Week 3 | Microscopy and magnification

Weekly teaching plan | LAUNCH Science | Autumn 1

Timetable: Monday, Wednesday and Friday | Period 1 | 09:30–10:10

Week commencing: ___________________

Day	Lesson	Learning focus
Monday	W3L1 · Introduce	I can use a light microscope model and explain the difference between magnification and resolution.
Wednesday	W3L2 · Explore	I can use the magnification relationship, convert units and judge whether an answer is plausible.
Friday	W3L3 · Do	I can independently measure, calculate and correct a magnification problem.

Prepare once for the week

Open this week's folder. Download or sync the complete folder to the classroom PC. Start the named PowerPoint in Slide Show mode. Print the selected PDF route; the Word sheet is an editable master. Keep teaching plans and mark schemes in staff storage.

Microscopes and prepared slides are optional. Use them only with the approved handling procedure and suitable staffing. The diagram route supports observation and calculation; it does not show that a pupil has handled a microscope. Have calculators and rulers ready. Questions use stated lengths, so printer scaling does not affect the answers.

Teaching decisions

Use one shared route: PowerPoint activity, paper or the linked online model. A video replaces up to 90 seconds of the relevant model, rather than adding time. Use the prompt and still diagram if playback is unavailable. Linked videos are freesciencelessons GCSE concept explanations; their AQA practical numbering is not this centre's assessment record.

If more time is needed, drop optional continuation. Keep one model, one supported attempt and independent evidence, then the Exit. Offer the least help first and leave the pupil's choice and explanation theirs.

Timetable source: Timetables 2026_2027 (2).xlsx, Launch B5/D5/F5; Matt D3/D9/D15.

W3L1 | Microscopy

Monday | 09:30–10:10 | Introduce

Say: Magnification is how many times larger an image is. Resolution is whether close points can be seen separately. Enlarging a blur does not recover detail.

09:30–09:33 | Arrival

What tool could help us see cells that are too small for the eye? Receive a short answer or a point to the image.

09:33–09:37 | Starter

A cell image becomes larger but stays blurred. Has its resolution improved? Commit a view before the model opens. Take a reason before revealing the answer.

09:37–09:42 | I Do

Begin on the lowest-power objective so the specimen is easier to find. Use coarse focus only at low power, then fine focus. Use fine focus only at high power. Total magnification equals eyepiece magnification multiplied by objective magnification.

09:42–09:47 | We Do

A microscope uses a ×10 eyepiece and a ×40 objective. What is the total magnification? Answer: ×400. Ask for the deciding step.

Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W3L1 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Magnification describes how many times larger the image appears. Resolution describes whether two close points can be seen as separate detail. A larger image is not automatically a more detailed image.

09:51–09:57 | We Do 2 · Task

Choose ×4 then ×40 objectives with a ×10 eyepiece. Predict the total each time. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A pupil changes from a ×4 objective to a ×40 objective while keeping a ×10 eyepiece. Explain the change in total magnification, field of view and visible detail. Include one limitation of the digital model. Select one correction on the same work.

10:07–10:10 | Exit

In one sentence, explain why a bigger image is not always a better-resolved image. Receive a specific learning request and agree the next action.

Watch for: Do not add the lens powers. At high power use fine focus only; follow the microscope's approved procedure.

Least help first: Ask which change is about size and which is about detail before naming either term.

W3L2 | Magnification

Wednesday | 09:30–10:10 | Explore

> **Say:** Name the unknown, match the units, select the relationship, substitute, then check. Magnification is a ratio: write ×200, not 200 mm.

09:30–09:33 | Arrival

Write the relationship between image size, actual size and magnification. Receive a short answer or a point to the image.

