



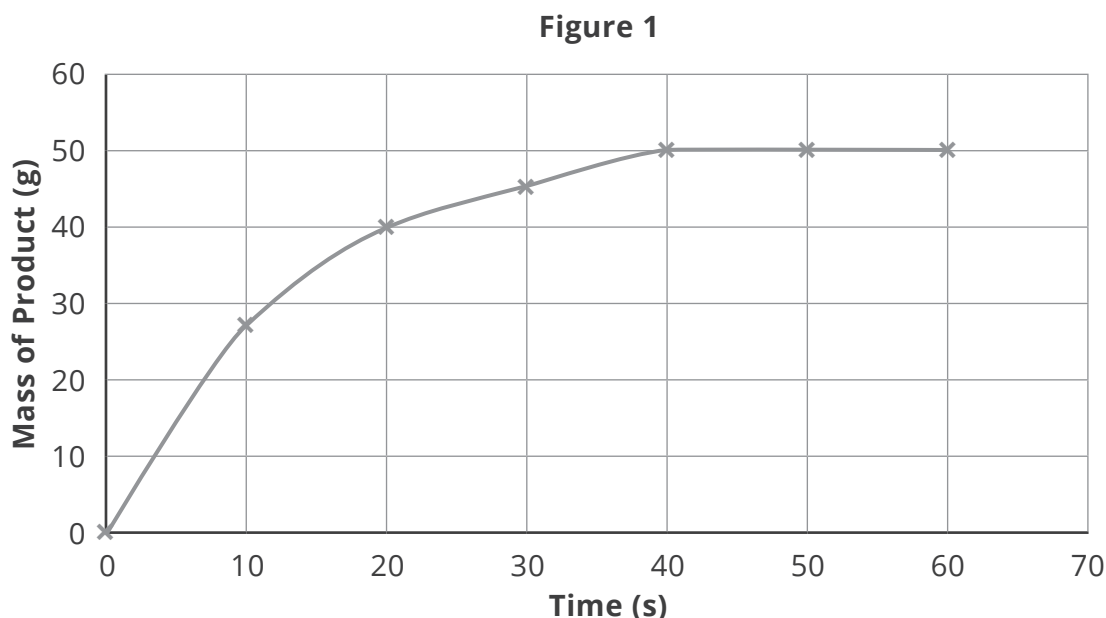
# The Rate and Extent of Chemical Change

## Multiple Choice Questions

### Set 3

Tick **one** box.

**Figure 1** is a graph showing how the mass of product formed in a chemical reaction changed over time.



1. After how many seconds was the chemical reaction in **Figure 1** complete?

- A. 30
- B. 40
- C. 50
- D. 60

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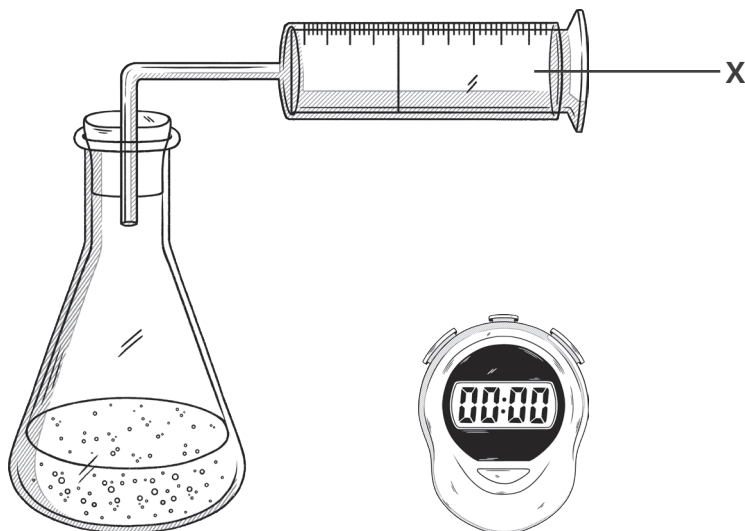
2. What was the mean rate of reaction for the chemical reaction in **Figure 1**?

- A. 0.8g/s
- B. 1.25g/s
- C. 40g/s
- D. 50g/s

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**Figure 2** shows apparatus which could be used to find the rate of a chemical reaction.

**Figure 2**



3. What is the name of the piece of equipment labelled X?

- A. conical flask
- B. gas syringe
- C. measuring tube
- D. timer

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4. What is a hypothesis?

- A. a method used to investigate the rate of chemical reactions
- B. a prediction
- C. an idea that can be tested
- D. the correct answer to an investigation

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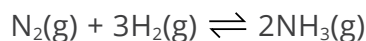
5. How does a catalyst increase the rate of a reaction?

- A. it changes the products of the reaction
- B. it increases the temperature of the reaction
- C. it provides reactants with the energy they need to react
- D. it reduces the activation energy of the reaction

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**Equation 1** shows how nitrogen and hydrogen can be reacted together to form ammonia.

**Equation 1**



6. Which of the following are the reactants in **Equation 1**?
  - A. ammonia ☐
  - B. hydrogen and nitrogen ☐
  - C. hydrogen only ☐
  - D. nitrogen only ☐
  
7. Why is only a small quantity of ammonia formed in **Equation 1**?
  - A. ammonia is a gas ☐
  - B. ammonia is a small molecule ☐
  - C. the reaction is reversible ☐
  - D. the temperature is too low ☐
  
8. Why would increasing the pressure of the reactants in **Equation 1** increase the rate of reaction?
  - A. the activation energy of the particles is lowered ☐
  - B. the number of reactant particles is increased, so more successful collisions can occur ☐
  - C. the particles are less energetic, so they collide less often ☐
  - D. the reactant particles are closer together, so they collide more often ☐
  
9. If a reversible reaction is exothermic in the forward direction, which statement is correct?
  - A. the backward reaction is also exothermic ☐
  - B. the backward reaction is endothermic ☐
  - C. the backward reaction releases energy to the surroundings ☐
  - D. the forward reaction takes in energy from the surroundings ☐
  
10. How can the direction of a reversible reaction be changed?
  - A. by changing the temperature ☐
  - B. by increasing the activation energy ☐
  - C. by restarting it ☐
  - D. it is not possible ☐