Charles Darwin used scientific studies to develop his theory of evolution and how organisms adapt to survive in diverse or changing habitats.</div> <div>I can explain how humans use selective breeding to pass on specific traits, including the advantages and disadvantages of this process.</div> |                                                                                                                                                                          |
| <div>Substantive Knowledge</div> <div>I know that light travels in straight lines—either directly from a light source or reflecting off objects into our eyes—allowing us to see.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <div>Substantive Knowledge</div> <div>I know how to compare, group, and select everyday materials for specific uses based on properties like</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <div>Substantive Knowledge</div> <div>I know the difference between sexual reproduction (requiring male and female cells) and asexual reproduction</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <div>Substantive Knowledge</div> <div>I know the structure and function of the circulatory system, including how the heart pumps oxygenated and</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <div>Substantive Knowledge</div> <div>I know that humans have a double and closed circulatory system as do most vertebrates.</div>                                                                                                                                                                                                                                                                                                                                                                                                           | <div>Substantive Knowledge</div> <div>I know how the fossil record provides evidence for evolution and give examples of animals that have evolved over time.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                          |

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|  | <p>I know that shadows match the shape of the object blocking the light because the surrounding light continues past in straight lines.</p> <p>I know the law of reflection, stating that the angle at which light reflects off a mirror equals the angle at which it hits it.</p> <p>I know that refraction is the bending of light as it passes between transparent materials, which can split white light into the full spectrum of rainbow colours.</p>                                                                                                                           | <p>thermal conductivity and insulation.</p> <p>I know how materials dissolve in liquids to form solutions and how evaporation can recover the dissolved substance.</p> <p>I know reversible changes—such as dissolving, mixing, and changes of state—and demonstrate how to separate mixtures using filtering, sieving, evaporating, or magnets.</p> <p>I know that irreversible changes form new materials and evaluate how these changes can be both useful and problematic.</p>                                                                                               | <p>(producing identical clones through bulbs, runners, or tubers).</p> <p>I know the life cycles of mammals, amphibians, insects, birds, fish, and reptiles, including how they produce eggs or live young.</p> <p>I know the process of sexual reproduction in flowering plants, including fertilisation.</p> <p>I know that the work of famous naturalists, like David Attenborough and Jane Goodall, and how studying living things in the wild helps educate us.</p> | <p>deoxygenated blood through blood vessels.</p> <p>I know the main components of blood (red cells, white cells, platelets, and plasma) and explain their specific roles in carrying oxygen, fighting disease, clotting, and transporting nutrients.</p> <p>I know how exercise strengthens the heart muscle, improving its overall efficiency in pumping blood.</p> <p>I know the relationship between physical activity, heart health, and how the circulatory system delivers essential oxygen and nutrients throughout the body.</p> | <p>I know that some animals have a single circulatory system, and some have an open circulatory system.</p> <p>I know the impact of diet, exercise, drugs and lifestyle on the way our bodies function.</p>                                                                                                                                                                                                                           | <p>I know how to define diversity between species and variation within a species, explaining how inherited traits differ among offspring.</p> <p>I know how variation leads to natural selection and evolution, supporting my points with real examples from nature.</p> <p>I know how animals and plants adapt to their environments—such as plants securing light, water, and pollination—to help them survive.</p>                                                                                                                    |
|  | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Recognise that light appears to travel in straight lines.</li> <li>• 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.</li> <li>• 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.</li> <li>• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• 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</li> <li>• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>• Describe the life process of reproduction in some plants and animals.</li> </ul>                                                                                                                                                                                                             | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the ways their bodies function</li> <li>• Describe the ways in which nutrients and water are transported within animals including humans.</li> </ul>                                                                                                    | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the ways their bodies function</li> <li>• Describe the ways in which nutrients and water are transported within animals including humans.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul> |