09:33–09:37 | Starter

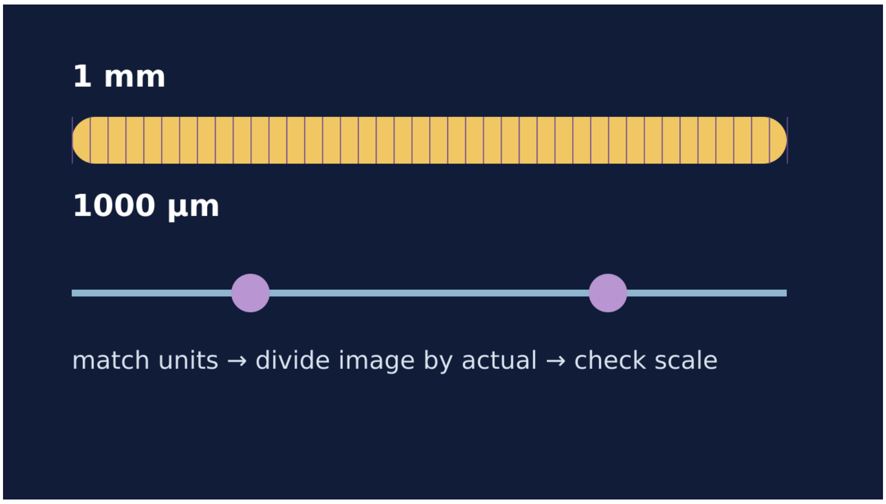
A cell is 50 µm long but its image measures 50 mm. Is the magnification ×1, ×100 or ×1000? Commit before converting. Take a reason before revealing the answer.

09:37–09:42 | I Do

Circle the known quantities and name the unknown. Convert both lengths into the same unit before substituting. Use magnification = image size ÷ actual size, then check whether the scale makes sense.

09:42–09:47 | We Do

An image is 24 mm and the actual cell is 60 µm. Which conversion is useful? Answer: 24 mm = 24,000 µm. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W3L2 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Rearrange only after naming the unknown. Keep units beside substitutions so a mismatch stays visible. A plausibility check asks whether the image is much larger than the actual cell.

09:51–09:57 | We Do 2 · Task

Work alone or in a pair. One person chooses the relationship; the other checks the units. Swap for the next item. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A micrograph of a cell measures 36 mm. The cell's actual length is 90 µm. Calculate the magnification and explain one check that shows your answer is plausible. Select one correction on the same work.

10:07–10:10 | Exit

What single check should happen before dividing one length by another? Receive a specific learning request and agree the next action.

Watch for: 50 µm is 0.05 mm, not 50 mm. A correct final value is not evidence that the unit route was understood.

Least help first: Ask which two values are known and whether their units match before discussing arithmetic.

W3L3 | Scale Bars

Friday | 09:30–10:10 | Do

Say: A ruler measurement changes if a picture is resized. A scale bar stays useful if the image and bar are resized together.

09:30–09:33 | Arrival

Convert 0.08 mm to micrometres. Receive a short answer or a point to the image.

09:33–09:37 | Starter

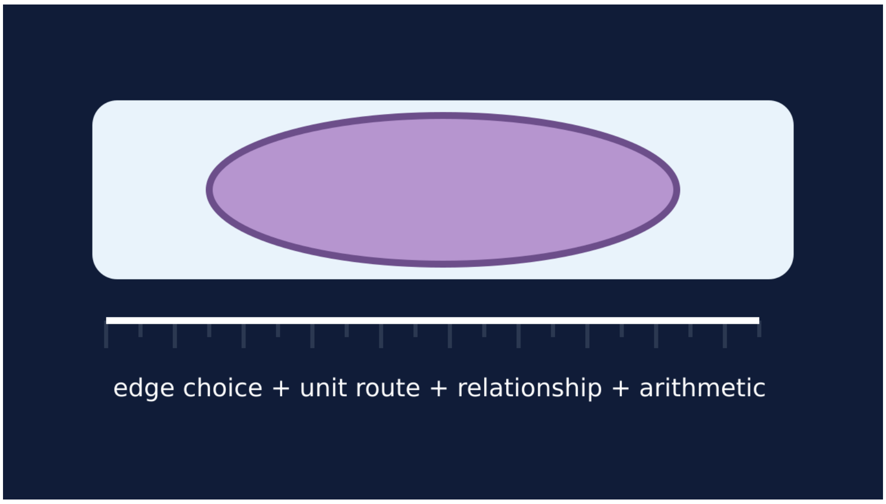
Two pupils get ×60 and ×600 from the same image. Which evidence would help locate the error? Take a reason before revealing the answer.

09:37–09:42 | I Do

Place the zero mark at the first clear edge and read the second edge once. Keep the measured image length and stated actual length in matching units. Classify an error as measurement, unit, rearrangement or arithmetic before repairing it.

