

Solutions

Each answer shows the steps, then the **result**.

2.1

- respiration is the **release of energy from food** in cells

2.2

- any **two** of: muscle contraction / protein synthesis / cell division / active transport / growth / nerve impulses / keeping warm

3.1 B

- respiration takes place in **all living cells**
- A is gas exchange; C and D are wrong

3.2

(a)

- **respiration**: energy released from food in cells
- **breathing**: air in and out of the lungs

(b)

- warmer yeast enzymes work faster, so it **respires faster**
- more **carbon dioxide** is given off

3.3

(a)

- glucose + oxygen → carbon dioxide + water
- $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

(b)

- **muscle contraction**
- **building large molecules** (e.g. proteins)
- **active transport** / cell division / keeping warm

(c)

- respiration is a **chemical reaction in every living cell**
- breathing is the **movement of air** in and out of the lungs
- breathing supplies oxygen and removes CO_2 , but **releases no energy**

(d)

- plants respire **all the time**, day and night
- in daylight they also photosynthesise, usually **faster** than they respire
- they take in more CO_2 than they release, so it **looks** as if they are not respiring