

Year 9 – Reactions – Chemical Energy and Types of Reactions

Name of unit	
Expected Outcomes • Students will understand that chemical reactions involve energy changes. • Students will identify exothermic and endothermic reactions by their energy effects. • Students will describe how to measure temperature changes during reactions. • Students will classify different types of chemical reactions (e.g. combustion, thermal decomposition, neutralisation). • Students will write word and symbol equations for common reactions.	
Developmental Focus Opportunities • Experimental design: Measuring temperature change to compare energy changes in reactions. • Graphical skills: Recording and interpreting reaction temperature data. • Chemical literacy: Using correct terminology and equations to describe reactions. • Real-world application: Connecting energy changes to chemical processes in daily life.	
Key Learning Points	Powerful Knowledge
• Exothermic reactions release energy, usually as heat. • Endothermic reactions absorb energy from the surroundings. • Energy changes can be measured and used to classify reactions. • Common reactions include combustion, oxidation, and neutralisation.	• Understanding how chemical reactions power our world (e.g. fuels, batteries, cold packs). • Applying scientific principles to energy transfer and storage. • Building foundational knowledge for thermochemistry at KS4. • Linking reactions to both practical uses and environmental concerns.
Subject-Specific Vocabulary	Reading Opportunities
• Energy transfer • Combustion • Thermal decomposition • Oxidation • Neutralisation • Temperature change • Reaction profile • Chemical equation	• Case studies on energy in fuels and reactions in industry. • Scientific texts describing chemical hand warmers, cold packs, and fuel cells. • Diagrams and summaries showing energy changes in reactions.

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Possible Misconceptions	Cross-Curricular Links
• Believing all reactions either feel hot or cold depending only on starting temperature. • Thinking exothermic means explosive or dangerous. • Confusing energy change with energy loss or disappearance. • Assuming all reactions fit neatly into just one category.	• Geography: Environmental impact of combustion and fuel use. • Maths: Interpreting graphs of temperature change. • DT: Applications of energy changes in materials and devices.