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|  |                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>• Demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• 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.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                       |
|  | <b>Vocabulary</b><br>Beam, ray, shadow, cast, object, reflect, light source, energy, distortion, factor, <i>incident ray</i> , reflected ray, <i>angle of incidence</i> , angle of reflection, normal line, phenomenon, refraction, spectrum, prism. | <b>Vocabulary</b><br>Material, mixture, burning, rust, thermal, conductor, insulator, transference, independent/dependent/controlled variable, dissolve, solid, liquid, gas, states of matter, solution, filtration, sieving, evaporation, permeable, vapour, particles, irreversible, chemical changes, acid.                                                                                                                                                                                                                    | <b>Vocabulary</b><br>Lifecycle, natural world, expertise, observe, document, study, stages of development, sexual, asexual, reproduction, larvae, embryo, metamorphosis, naturalist, sexual/ asexual reproduction, pistal/carpel, stigma, style, ovary, stamen, anther, nectar, pollen, pollination, fertilisation, dispersal, tuber, bulb, runner, clone, vegetative propagation, sperm, egg, external/internal fertilisation. | <b>Vocabulary</b><br>Pump, heart, lifestyle, drugs, medicine, illegal, vitamins, circulatory system, organ, blood vessels, arteries, veins, capillaries, living cells, oxygen, carbon dioxide, deoxygenated, oxygenated, platelets, plasma, red/white blood cells, antibodies, single/double circulatory system, nicotine, caffeine, proteins, stimulant, hallucinogen, depressant, nicotine, ethanol. | <b>Vocabulary</b><br>Pump, heart, lifestyle, drugs, medicine, illegal, vitamins, circulatory system, organ, blood vessels, arteries, veins, capillaries, living cells, oxygen, carbon dioxide, deoxygenated, oxygenated, platelets, plasma, red/white blood cells, antibodies, single/double circulatory system, nicotine, caffeine, proteins, stimulant, hallucinogen, depressant, nicotine, ethanol. | <b>Vocabulary</b><br>Diversity, siblings, characteristics, traits, habitats, climate, extinction, crossbreed, evolution, mould/body/trace/ cast fossil, fossil record, species, variation, inheritance, inherited/ environmental variation, selective-breeding, natural selection, adaptation, organism, pollinators. |

| Year Group | Science Year B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
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|            | Responsibility and Risk<br>(Term 1 and 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Culture and Diversity<br>(Term 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                        |  | Reflection and Legacy<br>(Term 5 &6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
| EYFS       | EYFS- Understanding the World                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|            | 3-4 Year Olds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | Reception                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | Early Learning Goal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|            | <ul style="list-style-type: none"><li>Use all their senses in hands-on exploration of natural materials.</li><li>Explore collections of materials with similar and/ or different properties.</li><li>Talk about what they see, using a wide vocabulary.</li><li>Explore how things work.</li><li>Plant seeds and care for growing plants.</li><li>Understand the key features of the life cycle of a plant and an animal.</li><li>Begin to understand the need to respect and care for the natural environment and all living things.</li><li>Explore and talk about different forces they can feel.</li><li>Talk about the differences between materials and changes they notice.</li></ul> |  | <ul style="list-style-type: none"><li>Recognise some similarities and differences between life in this country and life in other countries.</li><li>Explore the natural world around them.</li><li>Describe what they see, hear and feel whilst outside.</li><li>Recognise some environments that are different from the one in which they live.</li><li>Understand the effect of changing seasons on the natural world around them.</li></ul> |  | <u>People, Culture and Communities</u> <ul style="list-style-type: none"><li>Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.</li><li>Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts, and when appropriate, maps.</li></ul> <u>The Natural World</u> <ul style="list-style-type: none"><li>Explore the natural world around them, making observations and drawing pictures of animals and plants.</li><li>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.</li><li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li></ul> |  |
|            | <b>Vocabulary</b> squelchy slippery cold safe explore journey travel rescue responsibility brave shelter danger protect nest nocturnal baby safe shelter pond habitat creature water protect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | <b>Vocabulary</b> sound weather hot sunny listen fruit taste smell healthy juicy skin body grow different similar fish habitat underwater fins scales.                                                                                                                                                                                                                                                                                         |  | <b>Vocabulary</b> astronaut rocket moon stars explore universe night light dark planet recycle reuse protect environment care habitat pollution wildlife nature protect.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Year 1 & 2 | <b>Topic:</b><br>Animals, Including Humans<br><br><b>Key Scientists:</b><br>Edward ‘Bear’ Grylls (1974-present)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <b>Topic:</b><br>Plants<br><br><b>Key Scientists:</b><br>David Hickmott (unknown - present)                                                                                                                                                                                                                                                                |  | <b>Topic:</b><br>Plants<br><br><b>Key Scientists:</b><br>Alan Titchmarsh (1949 - present)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|            | <b>Topic:</b><br>Uses of Everyday Materials<br><br><b>Key Scientists:</b><br>Caroline Haslett (1820-1910)<br>Stella McCartney (1974-present)                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <b>Topic:</b><br>Living Things and Their Habitats<br><br><b>Key Scientists:</b><br>Jacques Cousteau (1910 - 1997)                                                                                                                                                                                                                                         |  | <b>Topic:</b><br>Animals, including Humans<br><br><b>Key Scientists:</b><br>David Attenborough (1926-present)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |



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|  | <p>I know that living things need water, food, air and shelter to survive.</p> <p>I know exercise helps humans to keep their bodies healthy and strong.</p> <p>I know in autumn, we can observe changes in weather, temperature, daylight, plants and animals.</p> <p>I know Bear Grylls' experiences demonstrate the importance of meeting basic needs such as food, water and shelter when surviving in different environments.</p> | <p>I know that everyday objects are made from materials that have different properties; hard, soft, smooth, rough, shiny, dull.</p> <p>I know that weather and daylight change throughout the year.</p> <p>I know that changing the shape of an object does not necessarily change the material it is made from.</p> <p>I know that materials can be changed by squashing, bending, twisting and stretching.</p> | <p>I know that plants grow from seeds and bulbs.</p> <p>I know that germination is when a seed begins to grow.</p> <p>I know that plants continue to grow and change throughout their life.</p> <p>I know that a conclusion about growth rate should be based on evidence collected during the investigation.</p> <p>I know plants continually need soil, water, light and air to stay healthy throughout their life.</p> | <p>I know that the cycle from seed to plant to flower to seed is called a lifecycle.</p> <p>I know that tree trunks can be different colours, textures, shapes and sizes.</p> <p>I know that leaves are important for the plant because they help it make food.</p> <p>I know that seasonal changes affect the growth and appearance of plants.</p> | <p>I know that there are a range of different microhabitats around the school such as long grass, flower beds and tree trunks.</p> <p>I know that different animals and plants are suited to different habitats.</p> <p>I know that animals can be grouped according to what they eat.</p> <p>I know that the length of daylight varies throughout the year.</p> | <p>I know that all animals move freely, eat other living things, need water, produce young.</p> <p>I know that each animal group has a set of characteristics, some of which are unique to them (amphibians, bird, fish, mammals and reptiles).</p> <p>I know David Attenborough is a natural historian and broadcaster who has helped people learn about animals and the natural world.</p> <p>I know in summer, many plants grow, some animals are more active and there are longer periods of daylight.</p> |
|  | <p><b>Links with NC:</b></p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>                                                                                                                                                                                                                                                                                 | <p><b>Links with NC:</b></p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>                                                                                                                                                                                                                                             | <p><b>Links with NC:</b></p> <p>Describe how plants need water light and suitable temperature to grow and stay healthy.</p>                                                                                                                                                                                                                                                                                               | <p><b>Links with NC:</b></p> <p>Observe how seeds and bulbs grow into mature plants.</p>                                                                                                                                                                                                                                                            | <p><b>Links with NC:</b></p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>                                                                                                                                                                | <p><b>Links with NC:</b></p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>                                                                                                                                                                                                                                                                   |
|  | <p><b>Vocabulary</b></p> <p>essential, survive, shelter, energy, air (oxygen), temperature, fruit, vegetables, cereal, meat, dairy, fat, sugar, energy, healthy, portion.</p>                                                                                                                                                                                                                                                         | <p><b>Vocabulary</b></p> <p>wood, metal, plastic, glass, brick, rock, paper, cardboard, strong, waterproof, bounce, squash, bend, twist, stretch, stretchy/not stretchy, fabric.</p>                                                                                                                                                                                                                             | <p><b>Vocabulary</b></p> <p>seed, seed coat, bulb, food store, protect, mature.</p>                                                                                                                                                                                                                                                                                                                                       | <p><b>Vocabulary</b></p> <p>Tree, trunk, bark, branch, leaf / leaves, evergreen, deciduous, seed, bulb, roots, stem, flower, petals, lifecycle, grow, healthy, mature, observe, compare, predict, soil, water, sunlight.