



The Rate and Extent of Chemical Change

Multiple Choice Questions

Set 2

Tick **one** box.

- How can the mean rate of a reaction be calculated?
 - mean rate of reaction = quantity of reactant used \times time taken
 - mean rate of reaction = quantity of reactant used \div time taken
 - mean rate of reaction = time taken \times quantity of product formed
 - mean rate of reaction = time taken \div quantity of product formed

- A reaction produces 45cm³ of carbon dioxide in 30 seconds. What is the mean rate of reaction?
 - 0.6cm³/s
 - 1.5cm³/s
 - 45cm³/s
 - 75cm³/s

- The reaction between calcium carbonate and sulfuric acid is shown in the equation below.



How could the rate of reaction be increased?

- decrease the temperature
 - dilute the sulfuric acid
 - grind the calcium carbonate into a powder
 - increase the pressure
- Which term describes the minimum energy that particles must have to react?
 - activation energy
 - collision energy
 - reaction energy
 - starting energy



A student is investigating the effect of temperature on the rate of reaction between sodium thiosulfate and hydrochloric acid. The student mixes the reactants together in a conical flask which they place over a piece of paper marked with an 'X'. The student records the time it takes for the 'X' to be obscured by the yellow precipitate which forms in the reaction.

5. Which piece of equipment will be needed to measure the dependent variable in the above investigation?

- A. conical flask
- B. piece of paper marked with an 'X'
- C. thermometer
- D. timer

6. Which piece of equipment will be needed to measure the independent variable in the above investigation?

- A. conical flask
- B. piece of paper marked with an 'X'
- C. thermometer
- D. timer

7. What effect does increasing the temperature of a reaction have on its rate?

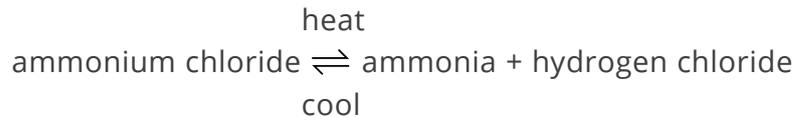
- A. the rate decreases because the collisions are more energetic
- B. the rate increases because the frequency of collisions is increased
- C. the rate increases because the collisions are less energetic
- D. the rate increases because the surface area of the reactants is increased

8. Which term describes a reversible reaction occurring in a closed container where the forward and reverse reactions happen at the same rate?

- A. balanced
- B. complete
- C. equilibrium
- D. equivalent



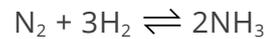
9. When ammonium chloride is heated it breaks down to form ammonia and hydrogen chloride. This reaction is reversible and is shown in the equation below.



How could this reaction be reversed to reform ammonium chloride?

- A. apply more heat
- B. cool the mixture down
- C. open the reaction container
- D. this reaction cannot be reversed

10. Ammonia is made in a reversible reaction, as shown by the equation below.



The forward reaction is exothermic. Which word describes the backward reaction?

- A. endothermic
- B. equilibrium
- C. exothermic
- D. none of the above