

## CURRICULUM INTENT: PREP SCHOOL CURRICULUM - SCIENCE

Our aim is for children to make sense of the world that they live in and to challenge concepts in a scientific way. We encourage children to ask questions, test hypotheses and practically investigate concepts around us. Children’s natural curiosity in science is championed especially in our focus on Scientific Enquiry. Children predict how things behave, explain what is happening and analyse concepts in our ever changing technological and scientific world. Children are encouraged to elicit natural curiosity through their own scientific enquiries promoting a sense of autonomy in the subject.

By the time our pupils leave Year 6 we aim to ensure that their skills reflect the expectation of the national curriculum and they will:

- Become fluent in the fundamentals of science, ensuring that pupils develop conceptual understanding and the ability to recall and apply knowledge accurately.
- Utilise scientific vocabulary within high order thinking and challenging scientific enquiry.
- Problem solving utilising concepts covered in investigations and theory work. The format of hypothesising from scientific knowledge and testing investigative skills in conjunction with scientific vocabulary covered will equip children to make reasoned judgments in their scientific understanding.

## CURRICULUM IMPLEMENTATION: SCIENCE

	AUTUMN TERM		SPRING TERM		SUMMER TERM		TRIPS AND EVENTS
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
<b>Year 3 Knowledge</b>	<b>Animals including humans</b>	<b>Light</b>	<b>Rocks</b>	<b>Forces and magnets</b>	<b>Plants</b>	<b>Scientific Enquiry</b>	Rocks – Natural History Museum
	Explore the 5 key food groups. Learn about the nutrition in the food we eat. Learn about the different types of skeletons. Learn about the human	Identify the difference between light sources and non-light sources. Explore the light that comes from the sun and how to stay safe.	Explore the formation and properties of igneous rocks. Explore the formation and properties of sedimentary and metamorphic rocks.	Explore contact and noncontact forces. Compare how things move on different surfaces. Explore different types of magnets. Explore the properties of magnets and	Compare the effect of different factors on plant growth. Identify and describe the functions of different parts of a flowering plant and how they are used in photosynthesis.	How can a solar oven be made more effective: posing questions and writing predictions. How can a solar oven be made more effective: recording and presenting results.	

	<p>skeleton. Learn about animals and their skeletons. Explore the role of muscles.</p>	<p>Explore materials which are reflective. Discover how shadows are formed. Investigate how shadows change throughout the day. Investigate how you can change the size of a shadow.</p>	<p>Weathering and the suitability of rocks for different purposes. Explore how water contributes to the weathering of rocks. Understand how fossils are formed. Explore different types of soil.</p>	<p>everyday objects that are magnetic. Understand that magnetic forces can act at a distance. Explore the everyday uses of magnets.</p>	<p>Investigate the way in which water is transported within plants.</p>	<p>How can a solar oven be made more effective: recording and presenting results. Making a cake: fair testing, controls and variables. Making a cake: scientific enquiry.</p>	
<b>Year 3 Skills</b>	<p><b>Literacy</b> Keywords, Full sentences.</p>	<p><b>Literacy</b> Recording findings using simple scientific language.</p>	<p><b>Literacy</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p><b>Literacy</b> Setting up simple practical enquiries, comparative and fair tests.</p>	<p><b>Literacy</b> Reporting on findings from enquiries, including oral and written explanations.</p>	<p><b>Literacy</b> Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>	
	<p><b>Numeracy</b> Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p>	<p><b>Numeracy</b> Light units -Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p>	<p><b>Numeracy</b> -Mass units. -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p>	<p><b>Numeracy</b> -Force units, - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including</p>	<p><b>Numeracy</b> Number of plants -Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p>	<p><b>Numeracy</b> General units -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including</p>	

				thermometers and data loggers.		thermometers and data loggers.	
	<b>SMSC</b> Healthy living and understanding of dietary healthy habits	<b>SMSC</b> Caring for the Environment. Understanding the environmental factors of light energy	<b>SMSC</b> Caring for the Environment – understanding rocks in the environment and to look after local habitats	<b>SMSC</b> Careers Focus – Engineering and Construction.	<b>SMSC</b> Caring for the Environment – Awareness of conserving plants and trees for humans to survive	<b>SMSC</b> Careers – Scientist careers. Problem solving skills and higher order thinking developed	
	<b>Subject Specific Skills</b> Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	<b>Subject Specific Skills</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	<b>Subject Specific Skills</b> Force concepts. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	<b>Subject Specific Skills</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions -Setting up simple practical enquiries, comparative and fair tests.	<b>Subject Specific Skills</b> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests.	<b>Subject Specific Skills</b> Asking relevant questions and using different types of scientific enquiries to answer them Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	
<b>Year 4 Knowledge</b>	<b>Animals including humans</b>	<b>Electricity</b>	<b>Sound</b>	<b>States of matter</b>	<b>Living things and their habitats</b>	<b>Living things and their habitats – Conservation</b>	Living Things and their habitats – Natural History Museum
	Identify the organs in the digestive system	Explore electrical appliances and electrical safety	Identify how sounds are made	Compare and group the 3 states of matter	Explore different habitats	Describe ecosystems and how they are affected by	

