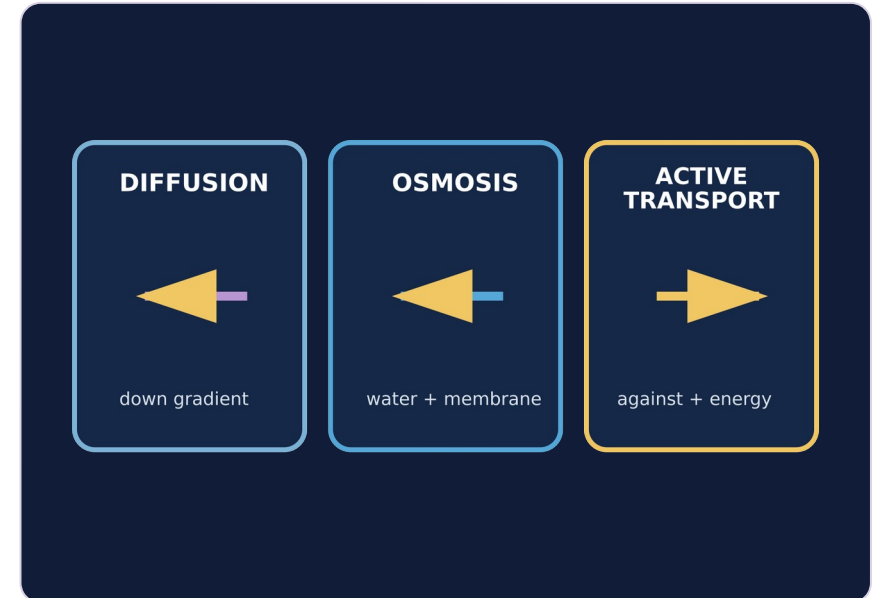


Comparing transport

I can select and justify the correct transport process in unfamiliar biological scenarios.

Notice. Recall. Be ready to explain.

- 1 Which process moves water only?
- 2 Which process moves against a concentration gradient?



Retrieval answers

Make a prediction

Water enters a plant cell through a partially permeable membrane. Which single clue should decide the process first?

A The cell is green

B The moving substance is water and the membrane is partially permeable

C The process is fast

Commit, then check

Watch the model

- 1** Ask what substance moves: water only or another substance.
- 2** Ask whether movement is down or against the relevant concentration gradient.
- 3** Ask whether a partially permeable membrane and cellular energy are part of the evidence.

Use three deciding clues

- 01** What moves?
- 02** Which direction?
- 03** Is energy needed?

[View labelled diagram](#)

[Optional video](#)

Choose and justify

Which sentence compares rather than lists?

A Diffusion moves particles. Active transport moves particles.

B Both can move substances across membranes, whereas only active transport can move against a concentration gradient using cellular energy.

C Osmosis is water.

D They are all transport.

Give the deciding clue before checking.

Check the reasoning

Connect the science

- 1 Both diffusion and active transport can move solutes across cell membranes.
- 2 Whereas diffusion is net movement down a concentration gradient, active transport can move against it.
- 3 Only active transport requires cellular energy; osmosis specifically concerns water through a partially permeable membrane.

Inward uptake: compare the same substance

Outside: 2 → Inside: 8

Lower → higher: against the gradient

Transport proteins + energy from respiration

Sort the transport clues

Choose diffusion, osmosis, active transport or need more evidence. Give the deciding clue.

- 1 A Oxygen moves from higher concentration in air into blood.
- 2 B Water crosses a partially permeable membrane from a solution more dilute than the cell contents.
- 3 C Ions enter against their gradient using energy from respiration.
- 4 D A substance crosses a membrane. No other clue is given.

Reveal shared reasoning

Your independent evidence

Compare diffusion and active transport. Classify and justify: oxygen enters blood from alveoli; water enters a root hair through its partially permeable membrane; mineral ions enter a root hair against their gradient.

Optional support

Ask: what moves, which way compared with the gradient, and is cellular energy needed? If a clue is missing, say what more you need to know.

Make one precise correction to the same work after feedback.

[Open worksheet pages](#)[Model after first attempt](#)

What changed in your thinking?

Complete with precision: only active transport...

- 1** Point to one improvement in your work.
- 2** Choose what you want to revisit.
- 3** Tell your teacher; agree the next step together.

Retrieval and prediction check

- 1 Osmosis, through a partially permeable membrane.
- 2 Active transport, using cellular energy.

The moving substance is water and the membrane is partially permeable

[Return to Starter](#)

Check the deciding clue

Both can move substances across membranes, whereas only active transport can move against a concentration gradient using cellular energy.

Correct comparison using both/whereas/only.

Compare your reason. Correct one step if needed.

[Return to We Do](#)

Our shared reasoning

A: diffusion — down the oxygen gradient.

B: osmosis — water, membrane, dilute to concentrated.

C: active transport — against gradient using cellular energy.

D: insufficient evidence — ask what moves, which gradient and whether energy is needed.

