



## Chemistry Curriculum Overview - Year 10 - Combined Higher

Unit	Details
<b>Electrolysis</b>	<p>Pupils are introduced to electrolysis. They will build upon their knowledge from structure and bonding to explain why ionic compounds can undergo electrolysis when molten or in solution. They should also be able to explain the movement of particles during electrolysis, and the reactions that occur at the electrodes. Pupils will then apply their understanding of electrolysis to the extraction of aluminium, and learn how to investigate the electrolysis of a solution. They should be able to predict the products of electrolysis and be able to write balanced half equations.</p>
<b>Chemical Calculations</b>	<p>Pupils will build upon their understanding of the structure of atoms to understand relative atomic mass and relative formula mass. This is then related to the mole and Avogadro's constant. They should be able to use the equation number of moles = mass (g) / <math>A_r</math> to calculate reacting masses. Finally, pupils will apply their understanding of relative atomic mass, relative formula mass, and moles to concentrations.</p>
<b>Energy Changes</b>	<p>Pupils will learn about the energy transfers that occur during chemical reactions. They should understand that an exothermic reaction transfers energy from the system to the surroundings, and an endothermic reaction transfers energy from the surroundings to the system.. Pupils should be able to interpret experimental data to identify if a reaction is exothermic or endothermic and should be able to describe some uses of exothermic and endothermic reactions.</p> <p>They will then further develop their qualitative understanding of the energy transfers in a reaction into a quantitative understanding. They should be confident with sketching and interpreting reaction profile diagrams and should be able to use bond energies to calculate overall energy changes for a reaction, identifying if it is exothermic or endothermic.</p>
<b>Rates</b>	<p>Pupils have learnt about the factors that affect the rate of a reaction, including temperature, surface area, concentration, and pressure. They should be able to explain the effect of each factor on the rate of reaction using collision theory. They should also be able to explain the effect of catalysts on the rate of a reaction in terms of providing an alternative reaction pathway with a lower activation energy.</p>
<b>Equilibrium</b>	<p>Pupils will learn about reversible reactions and dynamic equilibrium. They should apply their knowledge on endothermic and exothermic reactions to equilibrium reactions to be able to predict the effect of temperature changes on the reversible reactions and the position of the equilibrium. Pupils should also be able to use Le Châtelier's principle to explain the effect of temperature and pressure on the position of equilibrium.</p>