

Below outlines the learning focus for each term

Key stage 1 programme of study – years 5 and 6

Working scientifically

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Living things and their habitats

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals.

Animals, including humans

- describe the changes as humans develop to old age.

Properties and changes of materials

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Earth & Space

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system
- describe the movement of the Moon relative to the Earth
- describe the Sun, Earth and Moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Forces

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Term	Learning Focus		Cross Curricular Links
	Knowledge	Skills	
Autumn 1	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>I know what ‘forces’ are and how forces make things move through pushes or pulls</li> <li>I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>I know that Galileo Galilei and Isaac Newton helped to develop the theory of gravitation</li> <li>I know that the gravitational force on the moon is weaker than on Earth. Earth’s gravitational force is six times stronger.</li> <li>I know what the term ‘friction’ mean</li> <li>I know the effects of friction, that act between moving surfaces (slows objects down)</li> <li>I know what air resistance is and its effect on a moving object</li> <li>I know what water resistance is and its effect on a moving object in water</li> <li>I know that some mechanisms, including levers and pulleys allow a smaller force to have a greater effect.</li> <li>I know how pulleys and levers work</li> </ul>	<ul style="list-style-type: none"> <li>I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>I can use test results to make predictions to set up further comparative and fair tests</li> </ul>	<p><b>Math – data handling</b></p> <p><b>English – writing explanation texts</b></p>
Autumn 2	<p><b>Living things and their habitats Life Cycle</b></p> <ul style="list-style-type: none"> <li>I know the parts of a flowering plant</li> <li>I know the life process of reproduction in some plants</li> <li>I know the parts of a flowering plant, including male and female structures (stamen &amp; stigma)</li> <li>I know the life cycle of a flowering plant</li> <li>I know what asexual reproduction in plants refers to and can discuss this process</li> <li>I know the life process of reproduction in some animals.</li> <li>I know the differences in the life cycle of mammals and birds</li> <li>I know the differences in the life cycles of an amphibian and an insect</li> <li>I know about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.</li> </ul>	<ul style="list-style-type: none"> <li>I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>	<p><b>Maths – Data Handling</b></p>
Spring Term	<p><b>Properties and Change of Materials</b></p> <ul style="list-style-type: none"> <li>I know and can state the properties of some everyday materials (hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets)</li> </ul>	<ul style="list-style-type: none"> <li>I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>I can report and present findings from enquiries,</li> </ul>	<p><b>English – writing</b></p>

	<ul style="list-style-type: none"> <li>I know the meaning of the terms dissolve, react, solution and soluble.</li> <li>I know that some materials will dissolve in liquid to form a solution</li> <li>I know what a reversible change is</li> <li>I know how to recover a substance from a solution</li> <li>I know how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>I know that melting and dissolving are different processes</li> <li>I know that some changes result in the formation of new materials, and that this kind of change is not usually reversible</li> <li>I know that some changes such as rusting are difficult to reverse</li> <li>I know some ways that chemists create new materials</li> </ul>	<p>including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <ul style="list-style-type: none"> <li>I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> </ul>	<p><b>Math – data handling</b></p> <p><b>Computing - research</b></p>
Summer 1	<p><b>Earth and Space</b></p> <ul style="list-style-type: none"> <li>I know the Sun, Earth and Moon as approximately spherical bodies</li> <li>I know about the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>I know that the Sun is a star at the centre of our solar system and that it has eight planets</li> <li>I know the difference between geocentric (Earth centre of universe) and heliocentric (sun centre of universe) solar system</li> <li>I know the way that ideas about the solar system have developed</li> <li>I know about the work of scientists such as Ptolemy, Alhazen and Copernicus</li> <li>I know and can explain day and night (Earth’s rotation)</li> <li>I know and can explain the movement of the Moon relative to the Earth</li> </ul>	<ul style="list-style-type: none"> <li>I can plan different types of scientific enquiries to answer questions</li> <li>I can identify scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>	<p><b>English – explanation writing</b></p> <p><b>Math - solve problems involving measure including scaling</b></p> <p><b>History – significant people</b></p>
Summer 2	<p><b>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>I know and can describe the changes as humans develop to old age</li> <li>I know the gestation periods of other animals and comparing them with humans</li> <li>I know how to find out and record the length and mass of a baby as it grows.</li> <li>I know about the changes experienced in puberty.</li> <li>I know how the body changes during adulthood and old age.</li> </ul>	<ul style="list-style-type: none"> <li>I can plan different types of scientific enquiries to answer questions</li> <li>I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>	<p><b>English – writing</b></p>

**Intent**

At Camrose we recognise the importance of Science in every aspect of daily life and want our children to be naturally curious about the world around them. Our curriculum has been developed by staff to ensure full coverage of the National Curriculum; key skills are also mapped for each year group and are progressive throughout the school.

Throughout our school children are encouraged to develop and use a range of working scientifically skills including questioning, researching and observing for ourselves. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. Scientific language is to be taught and built upon as topics are revisited in different year groups and across key stages. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability with a broad and balanced science curriculum.

**Implementation**

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following:

- Through our planning, we involve problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that all children keep up.
- We build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

**Impact**

We ensure our children not only acquire the appropriate age related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

All children will have:

- A wider variety of skills linked to scientific knowledge and understanding, and scientific enquiry/investigative skills.
- A richer vocabulary which will enable to articulate their understanding of taught concepts.
- High aspirations, which will see them through to further study, work and a successful adult life.