</p>                                                                                                                        | <p><b>Vocabulary</b></p> <p>Tundra/Arctic, grassland, rainforest, forest/wood, wetlands, source, nutrients, energy, transfer, food chain, producer, prey, predator, depend/survive.</p>                                                                                                                                                                          | <p><b>Vocabulary</b></p> <p>characteristics, birds, fish, mammals, reptiles, amphibian feathers, cold-blooded, warm-blooded, scales, breathe, lay, young, offspring, growth, lifecycle, essential, survive, shelter, energy, air (oxygen), temperature.</p>                                                                                                                                                                                                                                                    |

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| Year 3 & 4 | <b>Topic:</b><br>Sound<br> <b>Key Scientists:</b><br>Alexander Graham Bell (1847-1922)                                                                                                                     | <b>Topic:</b><br>Sound<br> <b>Key Scientists:</b><br>Jaap Haartsen (1963 - present)                                                                                                                         | <b>Topic:</b><br>Forces and Magnetism<br> <b>Key Scientists:</b><br>Leonardo Da Vinci (1452-1519)                                                                                                                                                          | <b>Topic:</b><br>Forces and Magnetism<br> <b>Key Scientists:</b><br>Masato Sagawa (1943-)                                                                                                                        | <b>Topic:</b><br>Living Things and Their Habitats<br>(Classification and local environment)<br> <b>Key Scientists:</b><br>Carl Linnaeus (1707 - 1778)<br>Vanessa Nakate (1996 - present)                                                                                               | <b>Topic:</b><br>Electricity<br> <b>Key Scientists:</b><br>Benjamin Franklin (1706-1790)<br>Erik Bystrup (unknown-present)                                                                                                                                                                              |
|            | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How do we Hear sounds?</li> <li>What patterns can you find between the strength of vibrations and volume of a sound?</li> <li>What happens to sound as the distance from the sound source increases? (E)</li> </ol>       | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What material provides the best insulation against sound? (E)</li> <li>How do the features of an object affect the pitch of the sound it makes?</li> </ol>                                                                 | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What is a contact force?</li> <li>How do different surfaces affect the movement of objects? (E)</li> </ol>                                                                                                                                                                 | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What is a magnet and how do they work?</li> <li>What materials are attracted to a magnet?</li> <li>Do all magnets have the same strength? (E)</li> </ol>                                                                          | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>Is it helpful to group living things?</li> <li>What types of animals live in the local area? (E)</li> <li>What is special about our local environment?</li> <li>What dangers are posed to habitats and the environment?</li> <li>How can we develop the local area to protect living things?</li> </ol> | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>Where does electricity come from and what is it used for?</li> <li>How can we light a bulb using a simple, series electrical circuit?</li> <li>How does a simple switch work?</li> <li>What material is the best conductor of electricity? (E)</li> <li>What components are needed to make a working circuit?</li> </ol> |
|            | <b>Disciplinary Knowledge</b><br>I can make observations about how sounds are created and perceived through vibrations.<br>I can plan and conduct comparative fair tests to investigate how vibration strength affects sound volume.<br>I can use data loggers to take systematic, accurate | <b>Disciplinary Knowledge</b><br>I can independently plan and conduct fair tests, including creating results tables and repeating experiments three times to increase reliability.<br>I can use scientific language about sound waves to explain pitch changes and identify patterns between | <b>Disciplinary Knowledge</b><br>I can use observation to identify forces being used and to identify the effect these forces have on objects.<br>I can understand why tests should be fair and control all but one variable (the surface the car travels on).<br>I can Independently set up an investigation that follows the agreed method. | <b>Disciplinary Knowledge</b><br>I can carry out simple magnet investigations, making systematic observations about magnetic strength at various distances or through barriers like paper.<br>I can predict whether magnets will attract or repel based on their poles, and test materials to group | <b>Disciplinary Knowledge</b><br>I can make careful observations using tools like magnifying glasses, and use classification diagrams and dichotomous keys to identify and group living things by their characteristics.<br>I can describe how scientific research and environmental evidence show how human                                                              | <b>Disciplinary Knowledge</b><br>I can plan, set up, and test simple complete circuits, predicting and recording how changing or adding components affects circuit function.<br>I can carry out fair tests and comparative investigations to classify materials as electrical conductors or                                                                                                |

