

## Whole School Progression Document - Science 2026 to 27 (detailing links to National Curriculum and Tier 3 Vocabulary)

|                                              | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EYFS                                         | <b>BIOLOGY</b><br><br><b>All About Me</b><br><br>Observe/identify/describe changes as we grow.<br><br>Observe/identify/describe differences between each other<br><br>Observe/identify/describe changes as the seasons change throughout the year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>BIOLOGY</b><br><br><b>My Place in the World</b><br><br>Explore the natural world around them, using their senses.<br><br>Observe our teeth using magnifying glasses and know how to keep them clean.<br><br>Observe/identify/describe changes as the seasons change throughout the year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>CHEMISTRY</b><br><br><b>Materials Matter</b><br><br>Describe the feel of different materials e.g. rough, smooth, opaque etc<br><br>Explore and sort materials with similar and different properties.<br><br>Observe changing states of matter e.g. ice melting, water freezing, making jelly.<br><br>Investigate which materials float and sink.<br><br>Observe/identify/describe changes as the seasons change throughout the year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>BIOLOGY</b><br><br><b>Habitats - Who Lives Where?</b><br><br>Observe the life cycle of a caterpillar to a butterfly, tadpole to a frog, fertilised egg to a chick<br><br>Explore habitats found in the school grounds e.g. nest, log pile<br><br>Observe seeds germinating and growing into plants<br><br>Compare local habitats with habitats in a different<br><br>Observe/identify/describe changes as the seasons change throughout the year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>BIOLOGY</b><br><br><b>Farm to Fork</b><br><br>Observe, and look after, seeds germinating and growing into plants<br><br>Explore which vegetables grow above or below the ground.<br><br>Observe first hand where different food products come from<br><br>Observe/identify/describe changes as the seasons change throughout the year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>CHEMISTRY</b><br><br><b>Once Upon a World....Long, Long ago</b><br><br>Observe/identify/describe changes as the seasons change throughout the year.<br><br>Describe how to look after plants in the school grounds e.g. take responsibility for watering the hedge, plants<br><br>Observe animals and plants in the outside environment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Disciplinary skills                          | Use question prompts to generate their own questions (I observe..., wonder..., I think...)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | - Use question prompts to generate their own questions (I observe..., wonder..., I think...)<br>-Verbally construct predictions about what they are exploring in continuous provision.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | -Use question prompts to generate their own questions (I observe..., wonder..., I think...)<br>-Verbally construct predictions about what they are exploring in continuous provision.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -Use question prompts to generate their own questions (I observe..., wonder..., I think...)<br>- Verbally construct predictions about what they are exploring in continuous provision.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Use question prompts to generate their own questions (I observe..., wonder..., I think...)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Use question prompts to generate their own questions (I observe..., wonder..., I think...)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Development Matters and Early Learning Goals | <p><b>0-3</b></p> <ul style="list-style-type: none"> <li>- Make connections between the features of their family and other families</li> <li>- Notice differences between people</li> </ul> <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Continue developing positive attitudes about the differences between people</li> </ul> <p><b>Reception</b></p> <ul style="list-style-type: none"> <li>- Name and describe people who are familiar to them</li> </ul> <p><b>ELG</b></p> <p><b>The Natural World</b></p> <ul style="list-style-type: none"> <li>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul> | <p><b>0-3</b></p> <ul style="list-style-type: none"> <li>- Make connections between the features of their family and other families</li> <li>- Notice differences between people</li> </ul> <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Continue developing positive attitudes about the differences between people</li> </ul> <p><b>Reception</b></p> <ul style="list-style-type: none"> <li>- Name and describe people who are familiar to them</li> <li>- Explore the natural world around them</li> <li>- Describe what they see, hear and feel outside (S)</li> </ul> <p><b>ELG</b></p> <ul style="list-style-type: none"> <li>- Describe their immediate environment using knowledge from observations, discussions, stories, non-fiction texts</li> </ul> <p><b>The Natural world</b></p> <ul style="list-style-type: none"> <li>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul> | <p><b>0-3</b></p> <ul style="list-style-type: none"> <li>- Explore materials with different properties</li> <li>- Explore natural materials, indoors and outside</li> </ul> <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Explore how things work</li> <li>- Explore and talk about different forces they feel</li> <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 the differences between materials and changes they notice</li> <li>- Explore and talk about different forces</li> <li>- Talk about what they see, using a wide vocabulary</li> <li>- Begin to understand the need to respect and care for the natural environment and all living things (S)</li> </ul> <p><b>Reception</b></p> <ul style="list-style-type: none"> <li>- Understanding the effect of changing seasons on the natural world around them</li> <li>- Recognise some environments that are different to the one in which they live</li> </ul> <p><b>ELG</b></p> <p><b>The Natural World</b></p> <ul style="list-style-type: none"> <li>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul> | <p><b>0-3</b></p> <ul style="list-style-type: none"> <li>- Explore materials with different properties</li> <li>- Explore natural materials, indoors and outside</li> </ul> <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Plants seeds and care from 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 our natural environment and all living things</li> </ul> <p><b>Reception</b></p> <ul style="list-style-type: none"> <li>- Explore the natural world around them</li> <li>- Describe what they see, hear and feel whilst outside</li> </ul> <p><b>ELG</b></p> <ul style="list-style-type: none"> <li>- Understand the effect of changing season in the natural world around them</li> </ul> <p><b>ELG</b></p> <p><b>The Natural World</b></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 environment, drawing on their experience 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> | <p><b>0-3</b></p> <ul style="list-style-type: none"> <li>- Explore and respond to different phenomena in their settings or on trips</li> </ul> <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Plants seeds and care for growing plants (Understand the key features of the life cycle of a plant and animals Reception</li> <li>- Recognise some similarities and differences between life in this country and life in other countries</li> <li>- Recognise some environments that are different to the one in which they live (</li> <li>- Describe what they see, hear and feel whilst outside</li> </ul> <p><b>ELG</b></p> <p><b>Past and Present</b></p> <ul style="list-style-type: none"> <li>- Describe their immediate environment, using knowledge from observations, discussions, stories, non-fiction texts and maps</li> </ul> <p><b>The Natural World</b></p> <ul style="list-style-type: none"> <li>- Explore the natural world around them, making observations and drawing pictures of animals and plants Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> <li>- Know some similarities and differences between the natural world around them and contrasting environment drawing on their experiences and what has been read in class (</li> </ul> | <p><b>3-4</b></p> <ul style="list-style-type: none"> <li>- Plants 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> </ul> <p><b>Reception</b></p> <p><b>The Natural World:</b></p> <ul style="list-style-type: none"> <li>- Explore the natural world around them</li> <li>- Describe what they see, hear and feel whilst outside.</li> <li>- Understand the effect of changing seasons on the natural world around them.</li> </ul> <p><b>ELG</b></p> <p><b>The Natural World</b></p> <ul style="list-style-type: none"> <li>- Explore the natural world around them, making observations pictures and drawing 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> |

