

Science

National Curriculum Programme of Study

'A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.'

Our curriculum in science aims to ensure that all pupils:

- *develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics;*
- *develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them;*
- *are equipped with the scientific knowledge required to understand the uses and implications of science, today and in the future.*

Year 6 - Autumn Term

Key Knowledge	Key Skills
Evolution:	
Pupils will learn: • A definition and key features of 'evolution'; • What a fossil is, how it is formed, what they can tell us about the past; • Key types of fossils. • A definition and key features of 'inheritance'; • Reasons why and how we resemble our biological parents; • A definition, causes and key features of 'variation'; • How plants and animals adapt to cold climates (polar bear); • How plants and animals adapt to hot climates (camel); • Details of the 'peppered moth' and how it exemplifies evolution; • Key facts about and influences of Charles Darwin'; • Details about the 'dodo' and how it illustrates the idea of 'extinction'.	Pupils will learn how to: • Assess the features and 'adaptability' of different types of beaks and the impact on eating different types of food; • Apply their knowledge about 'adaptability' to a new situation.
Electricity:	
Pupils will learn: • A definition of what 'electricity' is; • Key uses and advantages of electricity; • Key dangers and disadvantages of electricity; • Key safety steps to be used when using electricity, including the key electrical symbols; • Key features and definitions of a 'circuit', including the importance of it being 'complete'; • A definition of a 'series' circuit; • A definition of a 'parallel' circuit; • Key features of a 'conductor' and their uses / importance; • Key features of an 'insulator' and their significance; • The impact of having more or fewer 'cells' in a circuit on the key components.	Pupils will learn how to: • Construct simple circuits; • Draw simple circuits, using the symbols to represent the key parts; • Test materials to see if they conduct electricity; • Create and test a simple switch; • Apply their knowledge of a circuit to make a simple game; • Identify the impact of and experiment with the number of cells in a circuit on the brightness of the bulb.

Year 6 - Spring Term

Key Knowledge	Key Skills
Changes of materials:	
Pupils will learn: • The definition of a 'material' and 'changes of state'; • The difference between reversible and irreversible changes of state; • Key reversible 'changes of state' and their definitions: evaporation, condensation, freezing, melting; • Key examples of 'changes of state': water • The impact of temperature on solubility; • The impact of grain size on solubility; • The difference between solutions and mixtures; • Key irreversible 'changes of state': burning and some chemical reactions (acid and bicarbonate); • The changes that occur in the formation of new materials.	Pupils will learn how to: • Melt ice and apply the 'change of state' occurring; • Dry washing and apply the 'change of state' occurring; • Separate different materials, selecting the right method: sieving filtration evaporation; • Recover salt from a range of mixtures / solutions: salt, sand and water.
Animals including humans:	
Pupils will learn: • The characteristics of living organisms (MRS GREN); • The definitions and key features of different groups of living things; • The definition of a 'cell' as the 'building blocks' of living things; • The key features of basic plant cells; • The key features of basic animal cells; • The names of the major organs and their position in the human body; • The role of the major organs in the human body: respiration (lungs), digestion (stomach, intestines), circulation (heart, arteries, veins, blood), reproduction; • The interrelatedness of the systems in the human body; • The key features and purpose of the process of digestion; • The key function of the heart (pump) and human circulation; • The impact of diet on how the body functions and what makes a healthy diet; • The impact and importance of exercise on how the body functions and how this impacts lifestyle; • A definition and key features of drugs; • Drugs encountered in everyday life and their impact on the human body:	Pupils will learn how to: • Classify living organisms, including microorganisms; • Label diagrams effectively, using the conventions of 'science'; • Measure your pulse rate; • Measure the impact of exercise on your pulse rate; • Evaluate how the choices they make regarding diet and exercise will impact on their growth, development, wellbeing and lifestyle; • Classify key microorganisms.

alcohol, caffeine, nicotine, medical; • A definition and key features of reproduction in animals: fertilisation; • Difference between internal and external fertilisation; • A definition and key features of microorganisms.	
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Year 6 - Summer Term

Key Knowledge	Key Skills
Sound:	
Pupils will learn: • The definition and key features of what 'sound' is: vibration / sound wave; • The definition of frequency and pitch and their impact on the vibration / sound wave; • The definition of amplitude and volume and their impact on the vibration / sound wave; • The impact of sound travelling through different materials (speed); • Sound cannot travel in a vacuum; • The structure of the ear and how this means we can hear sound (vibration / sound wave).	Pupils will learn how to: • Use an oscilloscope to describe the link between frequency and pitch, amplitude and volume; • Compare and contrast features of sound and light (summer year 5).
Forensics:	
Pupils will learn: • The definition of 'forensics' and features of science used in this field; • What a 'crime scene investigator' is and what they do; • How chemical hazard symbols are used in 'real life'; • How observation skills, distillation, chromatography, fingerprints and solubility of powders is used in crime scene investigations.	Pupils will learn how to: • Identify and investigate a 'death' using their observational skills and knowledge of living organisms and chemical hazard symbols; • Use their observational skills, distillation, chromatography diffusion, fingerprinting and solubility of different powders to investigate a theft from an art gallery.

Enrichment

- The story of Mary Anning.
- Mr Men/Little Miss activity.
- Simple collective memory to explain the location of DNA.
- Discussion regarding how this is changing due to climate change.