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|  | <p>measurements of sound levels.</p> <p>I can analyse measurement data to draw conclusions, identify patterns, and recognise the role of science museums in research and education.</p>                                                                                                                                                                                                                                                                                | <p>an object's features and the sound it produces.</p> <p>I can draw evidence-based conclusions about what affects the pitch and volume of a sound.</p> <p>I can build model prototypes to test and evaluate sound-insulating materials, mimicking the processes used by scientists and engineers.</p>                                                                                                                                                    | <p>I can use measuring tape to measure the distance the cars travel.</p>                                                                                                                                                                                                                                                                                                                      | <p>them into magnetic and non-magnetic categories.</p> <p>I can explain how factors such as size, shape, and material composition can influence the strength of a magnet.</p> <p>I can record experimental data in tables and present findings clearly using bar charts.</p>                                                                                                                                                                                                                      | <p>behaviours, urbanisation, and pollution cause habitats to change negatively over time.</p> <p>I can research local environmental threats and develop actionable plans and guides to help protect local habitats and living things.</p> <p>I can explain the ethical responsibilities of scientists to preserve habitats as they are found and advocate for protecting the planet from human impact.</p>                                                                                                                                                                                                                | <p>insulators, using data to draw conclusions.</p> <p>I can explain how scientific discoveries (like Benjamin Franklin's experiments with electricity) and modern innovations (like Erik Bystrup's T-pylon designs) show how science and engineering solve real-world problems.</p> <p>I can explain the fundamental safety rules when working with electricity, distinguishing between battery-powered appliances and dangerous mains electricity.</p>                                                                                                                                                                                                            |
|  | <p><b>Substantive Knowledge</b></p> <p>I know that sounds are caused by vibrations which travel as waves through solids, liquids or gases.</p> <p>I know that the volume of sound depends on the strength (size) of vibrations. Stronger vibrations make louder sounds. Weak vibrations make quieter sounds.</p> <p>I know that sounds decrease in volume as they get further from the sound source because vibrations decrease as they travel through the medium.</p> | <p><b>Substantive Knowledge</b></p> <p>I know that some materials absorb sound well e.g. materials with air/space in them as sound vibrations cannot move as quickly or easily through it.</p> <p>I know that different objects produce sounds of different pitches – some objects make higher sounds, and some objects make lower sounds. When vibrations are quick, they produce high sounds and when vibrations are slow, they produce low sounds.</p> | <p><b>Substantive Knowledge</b></p> <p>I know that contact forces are pushes and pulls that require contact between two objects.</p> <p>I know that friction is a contact force that affects the movement of objects.</p> <p>I know that friction acts in the direction opposite to that of the object moving on the surface.</p> <p>I know that smoother surfaces produce less friction.</p> | <p><b>Substantive Knowledge</b></p> <p>I know that magnetism is a force that acts at a distance within a magnetic field.</p> <p>I know how the two poles of a magnet interact, demonstrating how opposite poles attract and like poles repel.</p> <p>I know some magnetic materials and can demonstrate that metals containing iron, steel, or nickel are attracted to magnets.</p> <p>I know different types of magnets and explain that they vary in the strength of their magnetic fields.</p> | <p><b>Substantive Knowledge</b></p> <p>I know how to group and identify local living things—including vertebrates, invertebrates, flowering, and non-flowering plants—using classification diagrams and dichotomous keys.</p> <p>I know that an environment is shaped by both natural and human-made features and factors.</p> <p>I know how human activities, such as pollution, urbanisation, and deforestation, contribute to climate change and threaten planet ecosystems.</p> <p>I know what conservation is and can describe positive actions that can be taken locally to protect and preserve living things.</p> | <p><b>Substantive Knowledge</b></p> <p>I know safety rules for using electricity and distinguish between appliances powered by mains electricity and those powered by batteries.</p> <p>I know how to construct a complete series circuit with basic components (cells, wires, bulbs, and switches) and explain how an open or closed circuit affects the flow of electricity.</p> <p>I know how to use switches to control a circuit and demonstrate how a functional circuit can power a simple working device.</p> <p>I know how to test materials to identify electrical conductors and insulators, recognising that metals are generally good conductors.</p> |

