

## Home learning planning framework

This is the plan for a learning sequence, and won't take place within a single session.

<b>Year group:</b>	11	<b>Topic:</b>	C3 Chemical Reactions (part), C4 Predicting and Identifying Reactions and Products (part)
<b>Subject:</b>	Chemistry	<b>Area:</b>	<b>GCSE Combined Science &amp; GCSE Chemistry:</b> Electrolysis of molten salts and aqueous salts and electroplating. Group 0 – the noble gases, reactivity of elements. Detecting gases. Moles, mole calculations and concentrations. <b>GCSE Chemistry only:</b> Transition metals. Detecting cations and anions. Instrumental methods of analysis. Theoretical yield, percentage yield and atom economy.

Approach	What is it?	Examples (online / offline)—support students to:
Activate	Prompting students to think about what they have learnt previously, that will help them with their next step	<p>How do we obtain useful materials from their compounds?</p> <p>How do we purify metals?</p> <p>How do we electroplate objects to protect them from corrosion?</p> <p>What are group 0 elements so unreactive?</p> <p>What are the patterns of reactivity in the periodic table?</p> <p>How do we identify different substances?</p> <p>How do we measure out amount of chemical substance?</p> <p>How do we know the amount of substance that is reacting in chemical reactions?</p>
Explain	Explicitly teaching strategies to pupils and helping them decide when to use them.	<p><b><u>GCSE Combined Science &amp; GCSE Chemistry</u></b></p> <p>From knowledge of the theory of how electrolysis works, you will need to be able to:</p> <ul style="list-style-type: none"> <li>• predict which substances are produced at the electrodes.</li> <li>• deduce the reactions occurring at the electrodes.</li> <li>• Identify oxidation and reduction processes at the electrodes.</li> </ul> <p>From a knowledge of the structure of atoms and the layout of the periodic table, you should be able to:</p> <ul style="list-style-type: none"> <li>• explain the trends in reactivity of the elements in groups 1, 7 and 0</li> <li>• suggest the products of reactions between elements of differing reactivities</li> <li>• construct equations for reactions</li> </ul> <p>From a knowledge of chemical identification tests, you should be able to deduce the presence of unknown substances (gases only).</p> <p>When answering mathematical questions in chemistry, you will need to follow these steps:</p> <ol style="list-style-type: none"> <li>1. state which quantities you are given in the question</li> <li>2. state the appropriate equation</li> <li>3. substitute values into the equation</li> <li>4. carry out calculation</li> <li>5. include appropriate units for the answer</li> </ol> <p>Using the equations below, you should be able to calculate:</p> <p><b>moles = mass/relative mass</b></p> <p><b>moles = volume x concentration</b></p> <ul style="list-style-type: none"> <li>• number of moles of chemical substance</li> <li>• concentration of solutions</li> </ul> <p><b><u>GCSE Chemistry only</u></b></p> <p>From knowledge of gas spectra, you should be able to deduce composition of mixtures.</p> <p>From your knowledge of mass spectra, you should be able to deduce the relative formula masses of molecules.</p> <p>Using the equations below, you should be able to calculate:</p> <p><b>theoretical yield = (mass of limiting reagent/sum of Mr for limiting reagent) x sum of Mr for products</b></p> <p><b>percentage yield = (actual yield/theoretical yield) x 100</b></p> <p><b>atom economy = (sum of Mr of desired product/sum of Mr of all products) x 100</b></p> <ul style="list-style-type: none"> <li>• number of moles of chemical substance</li> <li>• concentration of solutions</li> <li>• theoretical and percentage yields</li> <li>• atom economies</li> </ul>

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Practise	Pupils practising strategies and skills repeatedly, to develop independence.	<p><b><u>GCSE Combined Science &amp; GCSE Chemistry</u></b></p> <p>You will need to be able to:</p> <ul style="list-style-type: none"> <li>• predict the products of electrolysis and electroplating</li> <li>• write equations for reactions occurring at the electrodes</li> <li>• explain whether oxidation or reduction is occurring at the electrodes</li> <li>• describe patterns of reactivity in the periodic table</li> <li>• explain patterns of reactivity in the periodic table</li> <li>• identify unknown substances using chemical tests (gases only)</li> <li>• calculate moles of chemical substance, including concentrations</li> <li>• state the units for mass, volume and concentration</li> </ul> <p><b><u>GCSE Chemistry only</u></b></p> <p>You will need to be able to:</p> <ul style="list-style-type: none"> <li>• describe the physical and chemical properties of the transition metals</li> <li>• identify unknown substances using chemical tests (anions and cations)</li> <li>• interpret gas chromatograms and mass spectra</li> <li>• calculate theoretical yield, percentage yield and atom economy</li> </ul> <p>Make high quality revision notes/mind maps/flash cards and store safely in a revision file/folder. Use flash cards to test yourself.</p>
Reflect	Pupils reflecting on what they have learnt after they have completed a piece of work.	<p>Keep track of any PT test scores you achieved and scores you obtained when you previously tested yourself.</p> <p>Set aside some time each week to go back over previous work.</p> <p>Have a parent/carer test you again, so that you can see how your work is improving.</p> <p>Keep a note of areas you still want to go back over.</p>
Review	Revisiting previous learning after a gap	<p>Revisit the areas you struggled with and use the revision notes/mind maps/flash cards you made to go back over the work.</p> <p>Retest yourself and look at extra examples of questions in this area (online or from your teacher).</p>