09:42–09:47 | We Do

A pupil divides actual size by image size and gets ×0.002. What type of error is this? Answer: Rearrangement/relationship. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W3L3 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Do not erase the first route; annotate the point where it became invalid. Use the error type to choose one repair, not a full restart. Compare the repaired answer with the image scale.

09:51–09:57 | We Do 2 · Task

Read the stated measurements. This route does not depend on the printer scale. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A specimen image measures 48 mm. Its actual width is 80 µm. Calculate the magnification. Then explain how you would distinguish a unit error from a measurement error if another pupil obtained ×60. Select one correction on the same work.

10:07–10:10 | Exit

Name the error type you would check first when an answer is exactly ten or one thousand times too large. Receive a specific learning request and agree the next action.

Watch for: Do not claim pupils measured a real cell if they used stated lengths or a model. A precise-looking number is not automatically an accurate measurement.

Least help first: Do not repair the whole calculation. Ask the pupil to name the error type and change one step.

Week 4 | Diffusion

Weekly teaching plan | LAUNCH Science | Autumn 1

Timetable: Monday, Wednesday and Friday | Period 1 | 09:30–10:10

Week commencing: ___________________

Day	Lesson	Learning focus
Monday	W4L1 · Introduce	I can explain diffusion as net movement down a concentration gradient and use evidence to compare rates.
Wednesday	W4L2 · Explore	I can link alveolus features to rapid gas exchange using concentration gradients and diffusion distance.
Friday	W4L3 · Do	I can select evidence and improve a diffusion explanation in an unfamiliar context.

Prepare once for the week

Open this week’s folder. Download or sync the complete folder to the classroom PC. Start the named PowerPoint in Slide Show mode. Print the selected PDF route; the Word sheet is an editable master. Keep teaching plans and mark schemes in staff storage.

Paper, counters, pens and calculators are enough. The datasets are illustrative. Use the alveolus drawing for gas exchange. An optional physical demonstration needs the setting’s approved procedure; dye spreading in warm water may include convection.

Teaching decisions

Use one shared route: PowerPoint activity, paper or the linked online model. A video replaces up to 90 seconds of the relevant model, rather than adding time. Use the prompt and still diagram if playback is unavailable. Linked videos are freesciencelessons GCSE concept explanations; their AQA practical numbering is not this centre’s assessment record.

If more time is needed, drop optional continuation. Keep one model, one supported attempt and independent evidence, then the Exit. Offer the least help first and leave the pupil’s choice and explanation theirs.

Timetable source: Timetables 2026_2027 (2).xlsx, Launch B5/D5/F5; Matt D3/D9/D15.

W4L1 | Diffusion

Monday | 09:30–10:10 | Introduce

Say: Particles move randomly in both directions. Net movement is the difference between those two movements, not a rule obeyed by every particle.

09:30–09:33 | Arrival

What does concentration describe? Receive a short answer or a point to the image.

09:33–09:37 | Starter

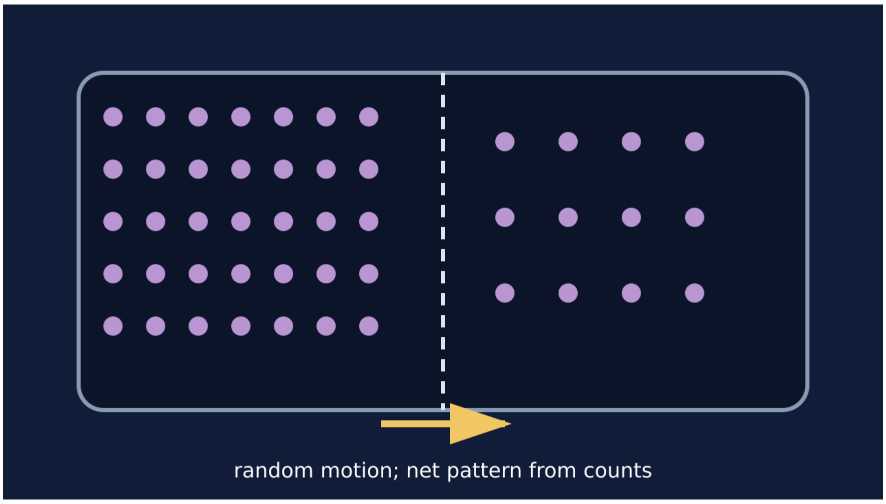
Particles move randomly in both directions. Can there still be net movement from high to low concentration? Take a reason before revealing the answer.

