Reactants and products

Learning objectives

1 Identify the reactants and products in a chemical equation.

2 Identify whether a chemical or physical change is occurring.

3 Define reactions as combination or decomposition from word and symbol equations.

Introduction

Chemical reactions are when one or more new substances are formed from other substances. This can also be referred to as a chemical change. In a physical change no new substances are formed, for example a change of state or dissolving.

A chemical change can occur through two types of reaction.

- A combination reaction (also known as a synthesis reaction) is where two or more reactants chemically change into one or more products.
- A decomposition reaction is where a compound breaks down to give two or more products.

In chemical reactions, the reactants are the chemicals that react together and are found before the arrow in a word equation. The products are the new substances produced and are found after the arrow in a word equation.

Instructions

1. Stick the structure strip in the margin of your exercise book/paper.
2. Follow the prompts in the structure strip and use your knowledge to write a summary of reactants and products. Reflect on what you already know about reactants and products. Where have you seen the key words before? If you'd like more support, what other sources could you use to find the information, e.g. a textbook, online?
3. Answer the extension question to apply your knowledge of reactants and products to a new context.

Key words

Use these key words and phrases in your responses:

• reactants • products • chemical reaction • chemical change • combination reaction • decomposition reaction

Structure strip **Reactants and products**	**Structure strip** **Reactants and products**	**Structure strip** **Reactants and products**	**Structure strip** **Reactants and products**	**Structure strip** **Reactants and products**
Define the terms 'reactants' and 'products' in a chemical equation.	Define the terms 'reactants' and 'products' in a chemical equation.	Define the terms 'reactants' and 'products' in a chemical equation.	Define the terms 'reactants' and 'products' in a chemical equation.	Define the terms 'reactants' and 'products' in a chemical equation.
Write a word equation for the following reaction. Label the reactants and the products. Magnesium reacts with hydrochloric acid to produce hydrogen. Magnesium chloride is also produced.	Write a word equation for the following reaction. Label the reactants and the products. Magnesium reacts with hydrochloric acid to produce hydrogen. Magnesium chloride is also produced.	Write a word equation for the following reaction. Label the reactants and the products. Magnesium reacts with hydrochloric acid to produce hydrogen. Magnesium chloride is also produced.	Write a word equation for the following reaction. Label the reactants and the products. Magnesium reacts with hydrochloric acid to produce hydrogen. Magnesium chloride is also produced.	Write a word equation for the following reaction. Label the reactants and the products. Magnesium reacts with hydrochloric acid to produce hydrogen. Magnesium chloride is also produced.
Describe some observations you might make when a chemical reaction has occurred.	Describe some observations you might make when a chemical reaction has occurred.	Describe some observations you might make when a chemical reaction has occurred.	Describe some observations you might make when a chemical reaction has occurred.	Describe some observations you might make when a chemical reaction has occurred.
Is heating copper carbonate and observing a colour change a chemical or physical change? Explain your answer.	Is heating copper carbonate and observing a colour change a chemical or physical change? Explain your answer.	Is heating copper carbonate and observing a colour change a chemical or physical change? Explain your answer.	Is heating copper carbonate and observing a colour change a chemical or physical change? Explain your answer.	Is heating copper carbonate and observing a colour change a chemical or physical change? Explain your answer.
Is an ice lolly melting a chemical or physical change? Explain your answer.	Is an ice lolly melting a chemical or physical change? Explain your answer.	Is an ice lolly melting a chemical or physical change? Explain your answer.	Is an ice lolly melting a chemical or physical change? Explain your answer.	Is an ice lolly melting a chemical or physical change? Explain your answer.
The equation below represents a decomposition reaction. Explain why. copper bromide → copper + bromine	The equation below represents a decomposition reaction. Explain why. copper bromide → copper + bromine	The equation below represents a decomposition reaction. Explain why. copper bromide → copper + bromine	The equation below represents a decomposition reaction. Explain why. copper bromide → copper + bromine	The equation below represents a decomposition reaction. Explain why. copper bromide → copper + bromine
The equation below represents a combination reaction. Explain why. zinc + sulfuric acid → zinc sulfate + hydrogen	The equation below represents a combination reaction. Explain why. zinc + sulfuric acid → zinc sulfate + hydrogen	The equation below represents a combination reaction. Explain why. zinc + sulfuric acid → zinc sulfate + hydrogen	The equation below represents a combination reaction. Explain why. zinc + sulfuric acid → zinc sulfate + hydrogen	The equation below represents a combination reaction. Explain why. zinc + sulfuric acid → zinc sulfate + hydrogen

Extension question

Write a short summary explaining the reaction below, focusing on the reactants and products.

magnesium + sulfuric acid → magnesium sulfate + hydrogen

$$Mg(s) + H_2SO_4(aq) \rightarrow MgSO_4(s) + H_2(g)$$

You need to include:

- the elements in sulfuric acid
- a description of the other reactant
- a description of the products formed
- any observations as the reaction begins
- whether this is a chemical or physical change.