|                               | Autumn 1                                                                                                                                                                                                                                                                                                                                                                | Autumn 2                                                                                                                                                                                                             | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                      | Summer 1                                                                                                                                                                                                                                                                                              | Summer 2                                                                                                                                                                                                                                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tier 3 vocabulary             | <ul style="list-style-type: none"> <li>- Body parts - head, arms, leg, hand, foot, thigh, elbow, calf, earlobe etc</li> <li>- Internal body parts - heart, lungs, brain, stomach, muscle etc</li> <li>- Senses - smell, taste, see, hear, listen, touch, feel</li> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul> | teeth, canine, incisor, molar,<br><ul style="list-style-type: none"> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul>                                            | rough, smooth, soft, hard, shiny, dull, firm, springy, heavy, light,<br>metal, wood, paper, glass, rock, plastic<br><ul style="list-style-type: none"> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul>                                                                                                                                                                                                                             | caterpillar, larvae,<br>woodland, desert, ocean/sea, rainforest, polar regions<br><ul style="list-style-type: none"> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul>                                                                                                                                                                                                                     | seeds, tree, flower, leaf, roots, grow, water, germinate, farm, woodland, young, names of key animals and their babies e.g. sheep/lamb cow/calf horse/foal<br><ul style="list-style-type: none"> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul> | plants, care, water, prune, repot, roots, hedge, dehydrated<br><ul style="list-style-type: none"> <li>- sun, rain, cloud, snow, wind, hail, fog, summer, autumn, winter, spring, (all year)</li> </ul>                                                                                                                       |
| Year 1                        | <b>BIOLOGY</b><br><br><b>Animals, including humans</b>                                                                                                                                                                                                                                                                                                                  | <b>PHYSICS</b><br><br><b>Seasonal changes</b>                                                                                                                                                                        | <b>CHEMISTRY</b><br><br><b>Everyday materials</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>BIOLOGY</b><br><br><b>Animals, including humans</b>                                                                                                                                                                                                                                                                                                                                                                                        | <b>BIOLOGY</b><br><br><b>Plants</b>                                                                                                                                                                                                                                                                   | <b>PHYSICS</b><br><br><b>Forces</b>                                                                                                                                                                                                                                                                                          |
| National Curriculum Objective | <b>Animals, including humans:</b><br><ul style="list-style-type: none"> <li>- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>                                                                                                                                                 | <b>Seasonal Changes</b><br><ul style="list-style-type: none"> <li>- Observe changes across the four seasons</li> <li>- observe and describe weather associated with the seasons and how day length varies</li> </ul> | <b>Everyday Materials</b><br><ul style="list-style-type: none"> <li>- distinguish between an object and the material from which it is made</li> <li>- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>- describe the simple physical properties of a variety of everyday materials</li> <li>- compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul> | <b>Animals, including humans</b> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> </ul> | <b>Plants</b> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>                 | (Non-statutory)<br><ul style="list-style-type: none"> <li>- Describe basic movements, using simple comparisons such as faster and slower.</li> <li>- To know that an object can change shape by bending, squashing, squeezing, twisting.</li> <li>- To know that a force can speed objects up and slow them down.</li> </ul> |

|                                                                                                                                         | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                              | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Spring 2                                                                                                                                                                                                                                                                                                                       | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Working Scientifically<br/>(National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p><b>Interpreting and communicating results:</b> using their senses to compare different textures, sounds and smells.</p> <p><b>Making predictions:</b> using their senses to make predictions about sound, taste, smells and texture etc.</p> <p><b>Setting up tests:</b> testing if senses work together. For example, children can explore how holding your nose impacts taste and how colour influences the taste that we expect to have by using food colouring to colour the same drink. (E.g. using food colouring to change the colour of orange cordial to see if children think the taste has changed)</p> | <p><b>Recording data:</b> gather and record data by making tables and charts to record the weather.