09:37–09:42 | I Do

Individual particles move randomly in every direction. More particles start in the high-concentration region, so more crossing events begin there. Net movement is the overall difference between movements in opposite directions.

09:42–09:47 | We Do

Which statement is scientifically accurate during diffusion? Answer: Particles move randomly, with net movement down the gradient. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W4L1 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

A steeper concentration difference usually increases the net rate. Higher temperature increases particle kinetic energy and movement rate. A longer diffusion distance reduces the rate of exchange.

09:51–09:57 | We Do 2 · Task

Draw two equal-volume regions: 12 particles left and 3 right. Predict the initial net direction. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

Two chambers have the same temperature and distance. Chamber A starts with 80 particles on the left and 20 on the right. Chamber B starts with 60 on the left and 40 on the right. Predict which has the faster initial net diffusion and explain using random motion and concentration gradient. Select one correction on the same work.

10:07–10:10 | Exit

What continues at equilibrium even though net movement is zero? Receive a specific learning request and agree the next action.

Watch for: Passive means no energy supplied by respiration is needed. It does not mean particles have no kinetic energy.

Least help first: Ask the pupil to compare starting counts on both sides before discussing direction.

W4L2 | Gas Exchange

Wednesday | 09:30–10:10 | Explore

> **Say:** For each feature, say what it changes physically and why that affects diffusion. “Good lungs” is not an explanation.

09:30–09:33 | Arrival

In which direction does oxygen diffuse at an alveolus? Receive a short answer or a point to the image.

09:33–09:37 | Starter

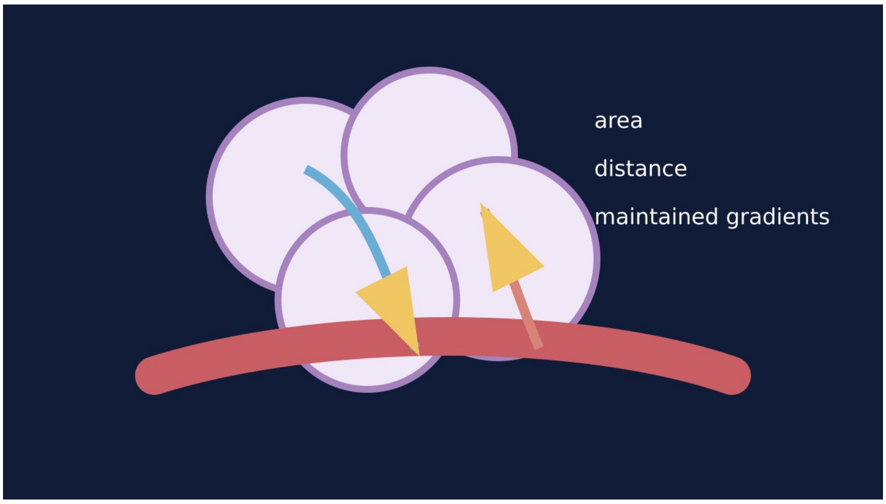
Which change would most directly shorten the distance that oxygen must diffuse: more alveoli, a thinner wall or faster ventilation? Take a reason before revealing the answer.

09:37–09:42 | I Do

Ventilation refreshes alveolar air and helps maintain oxygen and carbon dioxide gradients. Blood flow carries gases away or brings them to the exchange surface, maintaining gradients. A one-cell-thick exchange surface gives a short diffusion distance, while many alveoli give a large surface area.

09:42–09:47 | We Do

Why does a rich blood supply support oxygen diffusion into blood? Answer: It removes oxygenated blood and maintains a gradient. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W4L2 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Feature: large surface area. Effect: more membrane available at once. Consequence: greater total diffusion. Feature: thin wall. Effect: shorter diffusion distance. Consequence: faster exchange. Feature: ventilation and blood flow. Effect: maintain gradients. Consequence: continued net movement.

09:51–09:57 | We Do 2 · Task

Sketch an alveolus next to a capillary. Label air and blood. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A disease thickens the alveolar wall but does not initially change surface area. Explain how this affects oxygen uptake. Then state why increasing ventilation may not completely remove the problem. Select one correction on the same work.

