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| **Subject** | **Year 8 Chemistry Threshold Concepts – Summer Term** | **How to support students’ learning** |
| Energetics and rates | **Rate of reaction*** Recall key features of a chemical reaction
* Define rate of reaction
* Define the activation energy
* Identify variables
* Suggest methods to measure the rate of a chemical reaction

**Rate graphs*** Recall the factors that affect the rate of reaction
* explain the factors that effect the rate of reaction using the collision theory
* identify anomalous results and describe why they are anomalous
* draw a suitable graph to represent results
* use a graph to describe the relationship between variables

 **Concentration*** State how changing the concentration effects the rate of a chemical reaction
* Explain how changing the concentration effects the rate using the collision theory

**Surface area** * State how changing the surface area effects the rate of a chemical reaction
* Explain how changing the surface effects the rate using the collision theory
* describe how the surface area of a solid can be increased
* calculate the surface area and volume of a simple cube
* 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

**Complete and incomplete combustion** * Predict the products of a combustion reaction
* State the differences between complete and incomplete combustion
* Classify thermal decomposition as endothermic or exothermic
* Compare the pros and cons of fuels in terms of their products of combustion
* Recall the environmental pollutants from burning fuels and their environmental affects

**Thermal decomposition*** Define thermal decomposition
* Classify thermal decomposition as endothermic or exothermic
* Write word and balanced symbol equations for thermal decomposition reactions
* Explain observations about changes in mass in a thermal decomposition reaction
* Investigate the rate of thermal decomposition of different metal carbonates
* Calculate missing masses in conservation of mass calculations
 | Encourage your child to complete the online learning about chemical and physical changes [What is the difference between physical and chemical changes? (thenational.academy)](https://classroom.thenational.academy/lessons/what-is-the-difference-between-physical-and-chemical-changes-64upcr)Encourage your child to watch this video on how to calculate the rate of a reaction using a graph [GCSE Chemistry - How to Calculate the Rate of Reaction - Measuring Rate of Reaction #48 - YouTube](https://www.youtube.com/watch?v=GCR5xeduq2o) Encourage your child to visit BBC bitesize to learn about the factors that can affect the rate of a chemical reaction [Rate of reaction - Rates of reaction - AQA - GCSE Combined Science Revision - AQA Trilogy - BBC Bitesize](https://www.bbc.co.uk/bitesize/guides/zpkp7p3/revision/1)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](https://www.bbc.co.uk/bitesize/guides/zpkp7p3/revision/5)Encourage your child to watch this video on exothermic and endothermic reactions [GCSE Chemistry - Exothermic and Endothermic Reactions #43 - YouTube](https://www.youtube.com/watch?v=dstRL5xB0Sk)Encourage your child to read about combustion[Combustion of hydrocarbon fuels - Polluting the atmosphere - AQA - GCSE Chemistry (Single Science) Revision - AQA - BBC Bitesize](https://www.bbc.co.uk/bitesize/guides/zxy4xfr/revision/5)Encourage your child to watch this video on thermal decomposition reactions[Thermal Decomposition - YouTube](https://www.youtube.com/watch?v=fwukX8Ec-Pg) |