						changes in the seasons	
	Describe the functions of the main organs in the digestive system	Learn about electrical components in a series circuit	Explore how vibrations from sounds travel through a medium to the ear	Explore how particles behave in solids, liquids and gases	Research a habitat	Understand human impact on the environment through deforestation	
	Identify the types of human teeth and their functions	Investigate electrical circuits	Explore sound insulation	Investigate melting points	Explore how animals can be classified	Explore air pollution	
	Investigate the effects of different liquids on the teeth	Explore conductors and insulators	Explore volume	Explore freezing and boiling points	Create a classification key	Understand water pollution	
	Understand food chains and Explore food webs	Learn about electrical switches and Investigate how electrical components can change within a circuit	Explore pitch and Explore sounds from near and from far	Explore evaporation and condensation and Understand the water cycle	Adaptations and classification within species and Explore and classify pond plants	Explore methods that can be used to conserve water and -Understand that humans can have a positive impact on nature	
<b>Year 4 Skills</b>	<b>Literacy</b> Recording findings using simple scientific language	<b>Literacy</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	<b>Literacy</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusion	<b>Literacy</b> Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	<b>Literacy</b> Recording findings using simple scientific language	<b>Literacy</b> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	
	<b>Numeracy</b> Setting up simple practical enquiries,	<b>Numeracy</b> Electricity units	<b>Numeracy</b> Sound units	<b>Numeracy</b>	<b>Numeracy</b> Gathering, recording,	<b>Numeracy</b> Pollution statistics	

	comparative and fair tests understanding the units and measurements involved	-Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	-Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	States of Matter Units-Volumes and Mass of solids -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	classifying and presenting data in a variety of ways to help in answering questions	-Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	
	<b>SMSC</b> Healthy Living – linked with PSHE of Health Me and looking after yourself	<b>SMSC</b> Careers – Engineering and focus on renewable sources caring for the environment	<b>SMSC</b> Careers – Engineering and Musician. -Healthy living (understanding care for our ears)	<b>SMSC</b> Careers – Engineering -Caring for the environment of different states	<b>SMSC</b> Caring for the Environment – understanding conservation of habitats and the importance to prevent endangering species	<b>SMSC</b> Caring for the Environment – Conservation learning to help humanity to live in harmony with nature	
<b>Subject Specific Skills</b>							
	-Making systematic and careful observations -Reporting on findings from enquiries, including oral and written explanations	-Using straightforward scientific evidence to answer questions or to support their findings -Gathering, recording,	-Identifying differences, similarities or changes related to simple scientific ideas and processes -Setting up simple practical enquiries,	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	-Identifying differences, similarities or changes related to simple scientific ideas and processes -Reporting on findings from	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	

	-Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	classifying and presenting data in a variety of ways to help in answering questions	comparative and fair tests -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	-Using straightforward scientific evidence to answer questions or to support their findings -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	enquiries, including oral and written explanations, displays or presentations of results and conclusions	-Using straightforward scientific evidence to answer questions or to support their findings -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	
<b>Year 5 Knowledge</b>	<b>Earth and Space</b>	<b>Living things and their habitats</b>	<b>Properties of materials</b>	<b>Changes of materials</b>	<b>Animals including humans</b>	<b>Forces</b>	World Space Day in October – Dress up in space related items and research information for presentations to class.  London Zoo (Living Things and their habitats)
	Explore the solar system and its planets	Understand the life process of a plant	Exploring properties of materials	Use evaporation to recover the solute from a solution	Identify the key stages of a mammal's life cycle	Explore gravity and the life and work of Isaac Newton	
	Understand the heliocentric model of the solar system	Understand the life cycles of mammals	Explore thermal conductors and thermal insulators	Recognise and describe reversible changes	Explore the gestation periods of mammals	Examine the connection between air resistance and parachutes	
	Explain the Earth's movement in space	Compare the life cycles of insects and amphibians	Explore the hardness of materials	Observe chemical reactions and describe how we know new materials are made	Learn about foetal development	Explore factors which affect an object's ability to resist water	
	Explain the Earth's rotation and night and day	Understand the life cycle of birds and reptiles	Discover materials that become soluble in water	Investigate rusting reactions	Investigate the hand span of different aged children	Investigate the effects of friction on different surfaces	