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| <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify how sounds are made, associating some of them with something vibrating</li> <li>• Recognise that vibrations from sounds travel through a medium to the ear</li> <li>• Find patterns between the pitch of a sound and features of the object that produced it</li> <li>• Find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify how sounds are made, associating some of them with something vibrating</li> <li>• Recognise that vibrations from sounds travel through a medium to the ear</li> <li>• Find patterns between the pitch of a sound and features of the object that produced it</li> <li>• Find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces</li> <li>• Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li> <li>• Observe how magnets attract or repel each other and attract some materials and not others</li> <li>• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• Describe magnets as having 2 poles</li> <li>• Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces</li> <li>• Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li> <li>• Observe how magnets attract or repel each other and attract some materials and not others</li> <li>• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• Describe magnets as having 2 poles</li> <li>• Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</li> </ul> | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Recognise that living things can be grouped in a variety of ways</li> <li>• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>                               | <p><b>Links with NC</b></p> <ul style="list-style-type: none"> <li>• Identify common appliances that run on electricity</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> |
| <p><b>Vocabulary</b></p> <p>Sound, vibrate/ vibrations, medium, volume, distance, decrease, insulation, energy, sound wave, sound source, insulator, pitch.</p>                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>Vocabulary</b></p> <p>Sound, vibrate/ vibrations, medium, volume, distance, decrease, insulation, energy, sound wave, sound source, insulator, pitch.</p>                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>Vocabulary</b></p> <p>Push, pull, surface, movement, magnet, attract, repel, north/south pole, metal, iron, steel, nickel, Contact/non-contact force, friction, resistance, gravity, magnetic field, magnetism, horseshoe/bar/ring magnet.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Vocabulary</b></p> <p>Push, pull, surface, movement, magnet, attract, repel, north/south pole, metal, iron, steel, nickel, Contact/non-contact force, friction, resistance, gravity, magnetic field, magnetism, horseshoe/bar/ring magnet.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Vocabulary</b></p> <p>Group, category, key, flowering, non-flowering, environment, surroundings, conditions, natural, human-made, endangered, extinct, positive, negative, indifferent, protect, manage, impact, classification, vertebrate, invertebrate, spores, dichotomous key, urbanisation, deforestation, pollution, climate change, population, fossil fuels, natural disaster, human impact, Venn diagram, conservation.</p> | <p><b>Vocabulary</b></p> <p>Battery, generated, power station, electrical energy, pylon, plug, socket, convert, series circuit, component, bulb (lamp), lamp holder, buzzer, cell, battery, wire, crocodile clip, electrical conductor, electrical insulator.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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| Year 5<br>& 6 | <b>Topic:</b><br><b>Electricity</b><br><br><b>Key Scientists:</b><br>Nikola Tesla (1856-1943)<br>M.Stanley Whittingham<br>(1941-present)                                                                                                                                                                                                             | <b>Topic:</b><br><b>Animals Including Humans (Human change and puberty)</b><br><br><b>Key Scientists:</b><br>Alexander Fleming (1881 - 1955)<br>Rosalind Franklin (1920 - 1958)                                                               | <b>Topic:</b><br><b>Earth and Space</b><br><br><b>Key Scientists:</b><br>Nicolaus Copernicus (1473 - 1543)<br>Tim Peake (1972 - present)                                                                 | <b>Topic:</b><br><b>Forces</b><br><br><b>Key Scientists:</b><br>Isaac Newton (1643-1727)                                                                                     | <b>Topic:</b><br><b>Forces</b><br><br><b>Key Scientists:</b><br>Elon Musk (1971-present)                                     | <b>Topic:</b><br><b>Living Things and Their Habitats (Classification)</b><br><br><b>Key Scientists:</b><br>Carl Linnaeus (1707-1778)<br>Tanesha Williams (1985-)                                                                                                          |
|               | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How can we represent a simple circuit in a diagram?</li> <li>How Does the Number of Batteries Effect the Brightness of the Bulb? (E)</li> <li>What Else Impacts the Brightness of a Bulb in a Circuit?</li> <li>What Can Affect the Function of a Component in a Circuit?</li> <li>How Can I Use My Knowledge of Electrical Components to Make a Device?</li> </ol> | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How Do Humans Change Over Time?</li> <li>How Can We Investigate Changes as We Progress Through the Lifecycle? (E)</li> <li>What Happens to Us During Puberty?</li> <li>What Can the Size of Animals Incl. Humans Tell Us About Gestation Periods?</li> </ol> | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How Does Our Position in The Solar System Impact Life on Earth?</li> <li>Does Anything Else Orbit the Sun?</li> <li>How Do We Get Night And Day?</li> <li>How Can Shadows Show Us That Earth Is Rotating? (E)</li> </ol> | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>How Does Friction Affect the Amount of Force Required to Move an Object? (E)</li> <li>What Is Gravity?</li> <li>How Does Air Resistance Affect the Speed at which an Object Falls?</li> </ol> | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>What Changes the Effects of Water Resistance?(E)</li> <li>What Impact do Gears, Levers and Pulleys Have on Forces?</li> </ol>                 | <b>Learning Questions:</b> <ol style="list-style-type: none"> <li>Is The Classification of Animals Helpful?</li> <li>Are There Many Similarities Between Animals in The Local Area?</li> <li>How Can Plants Be Classified?</li> <li>Is There a Link Between Plant Groups and The Environment They Grow In?</li> <li>Do Microorganisms Matter? (E)</li> </ol> |