</p> <p><b>Measuring and observing:</b> observe changes in the seasons throughout the year, using equipment such as magnifying glasses to examine leaves and iPads to record evidence of changes.</p> <p><b>Measuring and observing:</b> with support, observe changes in the temperature using a thermometer.</p> | <p><b>Setting up tests:</b> what is the best material for an umbrella? Carry out a fair test to see which materials are waterproof, with emphasis on ensuring that all of the variables are the same (amount of water, amount of material etc.)</p> <p><b>Interpreting and communicating results:</b> use their own observations to suggest answers to questions.</p> <p><b>Evaluating:</b> reflect and discuss what they could do differently next time.</p> | <p><b>Measuring and observing:</b> identify, group and classify animals. Describe how they identify and group them; grouping animals according to what they eat.</p> <p><b>Research using secondary sources:</b> using their observations to compare and contrast animals at first hand or through videos and photographs.</p> | <p><b>Measuring and observing:</b> measure using non-standard units of measure (eg. Cubes/hands) and, with support, use rulers to measure the height of a plant.</p> <p><b>Measuring and observing:</b> observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants.</p> <p><b>Recording data:</b> Use text, simple labelled diagrams, pictures, photographs and pre-prepared tables to record their observations of plant growth.</p> <p><b>Evaluating:</b> express their thoughts about their scientific experiences by describing how they were able to identify and group animals.</p> <p><b>Recording data:</b> use text, simple labelled diagrams, pictures, photographs and pre-prepared tables to record their observations. Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. Draw diagrams showing the parts of different plants including trees.</p> | <p><b>Measuring and observing:</b> observe closely, using simple equipment such as sieves, rolling pins and stamps to apply force to play doh in order to change its shape.</p> <p><b>Setting up tests:</b> through group discussions and adult guidance, pupils will select what equipment (from a range given) will be most effective to test how forces affect different objects. Have a range of P.E. equipment available on the KS1 playground or KS1 hall (balls, bean bags, coits). Children choose their own equipment and investigate how a force can speed things up and slow things down. Pause the children to focus their attention on different surfaces if they have not done so themselves, can use mats, carpet strips, etc.</p> <p><b>Setting up tests:</b> through whole class discussions and adult support, pupils will identify what they will measure and observe in order to find out how different objects travel down a steep ramp compared to a flatter ramp.</p> |
| Tier 3 Vocabulary                                                                                                                       | head, elbow, neck, ankle, forehead, knees, face, eyes, eyebrows, cheek, chin, shoulders, toes,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | autumn, winter, spring, summer, weather, climate, seasons, seasonal, rainfall, wind, fog, snow, sleet, daylight,                                                                                                                                                                                                                                                                                                      | hard, soft; stretchy, stiff, shiny, dull; rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, opaque, transparent.                                                                                                                                                                                                                                                                                                         | fish, reptile, amphibians. reptiles, birds, mammals, carnivore, herbivore, omnivore, group, sort, classify                                                                                                                                                                                                                     | deciduous, evergreen, coniferous, leaves, flowers, blossoms, petals. fruit, roots, bulb, seed, trunk, branches, stem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | push, pull, balance, force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Year 2                                                                                                                                  | <p><b>BIOLOGY</b></p> <p>Animals, including humans</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>CHEMISTRY</b></p> <p>Uses of everyday materials</p>                                                                                                                                                                                                                                                                                                                                                             | <p><b>PHYSICS</b></p> <p>Electricity</p>                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b>BIOLOGY</b></p> <p>Living Things and their habitats (including Animals - including humans - offspring)</p>                                                                                                                                                                                                               | <p><b>BIOLOGY</b></p> <p>Living Things and their habitats</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>BIOLOGY</b></p> <p>Plants</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                                                                                         | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                     | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Summer 2                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>National Curriculum Objective</b>                                                                                                    | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>                                                                                                                                                                                                                                                       | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>                                                                                                                                             | <p>Pupils should be taught to:<br/>(Non- statutory based on assessment for learning)</p> <ul style="list-style-type: none"> <li>- explore where electricity comes from - renewable and non-renewable sources to know the difference between mains power and battery operated appliances. to know the uses of electricity</li> <li>- to know when electricity was invented and some significant scientific discoveries/ scientists</li> </ul> | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>-explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>- 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</li> <li>- identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>- 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.</li> <li>- notice that animals, including humans, have offspring which grow into adults</li> <li>- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> </ul> | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>-explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>- 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</li> <li>- identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>- 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.</li> <li>- notice that animals, including humans, have offspring which grow into adults</li> <li>- find out about and describe the basic needs of animals, including humans,</li> </ul> | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>- 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.</li> </ul>                    |
