



## Year 11

Subject and Year Group	Autumn Year 11	Autumn 2 Year 11	Spring 1 Year 11	Spring 2 Year 11	Summer 1 Year 11	Summer 2 Year 11
<b>Topic/Unit to be studied</b>	C9: Chemistry of the atmosphere C8: Chemical analysis	C2: Structure, bonding, and properties	C5: Energy changes C3 (part 2): Quantitative chemistry	C4: Chemical change (part 2) Salts and Electrolysis	Revision for examination	STUDY LEAVE
<b>Core Knowledge (Substantive knowledge)</b>	Understanding how the Earth's atmosphere has evolved over time. Greenhouse effect. Causes and effects of climate change  Purity of substances and how to test for purity. Chromatography as an analytical technique in chemistry. Testing for gases. <i>Testing for unknown ions and spectroscopic techniques (T)</i> <b>RP6-</b> Separation of coloured compounds with paper chromatography <b>RP7-</b> Chemical tests to identify unknown ions (T)	Learning to represent types of bonding with dot cross diagrams. Forming links between the structure and properties of different compounds. Uses of polymers and <i>nanotechnology (T)</i>	To observe, describe and calculate energy change in reactions in terms of exothermic and endothermic reactions. <i>Chemical and fuel cells (T)</i> <b>RP4-</b> Temperature change in solutions  Amounts of substance as masses, concentrations, and <i>gas volumes (T)</i> <i>Yield and atom economy (T)</i>	Synthesis and name salts from neutralisation reactions. Build on knowledge of reactivity of metals to describe extraction by electrolysis. <b>RP1-</b> Preparation of a soluble salt <b>RP2-</b> Titration (T) <b>RP3-</b> Electrolysis of solutions	Students use this time to consolidate their learning and practise exam technique.	



<p><b>Core Skills (Disciplinary Knowledge)</b></p>	<ul style="list-style-type: none"> <li>- Understand the limitations of scientific evidence.</li> <li>- Present observations and data using appropriate methods, including tables and graph.</li> <li>- Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</li> <li>- Use appropriate techniques, apparatus, and materials to carry out chromatography and gas tests.</li> <li>- Apply mathematical concepts to calculate Rf values.</li> <li>- Use of decimals, and significant figures in calculations for chromatography.</li> <li>- Present and record observations from gas tests and</li> </ul>	<ul style="list-style-type: none"> <li>- Using models to develop understanding, and to help explain properties</li> <li>- <i>Apply mathematical concepts to calculate SA:V ratios (T)</i></li> </ul>	<ul style="list-style-type: none"> <li>- Identify anomalies and apply mathematical concepts to calculate means.</li> <li>- Present data using appropriate methods, including tables and graphs including those with two lines of best fit</li> <li>- Make predictions using scientific knowledge and understanding.</li> <li>- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables.</li> <li>- Make and record observations and measurements using a range of methods; and evaluate the reliability of methods and suggest possible improvements.</li> <li>- Interpret data to draw accurate conclusions.</li> <li>- Apply mathematical concepts to calculate bond energies</li> <li>- Apply mathematical concepts to use and rearrange equations to calculate Mr masses, moles, concentration</li> <li>- Understand, use and convert SI units.</li> </ul>	<ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Select, plan and carry out methods to make salts from acids and metals, acids and carbonates and acids and bases</li> <li>- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables for electrolysis of solutions.</li> <li>- Make and record observations and measurements using a range of methods; and evaluate the reliability of methods and suggest possible improvements.</li> <li>- <i>Reading new equipment accurately within a titration (T)</i></li> </ul>		
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	positive and negative ion tests.		- Use of decimals, and significant figures - Apply mathematical concepts to use and rearrange equations to calculate atom economy, % yield, gas volumes (T)			
<b>Assessment</b>	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units		

**(T) = Triple/Separate science only**