



Unit	Emerging	Developing	Secure	Excelling
B4 - Bioenergetics	<ul style="list-style-type: none"> <li>• <b>Recognise</b> and describe the how nearly all life on Earth is dependent on plants</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> and describe the photosynthesis reaction in words</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> how a leaf is adapted for photosynthesis including the role of the stomata</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> how the products of photosynthesis are used by the plants to make organic molecules</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the need for Respiration and how different to breathing</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> a word summary for aerobic respiration</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> the difference between aerobic and anaerobic respiration</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> the similarities and differences between anaerobic and aerobic respiration and the products formed and the implications for the organism</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> simple food chains</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> simple food webs</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> the interdependence in food webs and ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> how toxins can bio accumulate in an ecosystem</li> </ul>
C4 – Periodic table	<ul style="list-style-type: none"> <li>• <b>Recognise</b> properties as physical or chemical and the properties of metals and non-metals</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> and <b>state</b> how the periodic table is broken up into metals, non-metals, periods and groups</li> </ul>	<ul style="list-style-type: none"> <li>• Use knowledge of Mendeleev and experiment to <b>describe</b> show how the periodic table can be used to make predictions about element in the periodic table</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> the chemical properties of metal and non-metal oxides with respect to acidity</li> </ul>



P4 - Particles	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the arrangement of particles in a solid, liquid or gas</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> how properties of states link to the arrangement of particles</li> </ul>	<ul style="list-style-type: none"> <li>• Link arrangement of particles and forces between particles to <b>describe</b> their relative motion and therefore internal energy</li> </ul>	<ul style="list-style-type: none"> <li>• Link temperature to density and internal energy and therefore <b>explain</b> changes of state</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the defining properties of solids liquids and gases in terms of shape, volume and density</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> how density explains why objects float or sink -</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> what causes pressure in fluids in terms of particle collisions and the ratio force over area</li> </ul>	<ul style="list-style-type: none"> <li>• Use Archimedes principle to <b>explain</b> why objects float or sink</li> </ul>
B5 – Ecosystems and adaptations	<ul style="list-style-type: none"> <li>• <b>Recognise</b> how different animals are adapted to their different habitats</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> how adaptations to some organisms link to them being more successful than others at survival</li> </ul>	<ul style="list-style-type: none"> <li>• Link adaptations and environment changes to <b>describe</b> successful reproduction or extinction</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Explain</b> the role of gene banks in maintaining biodiversity.</li> </ul>
C5 – Earth and Atmosphere	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the basic structure and composition of the Earth and Its atmosphere</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> how rocks move around the Earth forming sedimentary, metamorphic and igneous rocks.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> the role humans have played in the Carbon Cycle</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Explain</b> how Earth is a limited resource and the role humans play in this in terms of climate and recycling</li> </ul>
P5 - Forces	<ul style="list-style-type: none"> <li>• <b>Recognise</b> forces (using arrows) as pushes and pulls (or twists) on an object caused by interaction with other objects</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> how all the forces acting on an object can be replaced with one resultant force (or moment)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> the effect of a resultant force on an object – to change its shape or motion</li> </ul>	<ul style="list-style-type: none"> <li>• Use the idea of unbalanced forces to <b>explain</b> change in simple situations such as objects in freefall or see saws</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> different types of contact and non-contact forces</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> and calculate the speed of moving objects – interpret distance time graphs of simple journeys</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> and define forces applied over distance as <b>work</b> (a way of transferring energy)</li> </ul>	<ul style="list-style-type: none"> <li>• Use information about forces to predict and <b>explain</b> the motion of an object by sketching a distance time graph</li> </ul>



B6 - Inheritance	<ul style="list-style-type: none"> <li>• <b>Recognise</b> how organisms get their genetic information</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> variation in a species and some key words (Gene, DNA and chromosomes)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> variation as continuous or discontinuous and the graphical skills required to present it, along with the roles of Watson, Crick, Wilkins and Franklin in the development of the DNA Model</li> </ul>	<ul style="list-style-type: none"> <li>• Use punnet squares to <b>explain</b> the hereditary process outcomes</li> </ul>
C6 - Materials	<ul style="list-style-type: none"> <li>• <b>Recognise</b> via experiment that some elements are more reactive than others</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> predictions about reactions using the reactivity series</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> how carbon can be used to extract some metals from their ores</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Explain</b> why carbon cannot be used to extract all metals from their oxides</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> how different materials differ in properties</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> how we use some different materials</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> properties of polymers, ceramics and composites.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Explain</b> the link between properties of polymers, ceramics and composites to their uses.</li> </ul>
P6 - Space	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the nature of Our sun as a star and it's place in our galaxy and universe using light years as a measurement of distance</li> </ul>	<ul style="list-style-type: none"> <li>• <b>State</b> the link between the length of a day, year and month with the motion of the planets.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> and explain the effect of the Earth's rotation and tilt. Explain the variation in day length</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> how both lunar and solar eclipses form.</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Recognise</b> the cause of the force responsible for the motion of planets.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Identify</b> the relationship between gravitational field strength and distance or mass (qualitatively only).</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Describe</b> the link between orbital period, gravitational field strength and distance from the Sun.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Outline</b> and <b>explain</b> the link between distance from the sun and orbital speed of a planet.</li> </ul>



Working Scientifically	<ul style="list-style-type: none"> <li>• <b>Recognise</b> important variables in investigations, selecting the most suitable to investigate.</li> </ul>	<ul style="list-style-type: none"> <li>• Use scientific knowledge and understanding to plan investigations and <b>identify</b> the independent, dependent and control variables.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify key variables in different and difficult situations and <b>describe</b> in the planning stage how to take control of some variables that cannot be controlled easily.</li> </ul>	<ul style="list-style-type: none"> <li>• Use key scientific words and terms to <b>explain</b> choice of methods and procedures to investigate different kinds of scientific questions.</li> </ul>
	<ul style="list-style-type: none"> <li>• Repeat sets of observations or measurements selecting suitable ranges and intervals</li> </ul>	<ul style="list-style-type: none"> <li>• Collect data by choosing a suitable range and using the right numbers and values for measuring and observing.</li> </ul>	<ul style="list-style-type: none"> <li>• Make a risk assessment by acting and seeking advice from the right sources of information.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose and <b>explain</b> why the methods and procedures that are chosen will minimise error and allow precise and reliable data.</li> </ul>
	<ul style="list-style-type: none"> <li>• Write a straightforward conclusion from data found and explain the differences in repeats</li> </ul>	<ul style="list-style-type: none"> <li>• Use scientific knowledge to <b>identify</b> why some data or observations have limitations or don't follow a regular pattern.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Assess the strength of evidence, deciding whether it is sufficient to support a conclusion</li> </ul>	<ul style="list-style-type: none"> <li>• Process data, including using multi-step calculations and compound measures, to identify complex relationships between variables.</li> </ul>
	<ul style="list-style-type: none"> <li>• Evaluate the effectiveness of chosen method and give practical ideas on how to improve the method</li> </ul>	<ul style="list-style-type: none"> <li>• Make valid comments on the quality of the collected data</li> </ul>	<ul style="list-style-type: none"> <li>• Suggest ways of changing the chosen method so that more reliable data can be collected.</li> </ul>	<ul style="list-style-type: none"> <li>• Use detailed scientific knowledge to suggest ways of modifying the experimental procedures with reasons and suggest strategies that will take the investigation further than it originally was</li> </ul>