|               | <b>Disciplinary Knowledge</b><br>I can draw and interpret scientific circuit diagrams using standard international symbols to accurately represent components of increasing complexity.                                                                                                                                                                                                                                               | <b>Disciplinary Knowledge</b><br>I can collect scientific data using interviews and secondary sources by deciding on key questions, recording responses, and summarizing information.                                                                                                                                          | <b>Disciplinary Knowledge</b><br>I can build and use physical scale models to demonstrate the relative sizes, distances, and orbital movements of the Earth, Sun, Moon, and other planets in the solar system.                                                                             | <b>Disciplinary Knowledge</b><br>I can plan scientific enquiries into forces like friction and air resistance, controlling variables and taking accurate, repeated measurements using force-meters.                                                             | <b>Disciplinary Knowledge</b><br>I can plan and conduct a scientific enquiry testing the effects of shape and surface area on water resistance, measuring speed to identify relationships and make predictions. | <b>Disciplinary Knowledge</b><br>I can use, apply, and compare different classification keys and systems to identify living things and record observational data in structured tables.                                                                                                                                                                       |

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|  | <p>I can plan and conduct fair test enquiries, identifying variables and taking precise, repeated measurements using tools like data loggers to ensure accurate and reliable results.</p> <p>I can change components—such as increasing the number of cells—affects circuit performance, using data to draw evidence-based conclusions.</p> <p>I can describe how scientists build on each other's work over time (such as Nikola Tesla and M. Stanley Whittingham) to develop technologies and improve efficiency.</p>                               | <p>I can plan and conduct enquiries into human growth and development, taking accurate measurements, taking repeat readings, and presenting results in line graphs to identify causal relationships.</p> <p>I can explain how scientists classify data (such as using Venn diagrams for physical changes in males and females) to better understand how living things function and relate.</p> <p>I can gather data on growth and gestation periods to identify patterns, create rules, and make scientific estimations.</p>                                     | <p>I can explain how historical scientific evidence, such as the shift from a geocentric to a heliocentric model, has been used to support or refute ideas about the universe.</p> <p>I can plan and conduct a pattern-seeking investigation into shadow movement throughout the day, taking accurate measurements and recording data in self-designed tables.</p> <p>I can present shadow data using line graphs to identify patterns, draw evidence-based conclusions, and link findings to the rotation of the Earth.</p> | <p>I can represent forces using scientific force diagrams with directional arrows.</p> <p>I can describe how key scientific thinkers like Galileo Galilei and Sir Isaac Newton gathered evidence to explain gravity and falling objects.</p> <p>I can evaluate scientific evidence—including work by modern innovators like Elon Musk—to support or refute ideas about forces, space, and motion.</p>                                                                                                                                                         | <p>I can represent and explain multiple acting forces using labelled directional diagrams.</p> <p>I can describe how mechanical devices like levers, gears, and pulleys function by using small forces to move larger loads.</p> <p>I can identify causal relationships within simple machines to explain how changing gear sizes, pulley wheels, or lever fulcrums alters force and movement.</p>                                                                                                                                                           | <p>I can explain why scientists classify organisms—including the lasting impact of Carl Linnaeus' taxonomy system—to understand evolutionary relationships and identify new species.</p> <p>I can select appropriate methods and equipment to set up an experiment, using prior knowledge to test hypotheses about conditions affecting mould growth.</p> <p>I can gather data through primary observation and secondary sources, selecting effective formats to present scientific findings and conclusions.</p>                             |
|  | <p><b>Substantive Knowledge</b></p> <p>I know how to construct working electrical circuits and draw them accurately using recognized scientific symbols and conventions.</p> <p>I can explain how the number and voltage of cells in a circuit affect the brightness of a bulb and the loudness of a buzzer.</p> <p>I know how switches and other components function to control and alter how a circuit behaves.</p> <p>I know how to apply my understanding of how electrical components work together to design and build a functional device.</p> | <p><b>Substantive Knowledge</b></p> <p>I know the key stages of the human life cycle from embryo and foetus through to older adult, explaining the physical changes that occur at each stage.</p> <p>I know the specific physical and emotional changes that happen to the human body during puberty.</p> <p>I know that human gestation is nine months and I can explain why all mammals have a gestation period to give birth to live young.</p> <p>I know how to compare gestation periods across different mammals to show that larger animals generally</p> | <p><b>Substantive Knowledge</b></p> <p>I know the planets in our heliocentric solar system, explaining why Earth's position uniquely supports life.</p> <p>I know how the Earth's 24-hour rotation on its axis creates day and night and causes shadow lengths and positions to change throughout the day.</p> <p>I know that the Moon orbits the Earth and is visible because it reflects light from the Sun.