









Curriculum Overview for Chemistry Year 10

<p>Half Term 5: Energy changes – Unit 5</p> <p>Substantive Knowledge:</p> <ul style="list-style-type: none"> ❑ Draw and label exothermic reaction profile with activation energy, reactants, products and energy released. ❑ Draw and label an endothermic reaction profile with activation energy, reactants, products and energy absorbed. ❑ Identify examples of exothermic and endothermic reaction. ❑ Describe a method on how to measure temperature change. ❑ T – Describe how a battery works. ❑ T- Interpret data evaluate the use of cells. ❑ T- Evaluate the use of hydrogen fuel cells in comparison to recharge cells and batteries. ❑ T (HT) – Write half equations for the electrode reactions in hydrogen fuel cells. <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> ❑ HT – Calculate bond energies to identify exothermic or endothermic reactions. ❑ Draw reaction profiles with and without catalysts. <p>Quantitative Chemistry unit 3</p> <p>Substantive Knowledge:</p> <ul style="list-style-type: none"> ➔ Describe the law of conservation of mass. ➔ Explain change in mass of a reactions. ➔ Explain any observed changes in mass in non-enclosed systems given the balanced symbol equation. ➔ Describe how chemical amounts are measured in moles. ➔ Describe the number of atoms, molecules or ions in a mole of a given substance is the Avogadro constant. ➔ Use balanced symbol equations to calculate mass of reactants and products. ➔ Balance an equation given the masses of reactants and products. ➔ Describe with examples what is meant by a limiting reactant. ➔ Explain the effects of a limiting quantity of reactants on the amount of product. ➔ Describe how concentration of solutions can be measured. ➔ Explain how the mass of a solute and the volume of a solution is related to the concentration of the solution. ➔ Describe why it is not always possible to obtain the calculated amount of product. ➔ Describe atom economy. ➔ Describe how equal amounts in moles of gases occupy the same volume under the same conditions of temperature and pressure. <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> ➔ write and balance symbol equations. ➔ calculate relative formula mass. ➔ calculate percentage by mass using relative formula masses. 		<p>Skim and Scan of source information Decoding terms Etymology of key terms</p>
		<p>Endothermic Exothermic Activation energy Reactants Products Catalysts Overall energy change Reaction profile Rechargeable cells T- Fuel cells T- Chemical cells T- Battery T- Alkaline batteries T- Actual yield T- Atom economy H - Avogadro constant H- Avogadro's law Concentration Conservation of mass Limiting reactant H- Mole Percentage by mass Percentage yield Relative formula mass H- Theoretical yield Thermal decomposition uncertainty</p>
		<p>Recall questions to start every lesson Recall test Review sheet End of unit assessment</p>
		<p>Revision Card preparation for every lesson Recall test Review sheet Repetition of use of revision cards for end of unit assessment</p>



<p>→how to calculate the mass of one mole of substance</p> <p>→how to calculate the number of moles in a given mass given the relative formula mass of a substance.</p> <p>→Change the subject of a mathematical equation.</p> <p>→calculate the mass of solute in a given volume of solution of known concentration.</p> <p>→calculate percentage yield.</p> <p>→calculate percentage atom economy.</p> <p>→calculate the volume of gas at room temp and pressure from its mass and relative formula mass.</p> <p>→calculate volumes of gaseous reactants and products from a balanced equation and a given volume of a gaseous reactant and product.</p>		
<p>Half Term 6: The rate and extent of chemical change unit 6</p> <p>Substantive Knowledge:</p> <ul style="list-style-type: none"> Describe how changing temperature, concentration, pressure, surface area affects rate of reaction. Explain using collision theory the effects of changing conditions temperature, concentration, pressure, surface area on rate of reaction. Describe how catalysts impact rate of reaction. Link how catalysts impact rate of reaction to reaction profiles. Identify the symbol for reversible reactions. Link exothermic and endothermic reactions to reversible reactions. <p>Disciplinary Knowledge:</p> <ul style="list-style-type: none"> Calculate mean rate of reaction. Draw and interpret graphs showing the quantity of product formed or reactant used. HT – Draw tangents on graphs to calculate rate of reaction from a gradient HT- Predict changes on systems using le chateliers principle. HT – Predict the effect a change of concentration of a reactant or product, temperature or pressure has on equilibrium. 		<p>Skim and Scan of source information</p> <p>Decoding terms</p> <p>Etymology of key terms</p>
		<p>Activation energy</p> <p>Catalyst</p> <p>Collision theory</p> <p>Effect of changing concentration on equilibrium</p> <p>Effect of changing pressure on equilibrium</p> <p>Effect of changing temperature on equilibrium</p> <p>Effect of concentration on reaction rate</p> <p>Effect of pressure on reaction rate</p> <p>Effect of surface area on reaction rate</p> <p>Effect of temperature on reaction rate</p> <p>Equilibrium</p> <p>Le Chatelier's Principle</p> <p>Rate of reaction</p> <p>Reversible reaction</p>
		<p>Recall questions to start every lesson</p> <p>Recall test</p> <p>Review sheet</p> <p>End of unit assessment</p>
		<p>Revision Card preparation for every lesson</p> <p>Recall test</p> <p>Review sheet</p> <p>Repetition of use of revision cards for end of unit assessment</p>