10:07–10:10 | Exit

Complete: a thin exchange surface increases diffusion rate because… Receive a specific learning request and agree the next action.

Watch for: Both alveolar and capillary walls contribute to the diffusion path. Do not describe oxygen as choosing a destination.

Least help first: Ask for the feature, then its physical effect, then the diffusion consequence; do not jump straight to ‘more efficient’.

W4L3 | Diffusion Evidence

Friday | 09:30–10:10 | Do

Say: Describe tells us the pattern. Explain links that pattern to a mechanism. Evaluation asks whether the evidence supports the conclusion.

09:30–09:33 | Arrival

Define diffusion using ‘net movement’. Receive a short answer or a point to the image.

09:33–09:37 | Starter

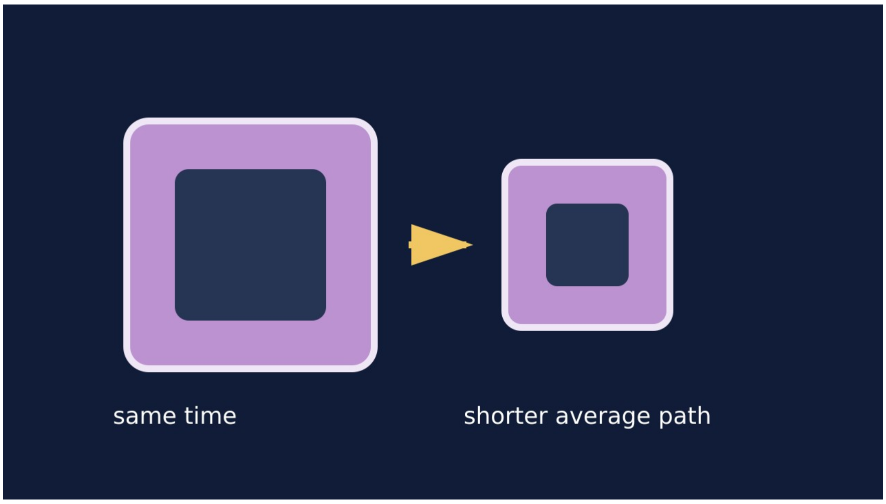
A dye spreads through a gel cube faster when the cube is smaller. Which evidence matters most: colour, surface-area-to-volume relationship or the container label? Take a reason before revealing the answer.

09:37–09:42 | I Do

Read the unfamiliar context and identify where concentration is higher and lower. Select only evidence that changes gradient, distance, surface area or particle movement. Build the causal chain before adding context words.

09:42–09:47 | We Do

Which sentence explains rather than only describes? Answer: The small cube had a shorter average diffusion distance, so dye reached its centre sooner.. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W4L3 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Evidence: smaller cube reached the centre sooner. Science: shorter diffusion distance and greater surface area to volume ratio. Consequence: dye reaches a larger proportion of the cube in the same time.

09:51–09:57 | We Do 2 · Task

Read the controlled comparison below; it is illustrative model data, not a class experiment. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A medicine patch releases particles through the skin. A redesigned patch has the same concentration but a larger contact area. Explain why more medicine may diffuse across the skin each minute. State one piece of extra evidence that would strengthen the conclusion. Select one correction on the same work.

10:07–10:10 | Exit

What is the difference between describing a diffusion pattern and explaining it? Receive a specific learning request and agree the next action.

Watch for: Dye spreading in warm water can include convection. Do not present an uncontrolled demonstration as proof of diffusion rate alone.

Least help first: Ask which evidence changes the gradient, distance or area; do not dictate a model answer.

Week 5 | Osmosis

Weekly teaching plan | LAUNCH Science | Autumn 1

Timetable: Monday, Wednesday and Friday | Period 1 | 09:30–10:10

Week commencing: ___________________

Day	Lesson	Learning focus
Monday	W5L1 · Introduce	I can define osmosis and predict net water movement through a partially permeable membrane.
Wednesday	W5L2 · Explore	Plan a fair investigation and analyse sample data; practical only when arranged.
Friday	W5L3 · Do	I can calculate, graph and interpret osmosis data while keeping raw values and anomaly decisions visible.

