



<b>Topic</b>	<b>Key Knowledge</b> <i>What will all students KNOW by the end of the topic?</i>	<b>Key Skills</b> <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	<b>Assessment Opportunities</b> <i>What are the key pieces of assessment? How will students be assessed?</i>
<b>Chemical changes (including recap of bonding)</b>	<ul style="list-style-type: none"><li>-How metals react with oxygen, water and acids</li><li>- The order of metals, including carbon and hydrogen, in the reactivity series</li><li>- What oxidation and reduction are in terms of electrons, oxygen and hydrogen</li><li>- How metals are extracted from their ores using carbon reduction</li><li>- The pH scale and the use of a variety of indicators</li><li>- The link between pH, <math>[H^+]</math> and orders of magnitude</li><li>- Neutralisation of acids and salt production</li><li>- The general equation for neutralisation</li><li>- The difference between strong and weak acids</li><li>- How covalent compounds form</li><li>- Properties of covalent compounds</li><li>- Properties of metals and alloys and metallic bonding</li><li>- How ionic compounds form</li><li>- Properties of ionic compounds</li><li>- The process of electrolysis including all key terms</li><li>- How the electrolysis of molten ionic compounds yields products</li><li>- How electrolysis can be used to extract more reactive metals</li><li>- How the electrolysis of aqueous solutions yields products</li></ul>	<ul style="list-style-type: none"><li>-Mixing reagents to explore chemical changes and products</li><li>-Applying the reactivity of metals including carbon and hydrogen to displacement reactions</li><li>-Elucidating chemical formulae</li><li>-Writing and balancing general and ionic equations Writing and balancing ionic half equations</li><li>-Identifying species that have been oxidised or reduced</li><li>-Predicting products from given reactants</li><li>-Competence of carrying out a multistep procedure, preparation of a pure, dry sample of a soluble salt</li><li>-Using the pH scale to identify acidic or alkaline solutions</li><li>-Measuring the pH of different acids and bases at different concentrations</li><li>-Making orders of magnitude calculations</li><li>-Using the words, weak, strong, dilute and concentrated and neutral when applied to acids and their reactions</li><li>-Drawing and interpreting dot-cross diagrams for covalent compounds</li><li>-Explaining how different substances conduct electricity</li><li>-Explaining the properties of alloys</li><li>-Determining numbers of sub-atomic particles Drawing dot-cross diagrams</li><li>-Calculating charges on ions</li><li>-Determining formulae of ionic compounds</li><li>-Setting up a simple electrochemical cell</li><li>-Applying redox to write and balance half equations</li><li>-Evaluating the processes involved in extracting metals from the ground and then by electrolysis</li></ul>	Homework Starter tasks Regular PPQ practice Assessment 1 Assessment 2

Curriculum Map: Year 10 Subject: Combined Trilogy Science (chemistry) Exam Board: AQA

<p><b>Completion of chemical analysis (following on from Year 9)</b></p>	<p>-The difference between pure substances and mixtures and formulations                      -Physical separation processes including: Filtration, crystallisation, simple and fractional distillation and chromatography                      -The gases:</p> <ul style="list-style-type: none"> <li>• Hydrogen</li> <li>• Oxygen</li> <li>• Carbon dioxide and</li> <li>• Chlorine</li> </ul> <p>can be identified by simple laboratory tests and the positive test results for these gases</p>	<p>-Fluency in the use of IUPAC nomenclature regarding representations of apparatus                      -Construction and use of word and symbol equations.                      -Be able to explain how chromatography separates mixtures.                      -Interpretation of chromatograms                      -Describing how to carry out tests for gases                      -Application of key mathematical skills: Calculating R<sub>f</sub> values or distances moved by a solvent or a substance during chromatography.                      -Practical skills and development and apparatus use: Setting up running paper chromatography (Req Prac 6).</p>	<p>Chromatography required practical                      Homework                      Starter tasks                      Regular PPQ practice                        Assessment 2</p>
<p><b>Atomic structure and periodic table review</b></p>	<p>-Recap: a simple model of the atom                      -The development of the periodic table                      -The structure of the modern periodic table                      -The chemistry of the elements of:</p> <ul style="list-style-type: none"> <li>• Group 1</li> <li>• Group 7</li> <li>• Group 0</li> </ul>	<p>-Fluency in the use of IUPAC nomenclature regarding element symbols and electronic structures.                      -Construction and use of word and symbol equations.                      -Explaining how new evidence can lead to changes in accepted models.                      -Application of key mathematical skills: Processing data to reveal patterns within elemental properties and interpreting data and graphs of elemental data.</p>	<p>Homework                      Starter tasks                      Regular PPQ practice                      Mock</p>
<p><b>Energy changes</b></p>	<p>- Energy is conserved during chemical reactions                      - What exothermic and endothermic reactions are including everyday examples of them                      - How reaction profiles are used to represent chemical reactions                      - What activation energy is                      - Energy is needed to break chemical bonds                      - Energy is released when new bonds are formed</p>	<p>-Writing, balancing and interpreting chemical equations                      -Measuring temperature changes of simple chemical reactions and classifying them as exo or endothermic                      -Investigating the variables that affect temperature changes                      -Drawing and interpreting reaction profiles for exothermic and endothermic reactions                      -Calculating the overall energy change in reactions from supplied data</p>	<p>Homework                      Starter tasks                      Regular PPQ practice</p>
<p><b>Quantitative Chemistry</b></p>	<p>- Consolidation of writing and balancing equations                      - Be familiar with specific key terms e.g. relative atomic mass/formula mass, mole, limiting reactant                      - The conservation of mass law                      - Avogadro's number                      - Amounts of substance can be measured in moles                      - How conservation of mass can be understood using</p>	<p>-Investigating mass changes using various apparatus                      -Writing, balancing and interpreting chemical equations -                      Using formula mass to calculate moles and vice versa                      -Recognising and using expressions in standard form Using ratios, fractions and percentages                      -Changing the subject of a variety of equations</p>	<p>Homework                      Starter tasks                      Regular PPQ practice</p>

**Curriculum Map: Year 10    Subject: Combined Trilogy Science (chemistry)    Exam Board: AQA**

	<p>formula masses and moles in balanced equations</p> <ul style="list-style-type: none"><li>- How to calculate % of an element in a compound</li><li>- How to calculate reacting masses in balanced equations</li><li>-What limiting reactants are and their effect on reacting mass calculations</li><li>- How concentration of solutions is measured in chemistry - Be familiar with specific key terms e.g. relative atomic mass/formula mass, mole, limiting reactant, yield, concentration</li><li>-The uncertainty associated with any measurements taken</li></ul>	<ul style="list-style-type: none"><li>-Converting units</li><li>-Using appropriate numbers of significant figures</li><li>-Writing, balancing and interpreting chemical equations</li><li>-Using formula mass to calculate moles and vice versa</li><li>-Recognising and using expressions in standard form Using ratios, fractions and percentages</li><li>-Changing the subject of a variety of equations</li><li>Converting units</li><li>-Using appropriate numbers of significant figures</li><li>-Identifying anomalous results and making estimations of uncertainty</li><li>-Calculating the mean of a data set and using the range as a measure of uncertainty</li></ul>	
--	---	---	--