Classroom 42

Triple Science, Higher Tier

C5 Energy Changes Revision Checklist

Topic	Content	✓
Exothermic and Endothermic Reactions	• Energy transfer in reactions - Define exothermic and endothermic reactions with real-world examples (e.g., combustion, oxidation, neutralisation, sports injury packs), explain energy transfers in terms of bonds breaking and forming, identify heating/cooling effects used in everyday applications.	
	• Measuring temperature changes (Required Practical 4)	
	• Investigate temperature changes in reacting solutions (e.g., acid + metal, acid + carbonate, neutralisation, displacement of metals), describe how energy is conserved in chemical reactions, evaluate uses and applications of exothermic and endothermic reactions.	
	• Reaction Profiles - Draw and interpret reaction profile diagrams for exothermic and endothermic reactions, explain activation energy and how catalysts lower energy requirements, use reaction profiles to compare different reactions.	
	• Bond Energy Calculations - Explain how energy is required to break bonds and released when bonds form, use bond enthalpy data to calculate overall energy changes in chemical reactions, distinguish between exothermic and endothermic reactions based on bond energy differences.	
Chemical Cells and Fuel Cells	• Describe how chemical cells and batteries generate electricity through redox reactions. Compare rechargeable and non-rechargeable batteries in terms of sustainability and efficiency, explaining the chemical changes occurring in each type.	
	• Explain the working principles of hydrogen fuel cells and their role in generating electricity with water as the only waste product. Compare fuel cells to traditional combustion engines in terms of environmental impact and efficiency, write half-equations for the electrode reactions in the hydrogen fuel cell.	

Triple Science, Foundation Tier

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Classroom 42

Double Science, Higher Tier

C5 Energy Changes Revision Checklist

Topic	Content	✓
Exothermic and Endothermic Reactions	• Energy transfer in reactions - Define exothermic and endothermic reactions with real-world examples (e.g., combustion, oxidation, neutralisation, sports injury packs), explain energy transfers in terms of bonds breaking and forming, identify heating/cooling effects used in everyday applications.	
	• Measuring temperature changes (Required Practical 3)	
	• Investigate temperature changes in reacting solutions (e.g., acid + metal, acid + carbonate, neutralisation, displacement of metals), describe how energy is conserved in chemical reactions, evaluate uses and applications of exothermic and endothermic reactions.	
	• Reaction Profiles - Draw and interpret reaction profile diagrams for exothermic and endothermic reactions, explain activation energy and how catalysts lower energy requirements, use reaction profiles to compare different reactions.	
	• Bond Energy Calculations - Explain how energy is required to break bonds and released when bonds form, use bond enthalpy data to calculate overall energy changes in chemical reactions, distinguish between exothermic and endothermic reactions based on bond energy differences.	

Double Science, Foundation Tier

C5 Energy Changes Revision Checklist

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	• Reaction Profiles - Draw and interpret reaction profile diagrams for exothermic and endothermic reactions, explain activation energy and how catalysts lower energy requirements, use reaction profiles to compare different reactions.	