Prepare once for the week

Open this week’s folder. Download or sync the complete folder to the classroom PC. Start the named PowerPoint in Slide Show mode. Print the selected PDF route; the Word sheet is an editable master. Keep teaching plans and mark schemes in staff storage.

Wednesday defaults to planning and labelled sample-data analysis. If the approved potato practical is arranged, agree the exposure interval, adult supervision and named collection handover before the lesson. A teacher or technician collects the results after the approved exposure; keep those results for Friday. Do not leave potatoes soaking until Friday. Watching a video or using staff samples does not establish pupil practical completion.

Teaching decisions

Use one shared route: PowerPoint activity, paper or the linked online model. A video replaces up to 90 seconds of the relevant model, rather than adding time. Use the prompt and still diagram if playback is unavailable. Linked videos are freesciencelessons GCSE concept explanations; their AQA practical numbering is not this centre’s assessment record.

If more time is needed, drop optional continuation. Keep one model, one supported attempt and independent evidence, then the Exit. Offer the least help first and leave the pupil’s choice and explanation theirs.

Timetable source: Timetables 2026_2027 (2).xlsx, Launch B5/D5/F5; Matt D3/D9/D15.

W5L1 | Osmosis

Monday | 09:30–10:10 | Introduce

Say: Osmosis is net water movement through a partially permeable membrane from a more dilute to a more concentrated solution.

09:30–09:33 | Arrival

What does net movement mean? Receive a short answer or a point to the image.

09:33–09:37 | Starter

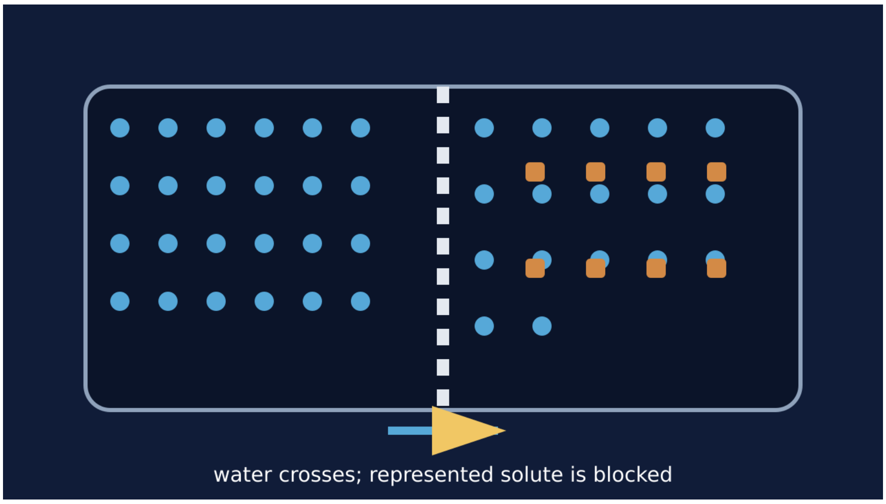
A membrane lets water through but blocks large solute particles. Which substance can show osmosis in this model? Take a reason before revealing the answer.

09:37–09:42 | I Do

Water particles move randomly on both sides of the membrane. The partially permeable membrane allows water through but blocks the represented solute. Net water movement is from the more dilute solution to the more concentrated solution in this model.

09:42–09:47 | We Do

Which definition is specific to osmosis? Answer: Net movement of water through a partially permeable membrane from a more dilute to a more concentrated solution. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W5L1 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

A more dilute solution has a higher concentration of water in the simplified GCSE model. Water can move both ways, but the net movement follows the difference between sides. Cells and tissues gain or lose water depending on the surrounding solution.

09:51–09:57 | We Do 2 · Task

Draw a plant cell in each of three labelled surroundings: more dilute than its cell solution, equal, and more concentrated. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A plant cell is placed in sugar solution more concentrated than its cell solution. Explain the net movement of water and why the solute representation does not cross the membrane in this model. Then distinguish the process from active transport. Select one correction on the same work.

10:07–10:10 | Exit

Which substance and membrane condition distinguish osmosis? Receive a specific learning request and agree the next action.

Watch for: The potato is tissue, not a single membrane. Its cells have membranes. “Concentrated” must be relative to the solution on the other side.

