

Subject	Year 8 Chemistry Threshold Concepts – Summer Term	How to support students' learning
Energetics and rates	<p><b>Rate of reaction</b></p> <ul style="list-style-type: none"> <li>● Recall key features of a chemical reaction</li> <li>● Define rate of reaction</li> <li>● Define the activation energy</li> <li>● Identify variables</li> <li>● Suggest methods to measure the rate of a chemical reaction</li> </ul> <p><b>Rate graphs</b></p> <ul style="list-style-type: none"> <li>● Recall the factors that affect the rate of reaction</li> <li>● explain the factors that effect the rate of reaction using the collision theory</li> <li>● identify anomalous results and describe why they are anomalous</li> <li>● draw a suitable graph to represent results</li> <li>● use a graph to describe the relationship between variables</li> </ul> <p><b>Concentration</b></p> <ul style="list-style-type: none"> <li>● State how changing the concentration effects the rate of a chemical reaction</li> <li>● Explain how changing the concentration effects the rate using the collision theory</li> </ul> <p><b>Surface area</b></p> <ul style="list-style-type: none"> <li>● State how changing the surface area effects the rate of a chemical reaction</li> <li>● Explain how changing the surface effects the rate using the collision theory</li> <li>● describe how the surface area of a solid can be increased</li> <li>● calculate the surface area and volume of a simple cube</li> </ul>	<p>Encourage your child to complete the online learning about chemical and physical changes  <a href="https://www.thenational.academy/what-is-the-difference-between-physical-and-chemical-changes/">What is the difference between physical and chemical changes? (thenational.academy)</a></p> <p>Encourage your child to watch this video on how to calculate the rate of a reaction using a graph  <a href="https://www.youtube.com/watch?v=GCSE-Chemistry-How-to-Calculate-the-Rate-of-Reaction-Measuring-Rate-of-Reaction-#48">GCSE Chemistry - How to Calculate the Rate of Reaction - Measuring Rate of Reaction #48 - YouTube</a></p> <p>Encourage your child to visit BBC bitesize to learn about the factors that can affect the rate of a chemical reaction  <a href="https://www.bbc.com/bitesize/gcse/combined-science/revision/aqa-trilogy/rate-of-reaction-rates-of-reaction-aqa-gcse-combined-science-revision-aqa-trilogy-bbc-bitesize">Rate of reaction - Rates of reaction - AQA - GCSE Combined Science Revision - AQA Trilogy - BBC Bitesize</a></p>

- explain how increasing the surface area increases the rate of reaction

**Catalysts**

- Define a catalyst.
- Describe the role of a catalyst
- define activation energy
- Explain how a catalyst works and explain why they are useful in industrial processes.

**Exothermic and endothermic reactions**

- Define endothermic and exothermic reactions
- List examples of endothermic and exothermic reactions
- Predict if a reaction is endothermic or exothermic given appropriate data
- State that bond breaking absorbs energy and bond making releases energy
- Explain whether a reaction will be exothermic or endothermic using bond energy data

**Oxidation reactions – metal and non-metal oxides**

- Define an oxidation reaction
- Write word and balanced equations for oxidation reactions
- Predict the pH of oxidation reactions

Encourage your child to read about a catalyst and what a catalyst can do to a reaction

[Catalysts - Rates of reaction - AQA - GCSE Combined Science Revision - AQA Trilogy - BBC Bitesize](#)

Encourage your child to watch this video on exothermic and endothermic reactions [GCSE Chemistry - Exothermic and Endothermic Reactions #43 - YouTube](#)

	<p><b>Complete and incomplete combustion</b></p> <ul style="list-style-type: none"><li>• Predict the products of a combustion reaction</li><li>• State the differences between complete and incomplete combustion</li><li>• Classify thermal decomposition as endothermic or exothermic</li><li>• Compare the pros and cons of fuels in terms of their products of combustion</li><li>• Recall the environmental pollutants from burning fuels and their environmental affects</li></ul> <p><b>Thermal decomposition</b></p> <ul style="list-style-type: none"><li>• Define thermal decomposition</li><li>• Classify thermal decomposition as endothermic or exothermic</li><li>• Write word and balanced symbol equations for thermal decomposition reactions</li><li>• Explain observations about changes in mass in a thermal decomposition reaction</li><li>• Investigate the rate of thermal decomposition of different metal carbonates</li><li>• Calculate missing masses in conservation of mass calculations</li></ul>	<p>Encourage your child to read about combustion <a href="#">Combustion of hydrocarbon fuels - Polluting the atmosphere - AQA - GCSE Chemistry (Single Science) Revision - AQA - BBC Bitesize</a></p> <p>Encourage your child to watch this video on thermal decomposition reactions <a href="#">Thermal Decomposition - YouTube</a></p>
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