| <p>Working Scientifically<br/>(National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p><b>Research using secondary sources:</b> access a range of secondary sources in the classroom to observe, through video or first-hand observation and measurement, how different animals, including humans, grow.</p> <p><b>Asking Questions:</b> asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</p> <p><b>Interpreting and Communicating Results:</b> Identify similarities, differences and changes in relation to place, objects, materials and living things. What similarities can the children find between the animals and the offspring?</p> | <p><b>Making Predictions:</b> With guidance, children will make written predictions about the suitability of materials before carrying out experiments, beginning to justify their reasoning.</p> <p><b>Measuring and observing:</b> identify, group and classify materials in a variety of different ways. Compare the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) and and recording their observations.</p> | <p><b>Interpreting and communicating results:</b> Participate in discussions to offer their own ideas and explanations.</p> <p><b>Setting up tests:</b> Through group discussions, pupils will select what equipment (from a given range) would be most effective to make a bulb light in a complete circuit (make link to debugging in coding).</p>                                                                                         | <ul style="list-style-type: none"> <li>- observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</li> <li>- (Also refer to Summer 1)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> <li>- sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</li> </ul>                                                                                                                                   | <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> <li>- observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.</li> </ul> |
| Tier 3 vocabulary                                                                                                                       | survival, water, air, food, exercise, hygiene, balanced diet , carbohydrate, fats and dairy, protein, fruit and vegetables. fats and oils, eatwell plate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | waterproof, absorbent, opaque, transparent, brick, paper, fabrics, squashing, bending, twisting, stretching elastic, foil                                                                                                                                                                                                                                                                                                                                                                                                                | mains, battery, power, renewable, non-renewable, circuit, components, wire, cell,                                                                                                                                                                                                                                                                                                                                                            | adult, baby, off spring, life cycle, eggs, larva, pupa, hatch, infant, (refer to Summer 1 too)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | living, dead, never alive, habitat, energy, food chain, predator, prey, woodland, pond, desert, urban, food chain, producer, predator. prey,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | seeds, bulbs, water, light, temperature, growth                                                                                                                                                                                                                                                                                                                                 |
| Year 3                                                                                                                                  | <b>CHEMISTRY</b><br><br>Rocks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>PHYSICS</b><br><br>Forces and magnets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>BIOLOGY</b><br><br>Animals, including animals                                                                                                                                                                                                                                                                                                                                                                                             | <b>BIOLOGY</b><br><br>Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>BIOLOGY</b><br><br>Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>PHYSICS</b><br><br>Light                                                                                                                                                                                                                                                                                                                                                     |

|                                                                                                                                     | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>National Curriculum Objective</b>                                                                                                | <p>Pupils should be taught to:</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>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- compare how things move on different surfaces</li> <li>- notice that some forces need contact between two 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 two poles</li> <li>- predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Pupils should be taught to:</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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Pupils should be taught to:</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> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <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, including pollination, seed formation and seed dispersal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- recognise that they need light in order to see things and that dark is the absence of light</li> <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>Working Scientifically (National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p>Pupils might work scientifically by:</p> <p><b>Measuring and observing:</b> With support, pupils will record their observations of rocks (eg. analysing crystals and porosity) systematically and accurately, exploring how and why they might have changed over time.</p> <p><b>Recording data:</b> Children will become increasingly independent when preparing their own tables, pictograms, tally charts, Venn and Carroll diagrams with prepared headings. Using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Using Venn or Carroll diagrams, pupils could explore different soils and identify similarities and differences between them.</p> <ul style="list-style-type: none"> <li>- <b>Research using secondary sources:</b> with support, pupils should recognise when and how secondary sources might help them to answer questions when researching the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.</li> <li>- <b>Setting up tests:</b> with guidance, pupils will decide what they need to measure and observe in order to find answers to their questions by investigating what happens when rocks are rubbed together or what changes occur when they are exposed to/ submerged in water.</li> <li>- <b>Asking questions:</b> pupils will begin to raise questions of their own about the way soils are formed.</li> </ul> | <p>Pupils might work scientifically by:</p> <p><b>Measuring and observing:</b> With support, pupils will record and compare how different things move and they will group them. Pupils will sort materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another</p> <p><b>Setting up tests:</b> With support, pupils will decide what equipment will be most effective in order to ask questions and carry out tests to find out how far things move on different surfaces.