</p> <p>I know how the Earth's tilt as it orbits the Sun causes the changing seasons.</p>                      | <p><b>Substantive Knowledge</b></p> <p>I know how friction affects the force needed to move an object across different surfaces and state that forces can be measured.</p> <p>I can explain that gravity is an attractive force that pulls unsupported objects toward the centre of the Earth, and that objects of different weights fall at the same speed.</p> <p>I know air resistance as a type of friction that acts in opposition to movement through the air, pushing upward against gravity.</p> <p>I know how an object's surface area and speed</p> | <p><b>Substantive Knowledge</b></p> <p>I know water resistance as a resistive push force that slows moving objects, and describe how streamlined shapes and smaller surface areas reduce this resistance.</p> <p>I can explain that upthrust is an upward force in liquids, and that an object floats when upthrust equals its weight.</p> <p>I know how simple machines like levers, pulleys, and gears make tasks easier by turning large required forces into smaller applied forces.</p> <p>I know practical applications where levers, pulleys, and</p> | <p><b>Substantive Knowledge</b></p> <p>I know the purpose and origin of scientific classification systems, and use them to identify and group animals in the local area based on their characteristics.</p> <p>I know how plants can be classified and describe how different local and non-local plants adapt to specific environmental conditions.</p> <p>I know what microorganisms are, describe their beneficial and harmful roles, and classify them into different groups.</p> <p>I know the significance of Joseph Lister's work,</p> |

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|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                             | have longer gestation periods.                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                              | affect the amount of air resistance acting upon it.                                                                                                                                                                                                                                                                                                                                                                                                         | gears are used to efficiently move or lift heavy objects.                                                                                                                                                                                                                                                                                                                                                                                                   | detailed how he applied germ theory to invent antiseptic surgery and prevent infections.                                                                                                                                                                                                                                                                              |
|  | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age.</li> </ul>                                                                                                                                                   | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Describe the movement of the Earth and other planets relative to the sun in the solar system</li> <li>Describe the movement of the moon relative to the Earth</li> <li>Describe the sun, Earth and moon as approximately spherical bodies</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul> | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul> | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul> | <b>Links with NC</b> <ul style="list-style-type: none"> <li>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</li> <li>Give reasons for classifying plants and animals based on specific characteristics</li> </ul> |
|  | <b>Vocabulary</b><br>Symbol, device, series circuit, cell, battery, component, voltage.                                                                                                                                                                                                                                                                                                                                                                     | <b>Vocabulary</b><br>Toddler, stages, lifecycle, puberty, pubic hair, breasts, periods, womb, chemical, mass, embryo, foetus, adolescent, hormones, genes, DNA, oestrogen, testosterone, pituitary gland, reproduction, menstruation, gestation period, viviparous, zygote. | <b>Vocabulary</b><br>Earth, sun, moon, planet, star, solar system, rotate, seasons, shadows, position, 24 hours, daytime, night-time, orbit, atmosphere, scale, heliocentric, geocentric, planetary movement, axis. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune.                                                                                                                                                                  | <b>Vocabulary</b><br>Simple machine, effort, load, float, sink, streamlined, friction, resistance, force meter, contact force, gravity, gravitational pull, mass, matter, air resistance, water resistance, drag, upthrust, displace, lever, pulley, gear, transmission, mesh, axle, fulcrum, pivot, mechanisms, redirecting force.                                                                                                                         | <b>Vocabulary</b><br>Simple machine, effort, load, float, sink, streamlined, friction, resistance, force meter, contact force, gravity, gravitational pull, mass, matter, air resistance, water resistance, drag, upthrust, displace, lever, pulley, gear, transmission, mesh, axle, fulcrum, pivot, mechanisms, redirecting force.                                                                                                                         | <b>Vocabulary</b><br>Insects, algae, moss, fern, conifer, bacteria, vertebrate/non-vertebrate, taxonomy, arachnids, crustaceans, millipedes, annelids, echinoderms, molluscs, coelenterates, dichotomous key, ginkgoes, angiosperms, microorganism, microbes, fungi, protists.                                                                                        |