

# Triple Science: Chemistry

## Key Stage 4: Year 10

Overall Curriculum Goals - developing the following Big Ideas:							
<ul style="list-style-type: none"> <li>Structure determines properties</li> <li>Reactions rearrange matter</li> <li>Earth systems interact</li> </ul>							
	w/c 4/09 & 11/09	w/c 18/09 & 25/09 & 2/10	WC 9/10	w/c 16/10 & 30/10	WC 6/11 & 13/11	WC 20/11 & 27/11 WC 4/12 & 11/12 & 18/12	
Term 1	Review Topic 1.1  Topic 1.2 Bonding <ul style="list-style-type: none"> <li>Ions</li> <li>Half equations</li> <li>Ionic bonding</li> <li>Ionic compounds</li> <li>Ionic lattices</li> </ul>	<ul style="list-style-type: none"> <li>Covalent bonds</li> <li>Simple covalent molecules</li> <li>Giant covalent molecules</li> <li>Metallic bonding</li> <li>Bonding models</li> </ul> Assessment Topic 1.2 Close the Gap	Topic 1.3 Calculations involving masses <ul style="list-style-type: none"> <li>Calculating concentration</li> <li>Conservation of mass</li> <li>Relative formula mass</li> </ul>	<ul style="list-style-type: none"> <li>Empirical formula</li> </ul> <u>Suggested practical – calculating the empirical formula of magnesium oxide</u>	<ul style="list-style-type: none"> <li>Moles</li> <li>Stoichiometry</li> </ul> Assessment Topic 1.3 Close the Gap	Topic 6 Groups in the periodic table <ul style="list-style-type: none"> <li>Group 1</li> <li>Group 7</li> </ul> • Halogen reactivity • Group 0  Assessment Topic 6 Close the Gap	
	<b>Key Vocabulary/Concepts/ideas</b>						
	<b>Half Term 1</b> Bonds, ions, cations, anions, electrons, electrostatic forces, ionic compounds, lattice structure, properties, melting point, boiling, anode, cathode, covalent, molecular., valency, polymer, monomer, intermolecular, allotropes, fullerenes, graphene, delocalised, metallic, malleable, conduct				<b>Half Term 2</b> Bonding, ionic, simple molecular, giant covalent, metallic, empirical formula, molecular formula, relative formula mass, conservation of mass, Avogadro constant,		
Term 2	w/c 8/01 & 15/01	w/c 22/01 & 29/01	w/c 5/02 & 12/02	w/c 26/02 & 4/03	w/c 11/03 & 18/03	w/c 25/03	
	Topic 7 Rates of reaction <ul style="list-style-type: none"> <li>Collision theory</li> <li>Factors affecting rates of reaction</li> <li>Rate experiments</li> </ul>	<ul style="list-style-type: none"> <li><u>Core practical – investigating reaction rates (method, calculations, conclusion)</u></li> <li>Catalysts and activation energy</li> </ul>	<ul style="list-style-type: none"> <li>Exothermic and endothermic reactions</li> <li>Bond energies</li> <li>Measuring temp change</li> </ul> Assessment Topic 7 Close the Gap	Topic 8/9 <ul style="list-style-type: none"> <li>Hydrocarbons</li> <li>Fractional distillation of crude oil</li> <li>Alkanes</li> <li>Alkenes</li> </ul>	<ul style="list-style-type: none"> <li>Cracking</li> <li>Addition polymerisation</li> <li>Disposal of polymers</li> </ul>	<ul style="list-style-type: none"> <li>Combustion/ Pollutants</li> <li>Greenhouse effect/climate change</li> <li>The atmosphere</li> </ul> Assessment Topic 8/9 Close the Gap	

<b>Key Vocabulary/Concepts/ideas</b>					
<b>Half Term 3</b> Particle model, solid, liquid, gas, physical, chemical, melting, insoluble, filtration, crystallisation, solution, solute, solvent, filtrate, residue, risk assessment, hazard, chromatography, stationary phase, mobile phase, chromatogram			<b>Half Term 4</b> Distillation, mixture, evaporates, condensed, fractional distillation, precipitates, aquifers, sedimentation, chlorination,		
	w/c 15/04 & 22/04	w/c 29/04 & 6/05 & 13/05	w/c 20/05 & 3/06 & 10/06	w/c 17/06 & 24/06	w/c 1/07 & 8/07
<b>Term 3</b>	Topic 9  <ul style="list-style-type: none"> <li>• Alcohols</li> <li>• Production of alcohols</li> <li>• Combustion of alcohols</li> <li>• <u>Core Practical: Investigate the temperature rise produced in a known mass of water by the combustion of alcohols.</u></li> </ul>	<ul style="list-style-type: none"> <li>• Carboxylic acids</li> <li>• Condensation polymers</li> <li>• Materials</li> <li>• Nanoparticles</li> </ul>	<ul style="list-style-type: none"> <li>• Tests for cations</li> <li>• Tests for anions</li> <li>• Flame photometry</li> </ul> <u>Core Practical: Identifying Ions</u>  Close the Gap Assessment Separate Chemistry 2	MOCK EXAMINATIONS  Review Paper 2 (Topic 1.1, 1.2, 1.3, 6, 7, 8, 9)	Review Paper 2 (Topic 1.1, 1.2, 1.3, 6, 7, 8, 9)
	<b>Key Vocabulary/Concepts/ideas</b>				
<b>Half Term 5</b> Aqueous solution, acidic, alkaline, neutral, pH scale, polyatomic ions, dissociate, neutralise,, state symbols, crystallization, ions, neutralisation, titration, burette, pipette, end-point, reactivity series, effervescence, ionic equation, carbonates, precipitation, precipitate, insoluble			<b>Half Term 6</b> Electrolysis, electrolyte, electrodes, cations, anions, cathode, anode, oxidation, reduction, half equation, displacement, redox, native state, extraction, bioleaching, leachate, phytoextraction, corrosion, recycling		
<b>CEIAG</b>					
Cultural capital sheets, careers displays, visits, speakers					