[Return to shared task](#)

Compare after your first attempt

Both diffusion and active transport can move substances across cell membranes, whereas diffusion is net movement down a concentration gradient and active transport can move against it using cellular energy. Oxygen enters blood by diffusion down its concentration gradient. Water enters the root hair cell by osmosis through a partially permeable membrane. Mineral ions moving against their concentration gradient require active transport and energy from respiration.

Use the model to improve your explanation in your own words.

[Return to independent task](#)

Your lesson resources

Worksheet pages are stored inside this PowerPoint.

[Worksheet · page 1](#)[Worksheet · page 2](#)[Standard PDF](#)[Supported PDF](#)[Depth PDF](#)[Editable Word worksheet](#)[Open online lesson / model](#)

Named files are in this week's folder. Online lesson and video need internet.

[Optional concept video](#)[Open scenario cards](#)

Worksheet · page 1

Use your printed copy.
 Keep the first attempt.

MADE BY MATT / LAUNCH SCIENCE

W6L3 | Transport card sort

Friday | 09:30–10:10 | Do | Editable pupil sheet

Name: _____ Date: _____

Core first. Write, speak, point or dictate your own words. Keep the first attempt so you can improve it.

Optional support: Ask: what moves, which way compared with the gradient, and is cellular energy needed? If a clue is missing, say what more you need to know.

Work together

Cut the four scenario cards or number them on paper; a seated route works equally well.

1. **A. Oxygen has a higher concentration in alveolar air than in arriving blood. It moves into blood.**

2. **B. Water enters a root cell from a solution more dilute than the cell solution, through a partially permeable membrane.**

Return to task

Worksheet · page 2

Continuation is optional.
Improve the same work.

MADE BY MATT / LAUNCH SCIENCE

W6L3 | Continue and improve

Use after the core questions when directed

3. C. Mineral ions enter a root cell against their gradient; uptake requires energy from respiration.

4. D. A substance crosses a cell membrane. No other information is given.

Optional transfer

Write one similarity and two linked differences between diffusion and active transport.

Depth: name an assumption or limit, then say what evidence would strengthen your answer.

Improve the same work

One correction I made, and why:

My request for next time: _____

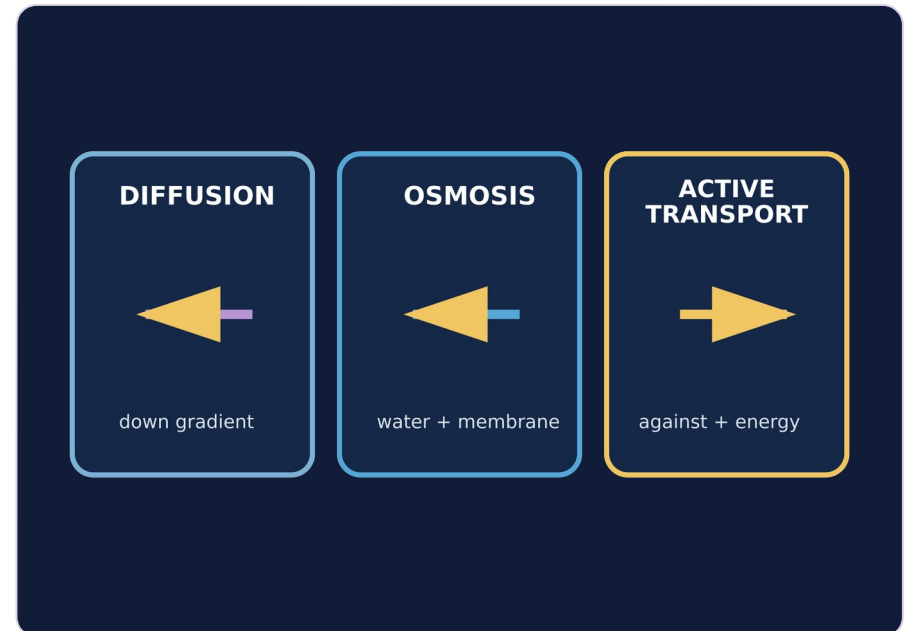
Return to task

Watch, pause and explain

Active transport

What two clues distinguish active transport from diffusion?

[Play freesciencelessons video](#)



No connection? Use the still model and explain the same question.

Look closely at the model

Compare = both sides

	DIFFUSION	ACTIVE T.
direction	down	UP
respiration energy?	no	YES
what moves	any particle	dissolved

SAME: both can cross a membrane

the command word

► **COMPARE**

similarities AND differences

A model illustration: use the stated data for calculations.

[Return to I Do](#)

Transport scenario cards

Place, number or point; cutting is optional

Sort into diffusion, osmosis, active transport or need more evidence. Give the deciding clue.
Sort each card. Give the deciding clue before naming the process.

Diffusion

A. Oxygen has a higher concentration in alveolar air than in arriving blood. It moves into blood.

C. Mineral ions enter a root cell against their gradient; uptake requires energy from respiration.

Osmosis

Active transport

Need more evidence

B. Water enters a root cell from a solution more dilute than the cell solution, through a partially permeable membrane.

D. A substance crosses a cell membrane. No other information is given.

My deciding clues

[Return to card sort](#)