	Explain the movement of the Moon	Know about the life and work of Jane Goodall and David Attenborough	Investigate the solubility of materials	Investigate burning reactions	Learn about the changes experienced during puberty	Investigate mechanisms - levers and pulleys	
	Design a planet using knowledge gained	Research and present the life cycle of a creature	Explore how mixtures could be separated by filtering, sieving, evaporating or magnets	Investigate chemical reactions - acids and bicarbonate of sod	Describe the changes humans may experience during adulthood and old age	Investigate mechanisms - gears	
<b>Year 5 Skills</b>	<b>Literacy</b> -Reporting and presenting findings from enquiries	<b>Literacy</b> Reading and accounts of former space explorers -Identifying scientific evidence that has been used to support or refute ideas or arguments	<b>Literacy</b> -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	<b>Literacy</b> -Reporting and presenting findings from enquiries, including conclusions, in oral and written forms	<b>Literacy</b> -Identifying scientific evidence that has been used to support or refute ideas or arguments	<b>Literacy</b> -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	
	<b>Numeracy</b> -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking	<b>Numeracy</b> -Recognising and controlling variables where necessary with the correct measurements	<b>Numeracy</b> -Measurements of materials Taking measurements, using a range of scientific equipment, with increasing	<b>Numeracy</b> -Using test results to make predictions to set up further comparative and fair tests	<b>Numeracy</b> -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking	<b>Numeracy</b> -Force calculations and units -Taking measurements, using a range of scientific equipment, with increasing accuracy	

	repeat readings when appropriate		accuracy and precision, taking repeat readings when appropriate		repeat readings when appropriate	and precision, taking repeat readings when appropriate	
	<b>SMSC</b> Understanding the solar system and big bang theories linked with PSHE	<b>SMSC</b> Caring for the Environment – habitat knowledge for future sustainability to preserve habitats	<b>SMSC</b> Recycling. Focus on utilising products for inventions and creative work with art	<b>SMSC</b> Recycling Focus on creative use of materials for sustainability -Careers in Chemistry and Physics pathways	<b>SMSC</b> Caring for the Environment and Healthy Me. -Careers – Veterinarian and Medicine	<b>SMSC</b> Careers in Engineering -Understanding of energy saving and with renewable forces	
<b>Subject Specific Skills</b>							
	Identifying scientific evidence that has been used to support or refute ideas or arguments	Planning different types of scientific enquiries to answer questions, -Reporting and presenting findings from enquiries -	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	-Identifying scientific evidence that has been used to support or refute ideas or arguments	
	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results.		Using test results to make predictions to set up further comparative and fair tests	Identifying scientific evidence that has been used to support or refute ideas or arguments	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	





<b>Year 6 Skills</b>	-Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	-Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	-Identifying scientific evidence that has been used to support or refute ideas or arguments	-Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a 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	-Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations in written and oral form such as presentations	
	<b>Numeracy</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	<b>Numeracy</b> -Units of Light -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	<b>Numeracy</b> -Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	<b>Numeracy</b> -Volume of blood -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	<b>Numeracy</b> -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	<b>Numeracy</b> -Pollution statistics -Using test results to make predictions to set up further comparative and fair tests -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	
	<b>SMSC</b> Career Focus - Engineering -Caring for the Environment	<b>SMSC</b> -Renewable sources and awareness of the environment	<b>SMSC</b> -Careers – Palaeontologists -Caring for the Environment	<b>SMSC</b> -Healthy living -An understanding of healthy diets Careers - Medicine	<b>SMSC</b> -Caring for the Environment -Understanding of the world we live	<b>SMSC</b> -Caring for the Environment	

	-Sustainability		-Understanding of humans and our ancestors		in, in relation to nature working hand in hand with mindfulness	-Awareness of sustainability for the environment	
<b>Subject Specific Skills</b>							
	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -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 Planning different.	Record data and results of increasing complexity using scientific diagrams and labels Identifying scientific evidence that has been used to support or refute ideas or argument -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations Animals adapted to suit their environment in different ways and that adaptation may lead to evolution.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Identifying scientific evidence that has been used to support or refute ideas or arguments -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary diet exercise heart rate.	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	-Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Identifying scientific evidence that has been used to support or refute ideas or arguments.	

**IMPACT:**

Children demonstrate a recall of facts and investigation concepts from long term memory.  
 Children show confidence in believing that they will achieve and show resilience when problems are encountered.  
 Each child achieves objectives (expected standard) for year group.

The development of the ability to recognise links between science topics and further cross-curricular connections.

Science skills are developed, using scientific language to explain ideas, and children can independently apply the concept to new problems.

Children show a high level of pride in the presentation and understanding of the work.

Children will be able to garner greater confidence in the articulation of concepts and the correct use of scientific vocabulary whilst developing a growth mindset in investigations and learning experiences in relation to the world around them.

Each child will nurture a self-autonomy in their learning by independently evaluating scientific results and reflecting on their learning.