## Key Stage 4: Year 11

Overall Curriculum Goals - developing the following Big Ideas:								
• Structure determines properties		• Reactions rearrange matter		• Earth systems interact				
Term 1	w/c 4/09 & 11/09	w/c 18/09 & 25/09	w/c 2/10	WC 9/10 & 16/10	w/c 30/10 & 6/11	w/c 13/11 & 20/11	w/c 27/11 & 4/12 & 11/12	w/c 18/12
	Review Chem paper 2	Topic 2 States of matter <ul style="list-style-type: none"> <li>States of matter</li> <li>Mixtures</li> <li>Filtration and crystallisation</li> <li>Distillation</li> <li>Paper chromatography</li> </ul>	<ul style="list-style-type: none"> <li><u>Core practical – investigating inks (method, conclusion)</u></li> <li>Drinking water</li> </ul> Assessment Topic 2 Close the Gap	Topic 3.1 Acids and Alkalis <ul style="list-style-type: none"> <li>Indicators</li> <li>Acids and Bases</li> <li>Strong and weak acids</li> <li>Concentration calc</li> <li>Reactions of acids</li> </ul>	<ul style="list-style-type: none"> <li><u>Core practical – investigating neutralisation (method, risk assessment, equations)</u></li> <li>Balancing equations</li> <li>Ionic equation</li> <li>Atom economy</li> </ul>	<ul style="list-style-type: none"> <li>Precipitations and solubility rules</li> </ul>	<ul style="list-style-type: none"> <li><u>Core practical – preparing copper sulfate (method, risk assessment, conclusion)</u></li> <li><u>Percentage yield calculation</u></li> <li><u>Titration</u></li> </ul>	Topic 3.1 Assessment Close the Gap
	<b>Key Vocabulary/Concepts/ideas</b>							
	<b>Half Term 1</b> catalyst, Haber process, alloy, redox, rusting, electroplating, titration, concentration, moles, yield, actual yield, theoretical yield, impurities, atom economy, raw material, industrial process, equilibrium, fertilisers, composition, molar volume.				<b>Half Term 2</b> Periodic table, alkali metals, reactivity, halogens, diatomic, salts, halide, displacement, redox, oxidation, reduction, noble gases, inert, rate of reaction, activation energy, exothermic, endothermic, catalysts, protein, active site, denature, neutralization, displacement			
Term 2	w/c 8/01 & 15/01	w/c 22/01 & 29/01	w/c 5/02 & 12/02	w/c 26/02 & 4/03	WC 11/03 & 18/03	WC 25/03		
	Topic 4 Extracting Metals <ul style="list-style-type: none"> <li>LCA</li> <li>Recycling</li> <li>Reactivity Series</li> <li>Reactivity of metals</li> </ul>	<ul style="list-style-type: none"> <li>Displacement</li> <li>Redox</li> <li>Extracting metals</li> <li>Biological methods</li> </ul> Topic 4 Assessment Close the gap	Topic 3.2 Electrolysis Molten electrolysis (half equations)  Aqueous electrolysis <ul style="list-style-type: none"> <li><u>Core practical – electrolysis of copper sulfate (method, conclusion)</u></li> </ul>	Topic 3.2 Assessment Close the gap  Topic 5 Separate Chemistry 1 <ul style="list-style-type: none"> <li>Transition metals</li> <li>Alloys</li> <li>Corrosion</li> <li>Fuel Cells</li> </ul>	<ul style="list-style-type: none"> <li>Dynamic equilibrium</li> <li>Le Chatelier's principle</li> <li>Haber process</li> <li>Fertilisers</li> <li>Titrations (prac/calcs)</li> </ul>	<ul style="list-style-type: none"> <li>Calculations with gases</li> </ul> Topic 5/4 Assessment Close the gap		

	<b>Key Vocabulary/Concepts/ideas</b>											
	<b>Half Term 3</b> Crude oil, natural gas, hydrocarbons, fractional distillation, evaporate, condense, viscosity, ignite, alkanes, homologous, molecular formulae, structural formulae, combustion, complete, incomplete, alcohols, carboxylic acids, addition polymerisation, condensation polymerisation, fermentation						<b>Half Term 4</b> cation, insoluble, precipitate, ammonia, irritant, toxic, nichrome, anion, blue litmus paper, line spectrum, photometry, instrumental analysis, nanoparticles, nanometres, polymers, ceramics, metals, composites, clay, glass, tensile					
<b>Term 3</b>	WC 17/04	WC 24/04	WC 02/05	WC 08/05	WC 15/05	WC 22/05	WC 05/06	WC 12/06	WC 19/06	WC 26/06	WC 03/07	WC 10/07
	<b>Revision GCSE Exams</b>											
	<b>Key Vocabulary/Concepts/ideas</b>											
	<b>Half Term 5</b>						<b>Half Term 6</b>					
<b>CEIAG</b>												
Cultural capital sheets, careers displays, visits, speakers												