

Exercise walk-through

Physical and chemical changes ■ 6.1

eXercise

You must be able to

- distinguish a physical change (no new substance) from a chemical change
- give the signs of a chemical reaction
- classify examples

Method — Physical vs chemical

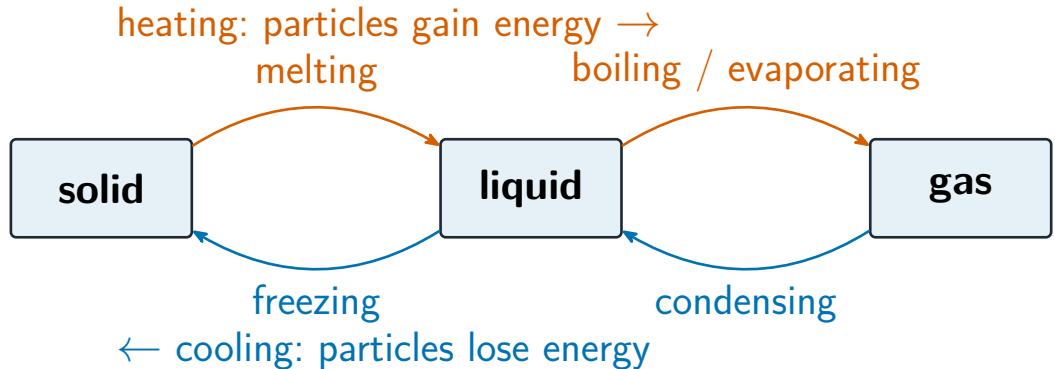
- **physical:** no new substance; easy to reverse (melting, dissolving).
- **chemical:** new substance(s); usually hard to reverse (burning, rusting).
- **signs of a reaction:** colour change, gas given off, energy change, precipitate forms.

Method — Physical vs chemical



Rust on an iron surface — a chemical change

Method — Physical vs chemical



Melting and boiling are physical changes — no new substance

Practice 2.1 ■ 1 mark

State one difference between a physical and a chemical change.

Solution 2.1

Method: Physical vs chemical

Worked steps

a chemical change makes a new substance; a physical change does not **B1**.

Practice 2.2 ■ 2 marks

Give two signs that a chemical reaction has happened.

Solution 2.2

Method: Physical vs chemical

Worked steps

any two of: colour change; gas given off; energy/temperature change; a precipitate forms **B1** **B1**.

Exam-style 3.1 ■ 1 mark

Which is a physical change?

A burning magnesium

B rusting iron

C melting ice

D neutralising an acid

Solution 3.1

Method: Physical vs chemical

A burning magnesium

B rusting iron

C melting ice



D neutralising an acid

Worked steps

C. Melting ice makes no new substance — a physical change.

Exam-style 3.2 ■ 2 marks

Dissolving salt in water and burning a candle are both changes.

- (a) State which is a physical change and which is a chemical change.
- (b) Explain your choice for the candle.

Solution 3.2

Method: Physical vs chemical

Worked steps

(a) dissolving salt = physical; burning a candle = chemical **B1** **B1**.

(b) burning makes new substances (e.g. carbon dioxide and water) and is hard to reverse **M1** **A1**.