Least help first: Ask what can cross the membrane and compare the solutions before giving any direction cue.

W5L2 | Osmosis Investigation

Wednesday | 09:30–10:10 | Explore

> **Say:** Today's default cover route is planning and sample-data analysis. A full soak, repeated measurements and graph do not fit inside a six-minute shared-task slot.

09:30–09:33 | Arrival

State the independent variable in a potato osmosis investigation. Receive a short answer or a point to the image.

09:33–09:37 | Starter

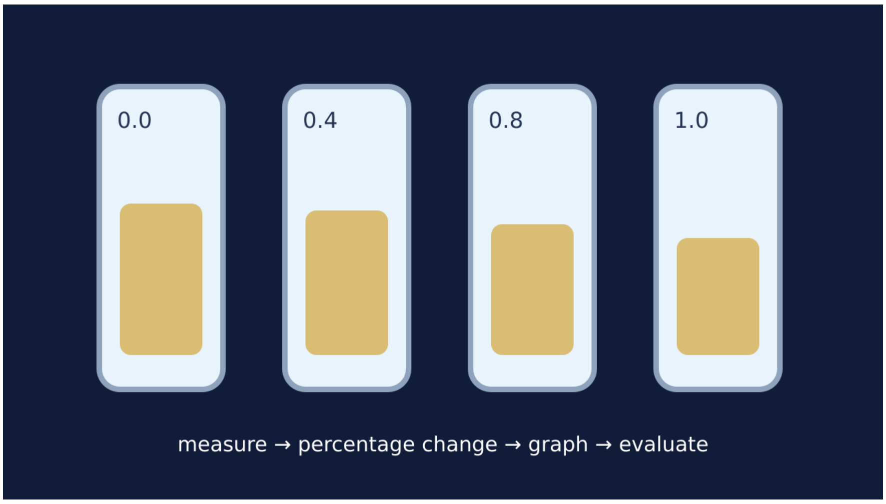
Two identical potato cylinders start at 3.00 g. Which result would be strongest evidence of net water movement: colour change, final mass or beaker position? Take a reason before revealing the answer.

09:37–09:42 | I Do

Change solution concentration and measure the potato cylinder's mass change. Control potato source, dimensions, solution volume, time, temperature and blotting method. Use repeats where possible and keep every raw value, including an unusual result.

09:42–09:47 | We Do

Why is percentage change more useful than mass change alone when starting masses differ? Answer: It compares the change with the starting value. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W5L2 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Percentage change = (final mass − initial mass) ÷ initial mass × 100. A positive result means mass gain; a negative result means mass loss. Link each weakness to its effect on the result and a clear improvement.

09:51–09:57 | We Do 2 · Task

Choose the paper/sample route unless the approved practical has been arranged with suitable staffing and equipment. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A group uses potato cylinders with different diameters and blots some for two seconds and others for ten seconds. Explain two threats to validity or measurement quality. For each, state the likely consequence and a specific improvement. Then explain what a negative percentage change means in terms of osmosis. Select one correction on the same work.

10:07–10:10 | Exit

Why is ‘repeat it’ incomplete as an evaluation unless you explain what repeats improve? Receive a specific learning request and agree the next action.

Watch for: Only record practical completion for pupils who actually carry out the approved practical. Sample data and pre-soaked staff samples are not proof of that completion.

Least help first: Ask what must stay the same and what the named problem could do to the measured mass before suggesting an improvement.

W5L3 | Osmosis Data

Friday | 09:30–10:10 | Do

> **Say:** Keep the raw data visible. Flag unusual values and investigate. Never delete a value simply because the graph looks tidier without it.

09:30–09:33 | Arrival

What does a negative percentage change mean? Receive a short answer or a point to the image.

