



Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
<b>Elements, Mixtures &amp; Compounds</b>	<i>Autumn</i>	<ul style="list-style-type: none"> <li>Collecting data</li> <li>Analyse patterns</li> <li>Justify opinions</li> <li>Review theories</li> <li>Draw conclusions</li> <li>Make observations</li> <li>Estimate risks</li> <li>Plan variables</li> <li>Test hypotheses</li> <li>Construct explanations</li> <li>Discuss limitations</li> </ul>	<ul style="list-style-type: none"> <li>A simple (Dalton) atomic model</li> <li>Differences between atoms, elements and compounds</li> <li>Chemical symbols and formulae for elements and introduced to the formula for compounds</li> <li>The varying physical and chemical properties of different elements</li> <li>The principles underpinning the Mendeleev periodic table</li> <li>The periodic table: periods and groups; metals and non-metals</li> <li>How patterns in reactions can be predicted with reference to the periodic table</li> <li>The properties of metals and non-metals</li> </ul>	<ul style="list-style-type: none"> <li>Y8 Spring: <b>Chemical Reactions</b></li> </ul> <p>Links to GCSE Topic 1 – <b>Atomic structure &amp; the Periodic Table</b></p> <p><b>Year 9:</b></p> <ul style="list-style-type: none"> <li>Atomic structure</li> <li>Atoms, Elements, Mixtures &amp; Compounds</li> <li>Development of the periodic table</li> <li>Trends in group 1, 7, &amp; 0</li> <li>Properties of alkali vs transition metals</li> <li>Separating mixtures</li> </ul> <p>Links to GCSE Topic 8 – <b>Chemical Analysis</b></p> <p><b>Year 10:</b></p> <ul style="list-style-type: none"> <li>Pure and impure substances</li> </ul>	<p><b>Prior Knowledge from KS2</b></p> <p>Students should be able to:</p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair</p>



			<ul style="list-style-type: none"><li>• The concept of a pure substance</li><li>• Mixtures, including dissolving</li><li>• Simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography</li><li>• The identification of pure substances</li></ul>		<p>tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>compare and group materials together, according to whether they are solids, liquids or gases</p> <p>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>
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<b>Chemical Reactions</b>	<i>Spring</i>	<ul style="list-style-type: none"><li>• Estimating risks</li><li>• Test hypotheses</li><li>• Collecting data</li><li>• Presenting data</li><li>• Draw conclusions</li><li>• Constructing explanations</li><li>• Justifying opinions</li><li>• Draw conclusions</li><li>• Construct explanations</li></ul>	<ul style="list-style-type: none"><li>• The chemical properties of metal and non-metal oxides with respect to acidity</li><li>• Chemical reactions as the rearrangement of atoms</li><li>• Representing chemical reactions using formulae and using equations</li><li>• Conservation of mass changes of state and chemical reactions</li><li>• Combustion, thermal decomposition, oxidation and displacement reactions</li><li>• Exothermic and endothermic chemical reactions</li><li>• Reactions of acids with metals to produce a salt plus hydrogen</li><li>• What catalysts do</li><li>• The tests for oxygen, carbon dioxide and hydrogen gas</li></ul>	<ul style="list-style-type: none"><li>• Y8 Summer: <b>Earth &amp; Environments</b></li></ul> <p>Links to GCSE Topic 3 – <b>Quantitative Chemistry</b> <b>Year 11:</b></p> <ul style="list-style-type: none"><li>• Conservation of mass</li></ul> <p>Links to GCSE Topic 4 – <b>Chemical Changes</b> <b>Year 9:</b></p> <ul style="list-style-type: none"><li>• Reactions of metals and acids</li></ul> <p><b>Year 11:</b></p> <ul style="list-style-type: none"><li>• Strong and weak acids</li><li>• Titrations</li></ul> <p>Links to GCSE Topic 5 – <b>Energy Changes</b> <b>Year 11:</b></p> <ul style="list-style-type: none"><li>• Endothermic and Exothermic reactions</li><li>• Catalysts</li></ul> <p>Links to GCSE Topic 8 – <b>Chemical Analysis</b> <b>Year 10:</b></p> <ul style="list-style-type: none"><li>• Testing for gases</li></ul> <p>Links to GCSE Topic 9 – <b>Year 10:</b> <b>Chemistry of the Atmosphere</b></p> <ul style="list-style-type: none"><li>• Combustion</li></ul>	<b>Prior Knowledge from KS2</b>
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Students should be able to:

compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

give reasons, based on evidence from comparative and fair tests, for the particular



					<p>uses of everyday materials, including metals, wood and plastic</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>
<p><b>The Earth &amp; Materials &amp; The Environment</b></p>	<p><i>Summer</i></p>	<ul style="list-style-type: none"> <li>Analyse patterns</li> <li>Review theories</li> <li>Discuss limitations</li> <li>Draw conclusions</li> <li>Construct explanations</li> </ul>	<ul style="list-style-type: none"> <li>Sedimentary, igneous and metamorphic rocks can be inter converted over millions of years through weathering and erosion, heat and pressure, and melting and cooling.</li> <li>Carbon is recycled through natural processes in the atmosphere, ecosystems, oceans and the Earth's crust (such as photosynthesis and respiration) as well as human activities (burning fuels).</li> </ul>	<p>Links to GCSE Topic 9 – <b>Chemistry of the Atmosphere</b></p> <p><b>Year 10:</b></p> <ul style="list-style-type: none"> <li>Combustion</li> <li>Composition of the atmosphere</li> <li>Climate change</li> <li>Greenhouse effect</li> </ul>	<p><b>Prior Knowledge from KS2</b></p> <p>Students should be able to:</p> <p>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p>



	<ul style="list-style-type: none"><li>• Collect data</li><li>• Present data</li><li>• Communicate Ideas</li><li>• Justify Opinions</li><li>• Estimate risks</li><li>• Examine consequences</li><li>• Review theories</li></ul>	<ul style="list-style-type: none"><li>• Crude oil is a mixture of hydrocarbons resources that are used as a fuel and to make other materials. The burning of hydrocarbons releases carbon dioxide</li><li>• Greenhouse gases reduce the amount of energy lost from the Earth through radiation and therefore the temperature has been rising as the concentration of those gases has risen.</li><li>• Scientists have evidence that global warming caused by human activity is causing changes in climate.</li></ul>	<p>Links to GCSE Topic 10 – <b>Using resources</b></p> <p><b>Year 10:</b></p> <ul style="list-style-type: none"><li>• Finite resources</li><li>• Crude oil</li><li>• Materials</li></ul>	<p>describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>recognise that soils are made from rocks and organic matter</p>
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