

Long Term Plan: Chemistry Year 8

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver (rename)	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Metals and Materials	<p>The properties of metals and nonmetals</p> <p>The reactivity series of metals, and displacement reactions</p> <p>How metals are extracted from their ores</p> <p>Polymers, ceramics, And composite materials</p>	<p>Predicting the outcome of a chemical reaction based on reactivity of the reactants</p> <p>Writing word and symbol equations</p> <p>(HT only) balancing chemical equations</p> <p>Use data to evaluate materials for different uses</p> <p>Interpret data</p>		Students may believe that all metals are hard, Strong materials with high melting points; although this is true of most metals students will need to understand that these are only “common properties” do not apply to all	In the upper key stage two science course of study, students will study various materials and their properties.	<p>Metals, their reactivity and their chemical reactions will be further studied at GCSE as part of the Paper One Chemical Changes Unit.</p> <p>The uses and properties of other materials such as polymers and composites are studied in more depth across a number of Paper Two</p>	<p>HPA students may be given the properties of a metalloid and asked to classify it as a metal or non-metal, justifying their decision.</p> <p>Students may also be asked why some metals have been known since antiquity, while others are relatively recent discoveries in relation to their reactivity</p>	<p>The environmental impact of different methods of metal extraction, the importance of metal recycling.</p> <p>The environmental impact of various synthetic materials</p>	<p>Historical use of metals.</p> <p>New and experimental materials.</p>	as the central science chemistry opens doors to a wide range of STEM field careers.

			presented in tabular and graphical form				Topics	and method of extraction. Students may also given the properties of various materials including Metal, polymers, ceramics, composite materials et cetera and ask to justify the use in a given situation			
Two	Metals and Materials	<p>The properties of metals and nonmetals</p> <p>The reactivity series of metals, and displacement reactions</p> <p>How metals are extracted from their ores</p> <p>Polymers, ceramics, And composite materials</p>	<p>Predicting the outcome of a chemical reaction based on reactivity of the reactants</p> <p>Writing word and symbol equations</p> <p>(HT only) balancing chemical equations</p> <p>Use data to evaluate materials for</p>		Students may believe that all metals are hard, Strong materials with high melting points; although this is true of most metals students will need to understand that these are only “common properties” do not apply to all	In the upper key stage two science course of study, students will study various materials and their properties.	<p>Metals, their reactivity and their chemical reactions will be further studied at GCSE as part of the Paper One Chemical Changes Unit.</p> <p>The uses and properties of other materials such as polymers and composites are studied in more depth</p>	<p>HPA students may be given the properties of a metalloid and asked to classify it as a metal or non-metal, justifying their decision.</p> <p>Students may also be asked why some metals have been known since antiquity, while others are relatively recent</p>	<p>The environmental impact of different methods of metal extraction, the importance of metal recycling.</p> <p>The environmental impact of various synthetic materials</p>	<p>Historical use of metals.</p> <p>New and experimental materials.</p>	as the central science chemistry opens doors to a wide range of STEM field careers.

			<p>different uses</p> <p>Interpret data presented in tabular and graphical form</p>				<p>across a number of Paper Two Topics</p>	<p>discoveries in relation to their reactivity and method of extraction.</p> <p>Students may also given the properties of various materials including Metal, polymers, ceramics, composite materials et cetera and ask to justify the use in a given situation</p>			
Three	Acids and Bases	<p>The definition of an acid, base and alkali</p> <p>The pH scale, and use of indicators</p> <p>Neutralisation Reactions, including writing chemical equations</p>	<p>The safe and competent use of simple laboratory glassware.</p> <p>Following a written method</p> <p>Accurately recording quantitative and qualitative data</p> <p>Presenting and</p>		<p>Confusion between the definition of a base and an alkali.</p> <p>The difference between a strong and a concentrated acid</p>	<p>As part of the upper KS2 course of study, students will have looked at neutralisation as an example of non-reversible changes, but will not have named it as such</p>	<p>This unit, along with the previous Year 8 unit, lays the foundation for the Paper One, Chemical Changes unit at GCSE.</p> <p>Students will extend their knowledge of acids and bases by considering</p>	<p>Higher prior attainers should be able to consider the difference between strong and concentrated acids.</p>	<p>The importance of health and safety and respecting each other in the lab.</p>	<p>The use of neutralisation reactions in a wide range of industrial processes.</p>	<p>As the central science chemistry opens doors to a wide range of STEM field careers.</p>