</p> <p><b>Setting up tests:</b> With guidance, pupils will decide what variables they will change and what must stay the same by exploring the strengths of different magnets and finding a fair way to compare them.</p> <p><b>Evaluating:</b> With guidance, pupil should identify new questions that have arisen from the data they have collected and make predictions identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.</p> <p><b>Interpreting and communicating results:</b> With guidance, pupils should look for p[atterns in their results and generate –er statements. This can be done when completing an experiment on magnet strengths. E.G The longer the distance from each other when they attracted, the stronger the magnetic field etc.</p> | <p>Pupils might work scientifically by:</p> <p><b>Recording data</b> - Make choices so they can decide how their data can be gathered, recorded and classified and presented in different ways by identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. Pupils might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat.</p> <p><b>Research using secondary sources</b> - With guidance, pupils should look will access and use high quality texts, realisable websites etc within the lesson. They might research different food groups and how they keep us healthy and design meals based on what they find out.</p> <p><b>Interpreting and communicating results:</b> With guidance, pupils should present and communicate their findings to others in the most effective way, using written, graphical and spoken methods. This can be done when justifying their classification of groups of animals.</p> | <p>Pupils might work scientifically by:</p> <p><b>Measuring and observing:</b> Pupils will take accurate measurements using standard unmixed and a range of familiar equipment. For example, they use measuring cylinders/ jugs to measure the amount of water each plant will receive when comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser.</p> <p><b>Evaluating:</b> Pupils will begin to make suggestions about how they could improve on what they have already done. For example, reflecting on the above experiment.</p> <p><b>Setting up tests:</b> With support, pupils will begin to understand if their chosen method will result in a fair test. Discussion on whether or not the experiment is a fair test and how do they know?</p> <p><b>Measuring and observing:</b> With support, pupils will record their observations of seed formations and observe the different stages of plant life cycles exploring how and why they might have changed over time.</p> | <p>Pupils might work scientifically by:</p> <p>- <b>Setting up tests:</b> With support, pupils will decide what equipment they will need to observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p> <p><b>Making predictions:</b> With guidance, children will make predictions about how water is transported in plants before carrying out experiments, justifying their findings using some scientific vocabulary.</p> <p><b>Recording data:</b> Children will be able to record their findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. Children can create labelled animation on how pollination or seed dispersal occurs.</p> | <p>Pupils might work scientifically by:</p> <p><b>Interpreting and communicating results:</b> Pupils will draw simple conclusions, suggest improvements and raise further questions when experimenting what happens to shadows when the light sources moves or the distance between the light source and the object changes.</p> <p><b>Asking questions:</b> Pupils will begin to suggest what type of enquiry will be the most effective to answer questions and to observe what happens when there is no light. They can do this by cutting a hole in a cardboard box. Without light, are they able to see inside? What happens when a light source is added?</p> |
| Tier 3 Vocabulary                                                                                                                   | Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | magnetic, non-magnetic, force, contact, attract, repel, friction, poles, push, pull, magnetic field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | movement, muscles, bones (vertebrate, invertebrate), skull, nutrition, skeletons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | air, light, water, nutrients, soil, reproduction, transportation, dispersal, pollination,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | air, light, water, nutrients, soil, reproduction, transportation, dispersal, pollination,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | light, shadows, mirror, reflective, dark, reflection, source, opaque                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                                                                                                                                         | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 4                                                                                                                                  | BIOLOGY<br><br>Animals, including humans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CHEMISTRY<br><br>States of Matter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PHYSICS<br><br>Electricity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BIOLOGY<br><br>Living things and their habitats                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PHYSICS<br><br>Sound                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CHEMISTRY<br><br>States of Matter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| National Curriculum Objective                                                                                                           | <p>Pupils should be taught to:</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>Pupils should be taught to:</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) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Pupils should be taught to:</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 cell.</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>Pupils should be taught to:</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>Pupils should be taught to:</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>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- compare and group together everyday materials on the basis of their properties, including their hardness, transparency, conductivity (electrical and thermal), and response to magnets</li> <li>- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p>Working Scientifically<br/>(National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p><b>Making Predictions:</b> With increasing independence, make predictions about what may happen or what they may discover.</p> <p><b>Interpreting and communicating results:</b> Look for changes, patterns, similarities and differences in their data to draw simple conclusions. Children will compare the teeth of carnivores and herbivores, suggesting reasons for differences.</p> <p><b>Setting up tests:</b> Through class/peer discussion, pupils will decide what variables should be kept the same and what variables should be changed each time to ensure a fair test. Egg experiment - children will use hard boiled eggs and an array of liquids to observe the impact of sugary drinks on the enamel of a tooth (shell of an egg).</p> <p><b>Asking questions:</b> Raise questions of their own about the digestive system and compare these with models or images.</p> | <p><b>Recording Data:</b> Children will become more independent when preparing their own Venn or Carol diagrams to group the properties of different states of matter. For example using a Venn diagram to compare solids and gases (Balloon would be in the centre as it shares both solid and gas properties).</p> <p><b>Setting up Tests:</b> Decide which equipment would be the most effective to measure their observations of the rate of evaporation at different temperatures throughout school. Children to use wet socks and place them in different locations around school to see if warmer areas have more of an effect on the rate of evaporation than cooler areas.