

Year 8 Curriculum Plan

Science



	Autumn / Spring	Spring / Summer
PRIOR LEARNING	<p>Developing as a Scientist: Lab safety, identify equipment and microscope parts.</p> <p>Organisms 2 & Ecosystems 2: Cell functions, unicellular organisms, tissue/organ/system basics.</p> <p>Matter 2: Particle model explains material properties and state changes. Pure substances vs. mixtures, separation methods.</p> <p>Forces 2: push/pull forces, measured in Newtons. Mass vs. weight (kg vs. Newtons).</p>	<p>Genes 2: Variation (inherited, environmental, combined) helps survival. Reproductive organs, cycles, foetal dependence.</p> <p>Reactions 2: Word equations, mass change, hazard awareness, pH with indicator.</p> <p>Energy: Energy travels as waves. Sound: vibrations & pitch. Waves: reflect, refract, transmit, absorb. Light: visible & invisible spectrums.</p> <p>Earth 2: uses of everyday materials, including metals, wood and plastic;</p>
KNOWING WHAT...	<p>Developing as a Scientist: Identifying equipment and how to minimise hazards.</p> <p>Organisms 2 and ecosystems 2: Gas exchange, effect of smoking on the lungs, functions of digestive organs, role enzymes & bacteria in digestion. Aerobic and anaerobic respiration.</p> <p>Matter 2: Identifying elements, periodic table layout and trends, naming salts.</p> <p>Forces 2: Force identification, Hooke's Law, pressure.</p>	<p>Genes 2: Theory of evolution by natural selection. Causes of extinction.</p> <p>Reactions 2: exothermic and endothermic reactions. The role of catalysts. Naming products formed during oxidation reactions.</p> <p>Energy: Recall unit for energy. Advantages and disadvantages of generating electricity through burning fossil fuels and through renewable sources. Methods of heat transfer.</p> <p>Earth 2: composition of the atmosphere; greenhouse gases; global warming; carbon cycle; Earths resources; extraction of metals; recycling.</p>
KNOWING HOW...	<p>Developing as a Scientist: Writing a full scientific investigation</p> <p>Organisms 2 and ecosystems 2: evaluate a model of the breathing system. Calculate percentage change in breathing rate. Use chemical formulae to represent aerobic and anaerobic respiration. Suggest improvements to an investigation on fermentation.</p> <p>Matter 2: Identify atoms, molecules, elements, compounds, and mixtures from particle diagrams. Use knowledge of the periodic table and a table of data to determine which group an element is from.</p> <p>Forces 2: Calculate pressure. Calculate resultant forces. Plot a straight-line graph and calculate the gradient. Rearrange simple mathematical formulae.</p>	<p>Biology – Genes 2 (Evolution and inheritance): Use genetic diagrams to predict the probability of offspring inheriting a particular characteristic.</p> <p>Reactions 2: Interpret energy-level diagrams. Writing (balanced) symbol equations.</p> <p>Energy: Unit conversion and substitution into a formula. Energy transfer diagrams. Calculating energy costs.</p> <p>Earth 2: Translating diagrammatical information into text; Expressing opinions supported by evidence; Interpreting graphs; Interrogating sources of evidence and considering bias.</p>
ASSESSMENT	<p>Developing as a scientist: full scientific investigation (Hypothesis, variables, method, recording results, creating a graph, conclusion, evaluation).</p> <p>Organisms 2 and ecosystems 2: gas exchange; digestive enzymes and bacteria in digestion; aerobic and anaerobic respiration</p> <p>Matter 2: particle diagrams; naming compounds from chemical formulae; data interpretation; polymers</p> <p>Forces 2: pressure calculations; Hooke's law investigation; upthrust.</p> <p>End of block assessment: An end of block assessment in the form of a 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.</p>	<p>Genes 2: extinction; genetic cross diagrams; natural selection.</p> <p>Reactions 2: catalysts; thermal decomposition; chemical equations.</p> <p>Energy: energy calculations; renewable and non-renewable energy resources; heat transfers</p> <p>Earth 2: Composition of atmosphere; identifying stages in the carbon cycle; interpreting text and data to form a conclusion.</p> <p>End of block assessment: An end of block assessment in the form of a 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.</p>