

## (Science) Year 9 Long Term Plan

**Rationale (with end points):** In Year 9, all pupils build on the knowledge from Year 7 and Year 8 by covering concepts that increase in complexity. Here pupils will link and apply their knowledge and use it in even more challenging ways to further build and consolidate knowledge around the 10 main topics. In biology, pupils will have learned the knowledge based on the topics of organisms, genes and ecosystems. Here pupils learn about prokaryotic and eukaryotic cells and organ systems in more detail. Pupils learn about genetic crosses and antimicrobial resistance in genes and structure of the leaf in more detail for ecosystems. In chemistry, pupils will have learned the knowledge based around the topics of matter, reactions and the earth. Pupils learn about the atom exploring sub-atomic particles and group 7 elements in the matter topic. In the Reactions topic, pupils learn how to express reactions in word and balanced equations and name more complex salts. For the Earth topic, pupils learn about atmospheric pollutants and the problems this causes and what humans are doing to reduce this. In physics, pupils will have learned the knowledge centred around the topics of forces, energy, waves and electromagnets. Pupils learn about acceleration and v-t graphs in Forces and specific heat capacity in the Energy topic. Pupils bring link together current and potential difference to measure and calculate resistance and learn about reflection, refraction and diffraction in different waves.

Term	Topic	Knowledge	Skills	Reading /wider reading
<b>Autumn term 1</b>	<ul style="list-style-type: none"> <li>Organisms 3</li> <li>Matter 3</li> </ul>	<ul style="list-style-type: none"> <li>Cells/Microscopes</li> <li>Diffusion/Osmosis</li> <li>Digestion/Heart/Diseases</li> <li>Atomic Structure</li> <li>Separating Techniques</li> </ul>	<ul style="list-style-type: none"> <li>Practical Skills - Microscopes</li> <li>Mathematical Skills - Magnification Calculations</li> <li>Extended Writing – Experimental Method</li> </ul>	Wider Reading 1: Selected Article (Scientific Paper/Magazine)
<b>Autumn 2</b>	<ul style="list-style-type: none"> <li>Reteach Week 1</li> <li>Forces 3</li> <li>Genes 3</li> </ul>	<ul style="list-style-type: none"> <li>Periodic table/Polymers</li> <li>Speed/Acceleration</li> <li>S-t and v-t graphs</li> <li>Mass &amp; Weight</li> <li>Hooke's Law</li> <li>Variation</li> <li>Menstrual Cycle/Genes</li> </ul>	<ul style="list-style-type: none"> <li>Graphical Skills – Charts, graphs and tables.</li> <li>Analysing &amp; Evaluation Skills - Conclusions</li> <li>Extended Writing – Menstrual Cycle</li> </ul>	Wider Reading 2: Selected Article (Scientific Paper/Magazine)

		<ul style="list-style-type: none"> <li>Natural Selection/Selective Breeding</li> </ul>		
<b>Spring 1</b>	<ul style="list-style-type: none"> <li>Reteach Week 2</li> <li>Reactions 3</li> <li>Energy 3</li> </ul>	<ul style="list-style-type: none"> <li>Equations and Reactivity series/Displacement reactions</li> <li>Neutralisation/Salts</li> <li>Exo/Endothermic reactions</li> <li>Energy stores/Heating &amp; Cooling</li> <li>Power and Energy</li> </ul>	<ul style="list-style-type: none"> <li>Practical Skills – Experimental Method</li> <li>Mathematical Skills - Balancing Equations – Ratios</li> <li>Analysing &amp; Evaluating Skills – Renewable Energy resources</li> </ul>	Wider Reading 3: Selected Article (Scientific Paper/Magazine)
<b>Spring 2</b>	<ul style="list-style-type: none"> <li>Reteach Week 3</li> <li>Ecosystems 3</li> </ul>	<ul style="list-style-type: none"> <li>Pyramids/Respiration</li> <li>Photosynthesis/Plant Transport</li> </ul>	<ul style="list-style-type: none"> <li>Analysing &amp; Evaluating Skills – Renewable Energy resources</li> <li>Mathematical Skills - Multi-step calculations</li> <li>Data analysis – trends and patterns</li> </ul>	Wider Reading 4: Selected Article (Scientific Paper/Magazine)
<b>Summer 1</b>	<ul style="list-style-type: none"> <li>Earth 3</li> <li>Reteach Week 4</li> </ul>	<ul style="list-style-type: none"> <li>Rock Cycle/Carbon Cycle</li> <li>Greenhouse/Global Warming</li> </ul>	<ul style="list-style-type: none"> <li>Extended writing – Evaluate Bioleaching &amp; Phytomining</li> </ul>	Wider Reading 5: Selected Article (Scientific Paper/Magazine)
<b>Summer 2</b>	<ul style="list-style-type: none"> <li>Waves 3</li> <li>Electromagnets 3</li> <li>Reteach Week 5</li> </ul>	<ul style="list-style-type: none"> <li>Sound/Light</li> <li>Reflection/Refraction/Diffraction</li> <li>Current/p.d./Resistance</li> <li>IV Graphs</li> </ul>	<ul style="list-style-type: none"> <li>Mathematical Skills – Wave property calculations</li> <li>Practical Skills – Angle measurements</li> <li>Practical Skills – Building Circuits and taking measurements.</li> </ul>	Wider Reading 6: Selected Article (Scientific Paper/Magazine)



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