</p> <p><b>Setting up tests:</b> Decide what needs to be measured / observed to find answers to a question. For example: Rate of melting using hot plate, water and objects to be melted. E.g. thermometer, hot plate, scales etc.</p> <p><b>Measuring and Observing:</b> During the above experiments, take accurate measurements using standard units and a range of familiar equipment e.g. measuring cylinders, thermometers, stopwatches etc.</p> <p><b>Research using secondary sources:</b> With guidance, pupils will access and use high quality texts, reliable websites etc within the lesson to research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid.</p> | <p><b>Making Predictions:</b> With increasing independence, justify their predictions using scientific vocabulary. E.g. Will the bulb light under this circumstance? Explain.</p> <p><b>Measuring and observing:</b> Record their observations systematically and accurately when conducting an experiment on which materials are conductors or insulators.</p> <p><b>Measuring and observing:</b> Begin to decide when to take repeat readings to improve the reliability of data when there is an outlier in the data. For example, pupils may spot the pattern that metals are conductors but if one is found not to be a conductor, this measurement should be repeated.</p> <p><b>Recording data:</b> Decide how their data can be gathered, recorded, classified and presented in different ways during the above conductivity experiment. They can gather numerical data on this by using data loggers to measure the amount of light given off by a bulb or the volume of the buzzer and apply this to a table or bar chart.</p> <p><b>Evaluating:</b> Begin to identify new questions that have arisen from the data they have collected and make predictions for new values within or beyond the data they have collected. For example, pupils may observe that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p> | <p><b>Recording data:</b> Use pre-made classification keys to identify and classify local plants and animals</p> <p><b>Interpreting and communicating results:</b> Make decisions about how they can present and communicate their findings to others in the most effective way, using familiar written, graphical and spoken methods by making a guide to local living things.</p> <p><b>Research using secondary sources:</b> With support, pupils should recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigation on their observations of animals.</p> | <p><b>Interpreting and communicating results:</b> Look for changes, patterns, similarities and differences in their data to draw simple conclusions. For example, pupils can do this by finding patterns in the sounds that are made by different objects (and instruments) such as saucepan lids of different sizes or elastic bands of different thicknesses.</p> <p><b>Setting up tests:</b> Through class/peer discussions, pupils will decide what variables should be kept the same and which variables should be changed each time to ensure a fair test. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. Link in knowledge of the structure of different states of matter.</p> <p><b>Interpreting and communicating results:</b> describe patterns and relationships in their results and generate -er statements. For example 'the tighter the string, the higher the pitch' or 'the harder the force, the higher the volume'.</p> | <p><b>Asking questions:</b> Decide what type of enquiry would be best to answer their questions. They might investigate the best material to keep a hot drink the warmest for the longest amount of time. Building on their knowledge of conductors and insulators, they might compare materials in order to make a switch in a circuit. They could build on tests for hardness developed from year 3 and their understanding of rocks. One question could be 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'</p> <p><b>Recording data:</b> Record their findings using scientific language, drawings, labelled diagrams, bar charts and tables. Children could design their own crane by choosing materials that would be appropriate for each component.</p> <ul style="list-style-type: none"> <li>- Hardness- metal frame</li> <li>- Transparency- clear windows to see surroundings</li> <li>- Conductivity- electrical inside the crane but buttons would have to be insulators and the frame of the crane would need to be an insulator to avoid electrocution from lightning.</li> <li>- Magnetism- magnet at the end to collect magnetic materials from a pile of objects.</li> </ul> <p><b>Interpreting and communicating results:</b> Make decisions about how they can present and communicate their findings to others in the most effective way using familiar written, graphical and spoken methods. Share results of experiment on which material was the best thermal insulator. Ice cube wrapped in various materials and measure size over time.</p> <p><b>Evaluating:</b> Begin to make suggestions about how they could improve what they have already done in any of the above experiments.</p> |
| Tier 3 vocabulary                                                                                                                       | mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, canine, incisor, molar, carnivore, herbivore, predator, prey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | solid, liquid, gas, evaporation, condensation, particles, temperature, freezing, heating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | cells, wires, bulbs, switches, buzzers, battery, circuit, series, parallel, circuit diagram, conductors, insulators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | classify, group, sort, key, vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, snails, slugs, worms, spiders, insects, environment, habitats                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | volume, vibration, wave, pitch, tone, speaker, amplifier, medium, insulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | hardness, soluble, insoluble, transparent, opaque, translucent, electrical conductor, electrical insulator, thermal conductor, thermal insulator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                               | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Spring 1                                                                                                                                      | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Summer 1                                                                                                                                                                                                                                                                | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 5                        | CHEMISTRY<br>States of Matter                                                                                                                                                                                                                                                                                                                                                                                                                              | PHYSICS<br>Forces                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BIOLOGY<br>Animals, including humans                                                                                                          | PHYSICS<br>Earth and Space                                                                                                                                                                                                                                                                                                                                                                                                                                               | BIOLOGY<br>Living things and their habitats                                                                                                                                                                                                                             | BIOLOGY<br>Properties and changes of materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| National Curriculum Objective | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</li> <li>- compare and group together everyday materials on the basis of their properties, including their hardness, transparency, conductivity (electrical and thermal), and response to magnets</li> <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>-</li> </ul> | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</li> <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> | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</li> <li>- describe the changes as humans develop to old age.</li> </ul> | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</li> <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> | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</li> <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> | <ul style="list-style-type: none"> <li>- Pupils should be taught to:</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> <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> <li>-</li> </ul> |

