











## CC10 Electrolytic Processes

## CC10a Electrolysis






Step	Learning outcome	Had a look	Nearly there	Nailed it!
 6 <sup>th</sup>	State the meaning of the term 'electrolyte'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Outline what happens during electrolysis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Explain the movement of the ions during electrolysis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	<b>H</b> Write half equations for the reactions at the electrodes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 9 <sup>th</sup>	<b>H</b> Explain the meaning of oxidation and reduction in terms of the movement of electrons.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	<b>H</b> State the electrodes at which oxidation and reduction occur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## CC10b Products from electrolysis







Step	Learning outcome	Had a look	Nearly there	Nailed it!
 6 <sup>th</sup>	Recall the products formed from the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	Explain the formation of the products in the electrolysis of a variety of common compounds and solutions (copper chloride solution, sodium chloride solution, sodium sulfate solution, acidified water, molten lead bromide).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	Predict the products formed from the electrolysis of a molten, binary, ionic compound.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	Explain how the electrolysis of copper sulfate solution using copper electrodes can be used to purify copper.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## CC11 Obtaining and Using Metals






## CC11a Reactivity

Step	Learning outcome	Had a look	Nearly there	Nailed it!
 5 <sup>th</sup>	Describe the reactions of common metals with water and acids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 5 <sup>th</sup>	Describe the reactions of metals with salt solutions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	<b>H</b> Explain why displacement reactions are redox reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	Deduce the order of metals in the reactivity series from their reactions with water, acids and salt solutions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 9 <sup>th</sup>	Explain the reactivity series in terms of the tendency of different metal atoms to form cations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>






## CC11b Ores

Step	Learning outcome	Had a look	Nearly there	Nailed it!
 4 <sup>th</sup>	Recall the meaning of the term 'ore'.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 4 <sup>th</sup>	Recall some metals that are found uncombined in the Earth's crust.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Explain how and why some metals are extracted from their ores by heating with carbon.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	Explain how and why some metals are extracted from their ores by electrolysis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	<b>H</b> Describe two biological methods of metal extraction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 10 <sup>th</sup>	<b>H</b> Evaluate biological methods of metal extraction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## CC11c Oxidation and reduction







Step	Learning outcome	Had a look	Nearly there	Nailed it!
	<b>H</b> Explain why reactions occurring at the electrodes during electrolysis are redox reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Describe the meanings of oxidation and reduction in terms of oxygen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Explain which substance has been oxidised and which substance has been reduced in a reaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Recall that all metals are extracted by reduction of their ores.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Explain how the position of a metal in the reactivity series is related to its resistance to oxidation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## CC11d Life cycle assessment and recycling

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	State the advantages and disadvantages of recycling a metal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Describe a process where a material or product is recycled for a different use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Evaluate the advantages and disadvantages of recycling a material or product to decide whether recycling is a viable option.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Describe the four stages in carrying out a life cycle assessment (LCA) of a material or product.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Evaluate data from a life cycle assessment of a material or product.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## CC12 Reversible Reactions and Equilibria

## CC12a Dynamic equilibrium

Step	Learning outcome	Had a look	Nearly there	Nailed it!
 6 <sup>th</sup>	Describe what happens in reversible reactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Explain the use of the symbol $\rightleftharpoons$ in chemical equations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Explain what is meant by dynamic equilibrium.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 <sup>th</sup>	Describe the formation of ammonia.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 5 <sup>th</sup>	State the conditions used for the Haber process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 <sup>th</sup>	<b>H</b> Describe how changing the temperature, pressure and concentration all affect the relative amount of substances in an equilibrium mixture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>