

Long Term Plan KS3 Science

Year 8

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	Physics: Waves	Chemistry: Periodic Table	Biology: Health and Human Systems	Physics: Electricity and Magnetism	Chemistry: Chemical Reactions	Biology: Ecosystems and Interdependence
NC/Qualification Objectives	-Observed waves -Energy waves -Light -Sound	-Periodic table	-Gas exchange systems -Nutrition and digestion	- Electricity -Magnetism	-Elements	-Relationships in an Ecosystem
Enrichment/ Experiences			Dissection of a lung	Power station	Whoosh bottle	Sampling on the nature reserve using quadrats
Cross-curricular links	Link with music for sound waves				Links to mechanics – internal combustion engine.	Links to Horticulture.
Scientific Enquiry/Skills	Disciplinary knowledge in science is cumulative. Knowledge is revisited and refined throughout the curriculum.					
	Students will have the opportunity to: Use a model to explain reflection, absorption and transmission of light. Use the particle model to explain the transfer of sound.	Students will have the opportunity to: Use data to describe a trend in physical properties.	Students will have the opportunity to: Evaluate a model for showing the mechanism of breathing. Make deductions from medical symptoms showing problems with the digestive system.	Students will have the opportunity to: Turn circuit diagrams into real series and parallel circuits, and vice versa. Identifying and using a range of techniques. Using scientific ideas to explain phenomena.	Students will have the opportunity to: Use particle diagrams to show what happens in a reaction.	Students will have the opportunity to: Making and testing predictions.
Knowledge and Learning	Know: <i>Students will begin by looking at some basic ideas about waves. They will then be introduced to the idea of a wave with regard to how sound</i>	Know: <i>Students will build on previous knowledge of properties of different materials by exploring how these can be used to group chemicals before</i>	Know: <i>Breathing</i> In gas exchange, oxygen and carbon dioxide move between alveoli and the blood. Oxygen is transported to cells for	Know: <i>Students will build on prior knowledge of forces at a distance and gravity and magnetism and everyday life experience around static electricity.</i>	Know: <i>Building on the understanding of properties and changes in materials from previous learning, students will be</i>	Know: <i>Students will construct and interpreted food chains, to looking at how food chains interact to form food webs, including</i>

Long Term Plan KS3 Science

	<p><i>spreads out from a source, and how sound travels as a wave. Following on from this students will extend work on sound sources to include frequency of vibrations, and how vibrations transmitted through the air are detected by microphones and the ear.</i></p>	<p><i>learning what a group and period are within the periodic table. They will then identify metals and non-metals on the periodic table before looking at their properties and the different physical and chemical properties of different elements. Further extending this unit students will learn about chemical symbols and formulae for different elements and compounds. This will build into representing chemical reactions as equations using formulae which will demonstrate conservation of mass. The unit finishes by looking at the properties of oxides, both metal and non-metal oxides, and how they affect acidity as well as how patterns in reactions can be predicted using the periodic table.</i></p>	<p>aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body. Breathing occurs through the action of muscles in the ribcage and diaphragm. The amount of oxygen required by body cells determines the rate of breathing.</p> <p><i>Digestion</i> The body needs a balanced diet with carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance. Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes. Facts: Iron is a mineral important for red blood cells; Calcium is a mineral needed for strong teeth and bones; Vitamins and minerals are needed in small amounts to keep the body healthy.</p>	<p><i>This will develop into understanding and applying ideas of current charge and voltage through building and testing circuits to measure current and potential difference. Magnetism is then explored, building on their understanding of magnetic poles, attraction and repulsion as well as magnetic and non-magnetic materials. Core material in this unit involves looking at the separation of charges when objects are rubbed together and exploring the idea of an electric field. Students will explore forces as pushes or pulls arising from the interaction between two objects, and non-contact forces. Further extending this topic to focus on magnetism, exploring magnetic poles, attraction and repulsion. Magnetic fields by plotting with a compass and the earth's magnetism. This will then be further extended by observing the magnetic effect of a current, electromagnets and D.C. motors.</i></p>	<p><i>able to explain that some changes result in the formation of new materials, including changes associated with the action of an acid on bicarbonate of soda.</i></p> <p>The core material of the unit will look at Chemical change, reactions being the rearrangement of atoms and how to represent reactions using formulae and equations.</p> <p>Specific reactions will include the pH scale and indicators, Combustion and Thermal decomposition.</p> <p>Further extending their knowledge student will then go on to explore displacement reactions and neutralisation, finally looking at the energetics of reactions.</p>	<p><i>predicting and explaining how one population affects others. Students develop will then develop ideas to appreciate the importance of insects in food security. Following this students will focus on how human actions can affect the environment, for example allowing toxins to enter food chains.</i></p>
<p>Curriculum End Point / Goal</p>	<p>Pupils will continue to develop a deeper understanding of a range of scientific ideas in the subject disciplines. The awareness of big ideas underpinning scientific knowledge and understanding are developing. Pupils will be encouraged to relate scientific explanations to phenomena in the world around them. Pupils will evaluate their results and identify further questions arising from them. Their use of scientific vocabulary deepens with consistency.</p>					