|                                                                                                                                         | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Working Scientifically<br/>(National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p><b>Recording data:</b> Begin to record their data in different ways when classifying different materials</p> <p><b>Asking questions:</b> Decide what type of enquiry would be best to answer their questions. They might investigate the best material to keep a hot drink the warmest for the longest amount of time. Building on their knowledge of conductors and insulators, they might compare materials in order to make a switch in a circuit. They could build on tests for hardness developed from year 3 and their understanding of rocks. One question could be ‘Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?’</p> <p><b>Recording data:</b> Record their findings using scientific language, drawings, labelled diagrams, bar charts and tables. Children could design their own crane by choosing materials that would be appropriate for each components.</p> <ul style="list-style-type: none"> <li>- Hardness- metal frame</li> <li>- Transparency- clear windows to see surroundings</li> <li>- Conductivity- electrical inside the crane but buttons would have to be insulators and the frame of the crane would need to be an insulator to avoid electrocution from lightening.</li> <li>- Magnetism- magnet at the end to collect magnetic materials from a pile of objects.</li> </ul> <p><b>Interpreting and communicating results:</b> Make decisions about how they can present and communicate their findings to others in the most effective way using familiar written, graphical and spoken methods. Share results of experiment on which material was the best thermal insulator. Ice cube wrapped in various materials and measure size over time.</p> <p><b>Evaluating:</b> Begin to make suggestions about how they could improve what they have already done in any of the above experiments.</p> | <p><b>Measuring and observing:</b> Make accurate and precise measurements, using the correct units, from their chosen equipment, including tape measures, stop watches, newton meters, and data loggers. This could be through a fair test on falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective.</p> <p><b>Setting up tests:</b> Decide and explain the variables that will need to be controlled in order to answer the question when exploring resistance in water by making and testing boats of different shapes.</p> <p><b>Evaluating:</b> Pupils will use their results to identify what needs to be improved and, with support, will identify anomalies when further tests and observations or repetition might be needed when testing boats (eg. Different conditions such as wind or waves may impact success).</p> | <p><b>Research using secondary sources:</b> Recognise when and how secondary sources will be useful to research ideas and will begin to identify which sources are most reliable to answer their questions. They can do this when researching the gestation periods of other animals and comparing them with humans and by finding out and recording the length and mass of a baby as it grows.</p> <p><b>Recording data:</b> Make choices to decide how their data can be gathered, recorded, classified and presented in different ways when investigating how age and height of children in school are linked. They can use scatter graphs, bar charts, line graphs and tables on iPads or in books to show data in a variety of different ways.</p> | <p><b>Research using secondary sources:</b> access and use high quality texts and reliable websites within lessons when comparing the time of day at different places on the Earth through internet links and direct communication. They may also research why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p> <p><b>Interpreting and communicating results:</b> Using both written and spoken methods, pupils use appropriate scientific vocabulary when presenting their findings to others by creating simple animations of the solar system.</p> <p><b>Setting up tests:</b> Decide what to observe and record, over what period of time and will select what a equipment they will need to use when constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day.</p> | <p><b>Recording data:</b> Use Venn and Carroll diagrams to compare the life cycles of plants and animals in their local environment</p> <p><b>Interpreting and communicating results:</b> Pupils will become more independent when choosing the most effective methods to present their findings to others. This can be done when pupils are comparing living things in the local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times). They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.</p> <p><b>Interpreting and communicating results:</b> Pupils will become more independent when seeking reasons for similarities and differences between life cycles. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs and explain their findings.</p> | <p><b>Measuring and observing:</b> Make accurate and precise measurements, using the correct units, from their chosen equipment, including measuring jugs, thermometers, cylinders and digital scales when carrying out fair test on dissolving, filtering and sieving.</p> <p><b>Setting up tests:</b> With increasing independence, children can decide the independent and dependent variables for their experiment when dissolving different solids in liquids.</p> <p><b>Making predictions:</b> Make predictions about what may happen or what they may discover during their enquiry, and justify predictions, using prior knowledge, experiences and relevant scientific vocabulary. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes.</p> |
| Tier 3 Vocabulary                                                                                                                       | hardness, solubility, transparency, conductivity, magnetic, filter, evaporation, dissolving, mixing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | air resistance, water resistance, friction, gravity, newton, gears, pulley (refer to sticky knowledge from DT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | foetus, embryo, womb, gestation, pre-natal, infancy, childhood, adolescence, early adulthood, middle adulthood, late adulthood/ elderly, growth, development, puberty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | earth, sun, moon, axis, rotation, day, night, phases of the moon, star, constellation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | mammal, reproduction, insect, amphibian, bird, offspring, life cycle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | adaption, evolution, inheritance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Year 6                                                                                                                                  | PHYSICS<br>Electricity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PHYSICS<br>Light                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BIOLOGY<br><br>Animals, including humans                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | BIOLOGY<br><br>Living things and their habitats                