		The reactions of metals and acids	interpreting data in tabular and graphical form. Simple calculations involving three terms				redox reactions, and the use of titration				
Four	Acids and Bases	The definition of an acid, base and alkali The pH scale, and use of indicators Neutralisation Reactions, including writing chemical equations The reactions of metals and acids	The safe and competent use of simple laboratory glassware. Following a written method Accurately recording quantitative and qualitative data Presenting and interpreting data in tabular and graphical form. Simple calculations involving three terms		Confusion between the definition of a base and an alkali. The difference between a strong and a concentrated acid	As part of the upper KS2 course of study, students will have looked at neutralisation as an example of non-reversible changes, but will not have named it as such	This unit, along with the previous Year 8 unit, lays the foundation for the Paper One, Chemical Changes unit at GCSE. Students will extend their knowledge of acids and bases by considering redox reactions, and the use of titration	Higher prior attainers should be able to consider the difference between strong and concentrated acids.	The importance of health and safety and respecting each other in the lab.	The use of neutralisation reactions in a wide range of industrial processes.	As the central science chemistry opens doors to a wide range of STEM field careers.

Five	Energetics	<p>What is meant by rate of reaction, and how it can be measured.</p> <p>What catalysts are and the effect they have on chemical reactions</p> <p>Endo and Exothermic reactions</p>	<p>The safe and competent use of simple laboratory glassware.</p> <p>Following a written method</p> <p>Accurately recording quantitative and qualitative data</p> <p>Presenting and interpreting data in tabular and graphical form.</p> <p>Simple calculations involving three terms</p>		<p>The difference between time taken and rate of reaction</p> <p>Students may believe that catalysts are used up in reactions.</p>	<p>Students will have studied irreversible reactions in upper KS2, and have studied chemical reactions more generally in Year 7</p>	<p>This unit lays the foundation for study of Energetics and rates at GCSE, extending to bond energies and factors affecting rate of reaction.</p> <p>Both of these units form the tail end of Paper One</p>	<p>Measuring the rate of reaction from graphs</p> <p>Exploring why catalysts have the effect they do</p>	<p>The importance of health and safety and respecting each other in the lab.</p>	<p>The use of endo and exothermic reactions in a wide range of everyday and industrial processes</p>	<p>As the central science chemistry opens doors to a wide range of STEM field careers.</p>
Six	Energetics	<p>What is meant by rate of reaction, and how it can be measured.</p> <p>What catalysts are and the effect they have on</p>	<p>The safe and competent use of simple laboratory glassware.</p> <p>Following a written method</p> <p>Accurately</p>		<p>The difference between time taken and rate of reaction</p> <p>Students may believe that catalysts are used up in reactions.</p>	<p>Students will have studied irreversible reactions in upper KS2, and have studied chemical reactions more generally in</p>	<p>This unit lays the foundation for study of Energetics and rates at GCSE, extending to bond energies and factors affecting rate</p>	<p>Measuring the rate of reaction from graphs</p> <p>Exploring why catalysts have the effect they do</p>	<p>The importance of health and safety and respecting each other in the lab.</p>	<p>The use of endo and exothermic reactions in a wide range of everyday and industrial processes</p>	<p>As the central science chemistry opens doors to a wide range of STEM field careers.</p>

		chemical reactions Endo and Exothermic reactions	recording quantitative and qualitative data Presenting and interpreting data in tabular and graphical form. Simple calculations involving three terms			Year 7	of reaction. Both of these units form the tail end of Paper One				
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