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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) |