

Exercise walk-through

Osmosis ■ 3.2

eXercise

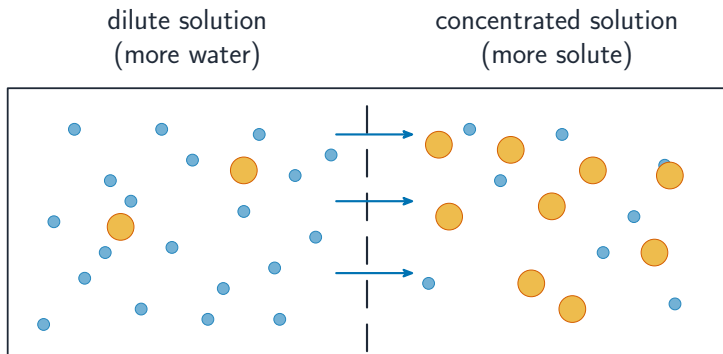
You must be able to

- define osmosis (net water movement across a partially permeable membrane)
- describe what happens to plant cells in dilute and concentrated solutions
- interpret a potato/dialysis-tubing experiment

Method — Osmosis and plant cells

- potato in water → gains mass; in concentrated solution → loses mass.

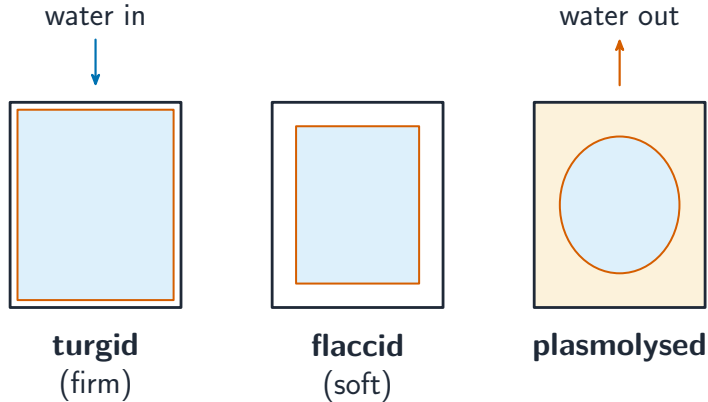
Method — Osmosis and plant cells



water moves by osmosis to the concentrated side; solute is too big to cross

Water crossing a partially permeable membrane; solute cannot

Method — Osmosis and plant cells



Turgid, flaccid and plasmolysed plant cells

Practice 2.1 ■ 2 marks

Define osmosis.

Solution 2.1

Worked steps

the net movement of water molecules from a region of higher water potential to a region of lower water potential **M1**, through a partially permeable membrane **A1**.

Practice 2.2 ■ 1 mark

State what happens to a plant cell placed in pure water.

Solution 2.2

Method: Osmosis and plant cells

Worked steps

water moves in by osmosis and the cell becomes turgid (firm) **B1**.

Exam-style 3.1 ■ 1 mark

A plant cell in a concentrated sugar solution becomes:

A turgid

B flaccid (loses water)

C larger

D unchanged

Solution 3.1

Method: Osmosis and plant cells

A turgid

B flaccid (loses water)



C larger

D unchanged

Worked steps

B. In a concentrated solution water leaves the cell, so it becomes flaccid.

Exam-style 3.2 ■ 2 marks

Potato cylinders are placed in different sugar solutions and their mass measured.

- (a) State what happens to the mass of a cylinder in pure water, and why.
- (b) State what you would observe for a cylinder in a very concentrated solution.

Solution 3.2

Method: Osmosis and plant cells

Worked steps

- (a) the mass increases **M1**; because water moves into the cells by osmosis **A1**.
- (b) it loses mass / becomes shorter and floppy **B1**.

Exam-style 3.3 ■ 2 marks

Explain why turgid cells help support a plant.

Solution 3.3

Method: Osmosis and plant cells

Worked steps

water inside makes the cells turgid and press out on the cell walls **M1**; this firmness holds the plant up straight **A1**.