

INTENT

Science Curriculum Year B: Planning, Progress and Long-Term Knowledge Growth

YEAR 5/6	Substantive science content	Recurring substantive themes, ideas and language (Key Concepts)	Subject rationale: Supporting pupils' wider science curriculum journey	Basic disciplinary training in science
Autumn Term WW2	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.	Taught alongside the history unit of 'Battle of Britain', this unit explores and deepens understanding of a wide range of scientific ideas based upon the key concepts of electricity and light . Pupils will be confident in their knowledge of electricity and light. They will explore and communicate their understanding of electricity and light through key events such as the Blitz.	This study of 'Electricity' helps build upon children's understanding of the key concepts of electricity from LKS2 which includes: simple circuits, switches, conductors and insulators and safety with electricity.	Scientific questioning such as: Does the amount of cells increase the brightness of bulbs? Why are shadows the same shape as the objects that cast them?
	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.	During the 'Electricity' unit, pupils will embed their understanding of key vocabulary, such as: <i>Circuit, complete circuit, circuit diagram, circuit symbol, battery, bulb, buzzer, motor, switch, voltage.</i>	This study of 'Light' helps build upon children's understanding of the key concepts of light from LKS2 which includes: light and dark, shadows, reflection of light and safety and dangers associated with light.	Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.
	Use recognised symbols when representing a simple circuit in a diagram.	During the 'Light' unit, pupils will embed their understanding of key vocabulary, such as: <i>angle, dark, dim, electricity, emits, mirror, opaque, reflects, shadows, source, surface, torches, translucent, transparent.</i>	The children will build on their knowledge of scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.	
	Recognise that light appears to travel in straight lines.		The unit links to our Eco schools topic of energy .	
	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.			
	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.			
	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.			

Spring Term SPACE	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.	<p>This unit of 'Earth and Space', explores and deepens the children's understanding of Earth and its place within the solar system. Pupils will be confident in their knowledge of Earth as a spherical body and the effect its movement has on day, night and the seasons.</p> <p>The unit of 'Forces' will give the children a greater understanding of gravity and how it acts between Earth and an object. The children will also develop their understanding of other forces such as: air resistance and friction and the impact they have on returning spacecraft.</p> <p>This unit also makes links with historical studies of 'The Space Race', geographical understanding of the internal and external structure of the earth.</p> <p>During this unit, pupils will embed their understanding of key vocabulary, such as: <i>Earth, sun, moon, planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune) spherical, solar system, rotate, star, orbit, asteroid, axis, comet, galaxy, gravity, leap year, meteorite, sphere, spin, time zones, universe, force, gravity, earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</i></p>	<p>This study of 'Earth, space and forces' helps build upon children's understanding of the key concepts of 'forces and magnets' from LKS2 which includes: magnetism and movement of objects on different surfaces.</p> <p>This study of 'Earth, space and forces' helps build upon children's understanding of the key concepts of: Scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.</p> <p>Forces</p> <p>States of matter</p> <p>The unit links to our Eco schools topic of global citizenship.</p>	<p>Scientific questioning such as: Which materials are the most absorbent? Which materials are best suited for space travel?</p> <p>Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.</p>
	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.			
	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, which act between moving surfaces.			

<p>Summer Term</p> <p>MAYANS</p> <p>Our bodies – Changes as humans grow, healthy lifestyles, and circulatory systems (Life processes)</p>	<p>Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</p>	<p>In their learning of the Year 5 ‘Animals Including Humans’ unit, the children will become confident in explaining the changes in humans as they develop to old age.</p> <p>In their learning of the Year 6 ‘Animals Including Humans’ unit, the children will become confident in their understanding of the human circulatory system and understand the impact of diet, exercise, drugs and lifestyle on the way our bodies function.</p>	<p>The study of ‘Animals Including Humans’ in Year 5, builds upon the children’s knowledge that animals, including humans, have offspring which grow into adults from their learning in KS1.</p> <p>The study of ‘Animals Including Humans’ in Year 6, builds upon the children’s knowledge of the digestive system, teeth and their functions, food chains and skeletons and muscles from LKS2.</p>	<p>Scientific questioning such as: How can I stop the tomato from decomposing? Why does my heart rate increase when I run?</p>
	<p>Study of Archimedes as a famous scientist.</p>			
	<p>Year 5 Describe the changes as humans develop to old age.</p>			
	<p>Year 6 Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.</p>	<p>This study of ‘ourselves’ links to the RSE curriculum in which the children learn the key life process concepts of growing and changing (puberty), sexual reproduction, the importance of stable relationships, a healthy lifestyle and the impact of legal, illegal drugs on the human body. With the use of external professionals he children will be taught about the place in society, the rules of law and their responsibilities.</p>	<p>These studies of ‘Living Things and their Habitats’ and ‘Animals Including Humans’ help build upon children’s understanding of the key concepts of: Scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.</p>	<p>Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.</p>
	<p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>			
	<p>Describe the ways in which nutrients and water are transported in animals including humans.</p>	<p>During the Year 5 and Year ‘Animals Including Humans’ units, pupils will embed their understanding of key vocabulary such as: life cycle, reproduce, sexual, sperm, fertilise, egg and live young. Heart, pulse rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and life style.</p>		