

CHEMICAL REACTIONS AND EQUATIONS

Full chapter notes | Board exam + school tests

FREE PREVIEW

- What is a chemical reaction?
- How to write an equation
- 2 worked balancing examples
- List of what the full PDF contains
- Not the complete chapter — sample only

Chemical Reactions and Equations

This chapter is scoring if you can **write a balanced equation**, **name the type of reaction**, and give **one daily-life example**. Do not only memorise names — practise writing the chemistry.

This preview shows how the paid notes are written. The full PDF has every reaction type, more worked balancing, exam tables, 17 practice questions and the answer key.

1. What is a chemical reaction?

A chemical reaction is a process in which one or more substances change into new substances with different properties. The starting substances are **reactants**. The new substances are **products**.

You know a reaction has happened when you observe one or more of these:

- Change in state (solid wax $\rightarrow$ liquid + gas when a candle burns)
- Change in colour (blue CuSO_4 solution becomes pale green when iron is dipped)
- Evolution of gas (bubbles when Zn reacts with dilute H_2SO_4)
- Change in temperature (heat given out or taken in)
- Formation of a precipitate (insoluble solid settles)

Teacher note: Physical change (ice $\rightarrow$ water) does not make a new substance. Melting is not a chemical reaction. Burning is.

2. Writing a chemical equation

Word equation uses names. Chemical equation uses formulae. The arrow means “gives” or “produces”. Reactants on the left, products on the right.

Word: Magnesium + Oxygen $\rightarrow$ Magnesium oxide

Skeletal: $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$

Balanced: $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

Symbols you must write in exams

- (s) solid (l) liquid (g) gas (aq) aqueous / dissolved in water
- heat above the arrow = heat is given sunlight / electricity written above the arrow if needed
- A catalyst is written above the arrow (it speeds the reaction but is not used up)

$2\text{KClO}_3 (\text{s}) \xrightarrow{\text{MnO}_2 / \text{heat}} 2\text{KCl} (\text{s}) + 3\text{O}_2 (\text{g})$

3. Balancing — sample (full method is in the paid PDF)

Never change a formula. Only change the number in front.

Skeletal: $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$

Balanced: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

Skeletal: $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$

Balanced: $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$

Locked in the full version

- Step-by-step balancing method used in class
- Combination, decomposition, displacement, double displacement, redox — with board equations
- Corrosion + rancidity with prevention
- Must-remember reaction bank table

- 17 practice questions (1-mark to 5-mark + assertion-reason)
- Complete answer key

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