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | BIOLOGY<br><br>Evolution and inheritance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Transition to high school                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                     | Autumn 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Autumn 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Spring 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Spring 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Summer 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Summer 2                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>National Curriculum Objective</b>                                                                                                | <p>Pupils should be taught to:</p> <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>                                                                                                                                                                                                                                                                                                                                                                                            | <p>Pupils should be taught to:</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>Pupils should be taught to:</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 way their bodies function</li> <li>- describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Pupils should be taught to:</p> <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 microorganisms, plants and animals</li> <li>- give reasons for classifying plants and animals based on specific characteristics.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> <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> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Visit to local high schools to work in Science labs - following previous visit to St Mary's High School</p> <ul style="list-style-type: none"> <li>- Pupils will be introduced to the periodic table and how it is organised.</li> <li>- Pupils will be shown how to safely use a Bunsen burner when visiting local high schools.</li> <li>- Pupils will be introduced to safety protocols in labs when visiting local high schools</li> </ul> |
| <p>Working Scientifically (National Curriculum)</p> <p><b>PLAN</b></p> <p><b>DO</b></p> <p><b>RECORD</b></p> <p><b>EVALUATE</b></p> | <p><b>Making predictions:</b> When predicting, children will consider a range of possible outcomes for their experiment when changing the voltage in a circuit or using different sized cells.</p> <p><b>Evaluating:</b> Use their results to identify what needs to be improved or changed and when further observations might be needed. When children face an error in their circuit, they will systematically identify the effect of changing one component at a time in a circuit.</p> <p><b>Interpreting and communicating results:</b> Pupils will independently seek patterns in their results, identifying causal relationships and identify anomalies.</p> <p><b>Evaluating:</b> Identify evidence in their data that refutes or supports their prediction, using it to make further predictions when summarising their findings around voltage/cell size.</p> | <p><b>Making predictions:</b> Pupils will justify their predictions, using prior knowledge, experiences and relevant scientific vocabulary when deciding where to place mirrors in order to see a target or around corners.</p> <p><b>Setting up tests:</b> Independently decide which variables will be controlled in their investigation and which variables will remain the same, using the term 'independent, dependent and control variables'. They will do this when investigating the relationship between light sources, objects and shadows</p> <p><b>Measuring and observing:</b> Make accurate and precise measurements, using the correct units, from their chosen equipment, including rulers and protractors when measuring shadows.</p> <p><b>Making predictions:</b> Make accurate predictions about what may happen or what they may discover when observing refraction through rainbows, colours on soap bubbles, objects looking bent in water. They can also use coloured filters/light to observe what happens when light colours are mixed together (they do not need to explain why these phenomena occur).</p> | <p><b>Asking questions:</b> Independently raise questions about what they want to investigate, using their past experiences. This may be related to the link between heart-rate and exercise.</p> <p><b>Setting up tests:</b> Explain how they have planned a fair test on the relationship between activity and heart rate, as well as justifying how they decided what to observe, how long for, how and why they selected their chosen equipment and how they will use it accurately.</p> <p><b>Measuring and observing:</b> Recognise anomalies in heart rate results and repeat readings when necessary.</p> <p><b>Recording data and interpreting and communicating results:</b> Independently choose how data can be gathered, recorded classified and presented in different ways through preparing their own scatter graphs, bar charts, line graphs or tables. This could be done on any experiment involving heart rate.</p> <p><b>Evaluating:</b> Decide whether or not the heart rate test should be repeated to ensure a fair test.</p> | <p><b>Research using secondary sources:</b> use classification systems and keys to identify some animals and plants in the immediate environment.</p> <p><b>Recording data:</b> Pupils will make their own classification keys on plants, microorganisms or animals on iPads or in books.</p> <p><b>Setting up tests:</b> independently decide which variables will be controlled in their investigation and which variables will remain the same when investigating the growth of mould on bread.</p> <p><b>Interpreting and communicating results:</b> Pupils can observe the growth of microorganisms over time through developing a sourdough starter and seek patterns/causal relationships in how it grows.</p> <p><b>Research using secondary sources:</b> Independently recognise when and how secondary sources will be useful to research ideas and will identify which sources are most reliable when answering questions about unfamiliar plants or animals from a broad range of habitats to decide where they should be classified.</p> | <p><b>Research using secondary sources:</b> Pupils will access and use high-quality texts and reliable websites within lessons. This can be used when researching the theory of evolution or how animals have evolved over time or have become extinct.</p> <p><b>Interpreting and communicating results:</b> use precise and concise scientific language when presenting findings on how varied characteristics are inherited by offspring.</p> <p><b>Research using secondary sources:</b> Access and use high quality texts and reliable websites within lessons when exploring how animals have adapted to different environments overtime, linking to their work on biomes in geography.</p> <p><b>Asking questions:</b> Ask questions on how different species of animals have evolved overtime and adapted to the environment and choose the type of scientific enquiry required to find an answer to their question.</p> <p><b>Interpreting and communicating results:</b> Pupils will become more independent when analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Tier 3 vocabulary                                                                                                                   | cells, wires, bulbs, switches, buzzers, battery, circuit, series, conductors, insulators, amps, volts, voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | refraction, reflection, light, spectrum, rainbow, colour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | circulatory, heart, blood vessels, veins, arteries, oxygenated, deoxygenated, valve, exercise, respiration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | classification, vertebrates, invertebrates, micro-organisms, amphibians, reptiles, mammals, insects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | fossils, adaptation, evolution, characteristics, reproduction, genetics, inherited, environmental, extinct                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

