

Science Year 9 Curriculum Maps

Year 9	Theme	Key themes	I will be able to ...	I will also be developing my investigative skills
Term 1	Cells and organisation	Prokaryotes Eukaryotes Microscopy Diffusion Cells tissues organs of the digestive system Enzymes	Know the structural differences between different types of cells. Know the function of different types of cells. Calculate magnification. Know that diffusion is the movement of particles from an area of high concentration to an area of low concentration. label the main parts of a digestive system diagram and state functions of the parts. give a detailed description of the digestion of the major food types including enzyme names.	Preparing microscope slides and viewing them at different magnifications. Scientific drawing of cells Investigating how the concentration affects the rate of diffusion. Investigate how pH affects enzyme activity.
	Chemical reactions	Combustion Thermal Decomposition Neutralisation Endothermic reactions Exothermic reactions Catalysts	Write word equations for combustion or thermal decomposition reactions. Explain why a reaction is an example of combustion or thermal decomposition. Predict the products of the combustion or thermal decomposition of a given reactant and show the reaction as a word equation. Use experimental observations to distinguish exothermic and endothermic reactions. Know a catalyst affects the rate of reaction	Investigation into the change in mass during reactions. Select a reaction for a chemical hand warmer or cool pack
	Light Waves	Transverse waves Light waves	Use ray diagrams to describe how light passes through lenses and transparent materials.	Use ray diagrams to model how light passes through transparent materials and lenses. Investigate reflection and refraction

## Science Year 9 Curriculum Maps

		Reflection Refraction	Explain observations where coloured lights are mixed or objects are viewed in different lights.	Make a pinhole camera. Investigate the effect of coloured light and filters.
Term 2	Photosynthesis and respiration	Photosynthesis Respiration	State that the leaves are where photosynthesis occurs and to describe their main adaptations.  Identify the internal tissues of a leaf and state their functions.  describe the tests for the presence of starch in leaves and explain why glucose is built up into starch for storage.  State the word equation for photosynthesis.  State the word equation for respiration.	Investigate how light intensity effects the rate of photosynthesis.  Investigation how heart rate changed during exercise.
	Chemistry of the Atmosphere	Composition of the atmosphere Carbon cycle The greenhouse effect Climate change Carbon footprint	Know the composition of our atmosphere today and how it has changed over time.  Know how Carbon is recycled in the environment.  Interpret the effect of Greenhouse gases on Global Warming  Describe the work of Scientists and the evidence being gathered to show how human activity is causing changes in climate	Investigate the contribution that natural and human chemical processes make to our carbon dioxide emissions
	Electrical resistance, Static and Magnetism	Resistance Static	Use the idea of field lines to show how the direction or strength of the field around a magnet varies.	Explore the magnetic field pattern around different types or combinations of magnets

Science Year 9 Curriculum Maps

		<p>Magnetic poles</p> <p>Magnetic fields</p> <p>Earth's Magnetism</p> <p>Electromagnets</p> <p>Electromagnetic devices</p> <p>Electric motors</p>	<p>Explain observations about navigation using Earth's magnetic field</p> <p>Use a diagram to explain how an electromagnet can be made and how to change its strength.</p> <p>Explain the choice of electromagnets or permanent magnets for a device in terms of their properties.</p>	<p>Investigate ways of varying strength of an electromagnet</p> <p>Investigate static electricity</p>
<p><b>Term 3</b></p>	<p>Genetics and evolution</p>	<p>Variation Inheritance Evolution</p>	<p>Distinguish between inherited and environmental variation.</p> <p>Describe genes and know that they are responsible for inherited characteristics.</p> <p>How their gender is decided and how particular features are inherited.</p> <p>Explain the inheritance of a particular feature such as hair colour, using the correct terminology.</p> <p>Explain how the chances of inheriting a particular characteristic are calculated.</p> <p>Describe some of the contributions made by Charles Darwin to the theory of evolution.</p> <p>Explain the advantages and disadvantages of selective breeding with specific examples.</p>	<p>Graph data relating to variation and explain how it may lead to the survival of a species</p>
	<p>Materials</p>	<p>Reactivity series</p> <p>Displacement</p> <p>Extraction of metals</p>	<p>Explain the sequence of the metals in the reactivity series.</p> <p>State that a more reactive metal will displace a less reactive one</p>	<p>Use the reactivity series to predict whether a displacement reaction will take place.</p> <p>Extract copper from its ore</p>

Science Year 9 Curriculum Maps

	<p>Copper extraction</p> <p>Alloys</p> <p>Ceramics</p> <p>Composites</p> <p>Polymers</p>	<p>Know that all metals are found in and extracted from the Earth's crust.</p> <p>Recognise that unreactive metals are found native and explain why carbon can be used to extract iron.</p> <p>Explain that an alloy is a mixture of metals</p> <p>Describe and explain the properties of ceramics and composites.</p>	
Forces	<p>Moments</p> <p>Hooke's law</p> <p>Work done</p> <p>Pressure</p>	<p>Explain whether an object in an unfamiliar situation is in equilibrium.</p> <p>Describe how materials behave as they are stretched or squashed.</p> <p>Describe what happens to the length of a spring when the force on it changes. Describe factors which affect the size of frictional and drag forces.</p> <p><i>Know</i> the location of the pivot, effort force and load force on a simple lever in action.</p> <p>state that the turning effect of a force is called its moment <i>and</i> calculate the moment due to a force acting around a pivot.</p> <p>Use the principle of moments to decide if an object is balanced or in which direction it would rotate.</p>	<p>Investigating the principle of moments</p> <p>Investigate Hooke's Law</p> <p>Investigate how pressure from your foot onto the ground varies with different footwear</p> <p>Observe how pressure increase with depth in a liquid</p>