



## Year 10

Subject and Year Group	Autumn 1 Year 10	Autumn 2 Year 10	Spring 1 Year 10	Spring 2 Year 10	Summer 1 Year 10	Summer 2 Year 10
Topic/Unit to be studied	C1 (part 2) & C4 (part 1): Atomic structure and the periodic table, chemical changes	C3: Quantitative chemistry (part1)	C7: Organic chemistry	C6: Rate and extent of chemical change	C10: Using resources	C9: Chemistry of the atmosphere
Core Knowledge (Substantive knowledge)	Atomic and electronic structure. How the atom and periodic table has developed over time. Trends in the periodic table. Reactivity of metals. Oxidation and reduction reactions Displacement reactions Groups 1,7 and 0. Transition metals (T)	Applying knowledge of atoms to identify isotopes and use isotope information to calculate relative atomic mass Use chemical formula to calculate relative formula mass and percentage by mass Conservation of mass and balance symbol equations.	Alkanes. Separating fuels from crude oil using fractional distillation. Cracking. Atmospheric effects of burning fossil fuels. Alkenes and addition reactions of alkenes (T) Addition polymerisation (T) Alcohols (T) Carboxylic acids (T) Esters (T) Condensation polymerisation (T) Natural polymers (T)	Why reactions take place. Factors affecting rates of reaction. Reversible reactions. Controlling chemical equilibria. <b>RP5</b> - The effect of concentration on rate of reaction	Sustainability of resources. Life cycle assessments of products. Water treatment processes. Methods of extracting metal oxides from ores and alternative metal extraction methods. Production of fertilisers (T) Materials chemistry; corrosion of metals, ceramics, composites, polymers, and alloys (T) <b>RP8</b> -Analysis and purification of water samples	Understanding how the Earth's atmosphere has evolved over time. Greenhouse effect. Causes and effects of climate change.
Core Skills (Disciplinary knowledge)	- Use of linear equations to calculate number of neutrons. - Make observations when	- Apply mathematical concepts to calculate relative atomic masses, relative formula	- Apply mathematical concepts to complete and balance cracking equations.	- Identify anomalies and apply mathematical concepts to calculate means. - Present data using appropriate methods, including tables and	- Use appropriate techniques, apparatus, and materials to obtain potable water and	- Understand the limitations of scientific evidence. - Present observations and data using

Resilience

Responsibility

Reflectiveness



	<p>reviewing reactivity of metals</p> <ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Identify variables in investigations</li> <li>- Use models to develop understanding and an appreciation of how scientific thinking and theories develop over time</li> </ul>	<p>masses, percentage by mass and conservation of mass</p> <ul style="list-style-type: none"> <li>- Recall concept of percentages</li> <li>- Use of decimals, and significant figures</li> </ul>	<ul style="list-style-type: none"> <li>- Understand and use IUPAC (International Union of Pure and Applied Chemistry)</li> <li>chemical nomenclature</li> </ul>	<p>graphs including curved lines of best fit</p> <ul style="list-style-type: none"> <li>- Apply mathematical concepts to calculate mean rate and rate at a specific point using a tangent and gradient.</li> <li>- Use of decimals, and significant figures in calculations rate.</li> <li>- Understand and use SI units.</li> <li>- Apply mathematical concepts to calculate SA:V ratios.</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> </ul>	<p>measure the mass of solid in a water sample.</p> <ul style="list-style-type: none"> <li>- Make and record observations when analysing samples of water.</li> <li>- Compare and evaluate products based on lifecycle assessment data given.</li> </ul>	<p>appropriate methods, including tables and graph.</p> <ul style="list-style-type: none"> <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> </ul>
<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	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units