09:33–09:37 | Starter

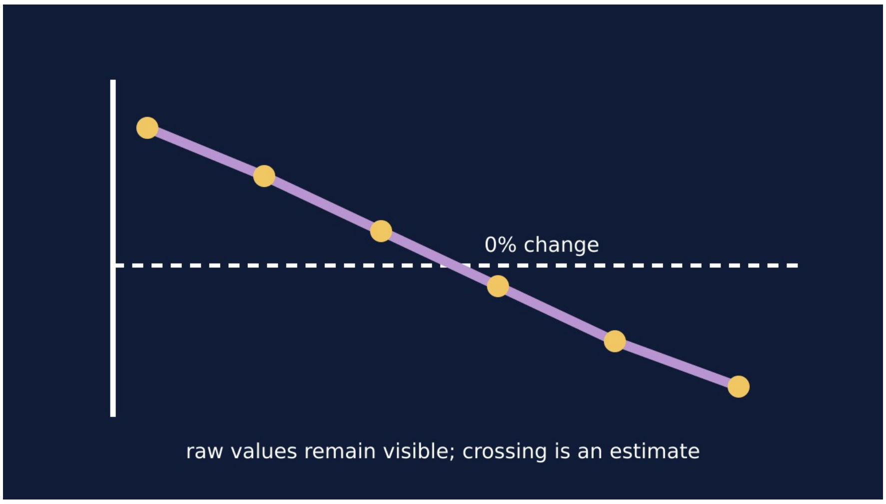
One repeat is very different from two others. Should it be erased, automatically excluded or investigated and kept visible? Take a reason before revealing the answer.

09:37–09:42 | I Do

Show every raw result before calculating a mean. Flag an unusual value and record whether it is included, with a reason. Plot concentration on the x-axis and mean percentage change in mass on the y-axis with units.

09:42–09:47 | We Do

What does a graph crossing near 0% mass change suggest? Answer: The tested tissue and solution had little or no net water movement under those conditions. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W5L3 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Description states the pattern in the plotted data. Inference links the pattern to osmosis and the tested tissue. Evaluation states how method or data could make the inference more secure.

09:51–09:57 | We Do 2 · Task

Use class data if available; otherwise label this dataset “illustrative sample data”. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

The mean percentage change falls from +12% at 0.2 mol dm^{-3} to −8% at 0.6 mol dm^{-3}. Estimate the concentration where change may be zero and explain why the estimate should be reported as approximate. Suggest one additional data point that would improve it. Select one correction on the same work.

10:07–10:10 | Exit

Complete: an anomaly is not automatically wrong because… Receive a specific learning request and agree the next action.

Watch for: Between +12% at 0.2 and −8% at 0.6, straight-line interpolation gives 0.44 mol dm^{-3}, not the midpoint 0.4.

Least help first: Ask what the data shows before asking what it means, and require a reason for any exclusion decision.

Week 6 | Active transport

Weekly teaching plan | LAUNCH Science | Autumn 1

Timetable: Monday, Wednesday and Friday | Period 1 | 09:30–10:10

Week commencing: ___________________

Day	Lesson	Learning focus
Monday	W6L1 · Introduce	I can explain how active transport moves substances against a concentration gradient and needs energy from respiration.
Wednesday	W6L2 · Explore	I can use concentration and respiration evidence to decide when diffusion alone cannot explain uptake.
Friday	W6L3 · Do	I can select and justify the correct transport process in unfamiliar biological scenarios.

Prepare once for the week

Open this week’s folder. Download or sync the complete folder to the classroom PC. Start the named PowerPoint in Slide Show mode. Print the selected PDF route; the Word sheet is an editable master. Keep teaching plans and mark schemes in staff storage.

Use counters or the projected model. Friday includes printable scenario cards. Pupils can place, number or point to cards; cutting and dragging are optional. Ask for concentration and energy evidence before naming the process.

Teaching decisions

Use one shared route: PowerPoint activity, paper or the linked online model. A video replaces up to 90 seconds of the relevant model, rather than adding time. Use the prompt and still diagram if playback is unavailable. Linked videos are freesciencelessons GCSE concept explanations; their AQA practical numbering is not this centre’s assessment record.

If more time is needed, drop optional continuation. Keep one model, one supported attempt and independent evidence, then the Exit. Offer the least help first and leave the pupil’s choice and explanation theirs.

Timetable source: Timetables 2026_2027 (2).xlsx, Launch B5/D5/F5; Matt D3/D9/D15.

W6L1 | Active Transport

Monday | 09:30–10:10 | Introduce

> **Say:** Active transport uses energy released by respiration to move a substance against its concentration gradient through membrane transport proteins.

09:30–09:33 | Arrival

What does ‘down a concentration gradient’ mean? Receive a short answer or a point to the image.

09:33–09:37 | Starter

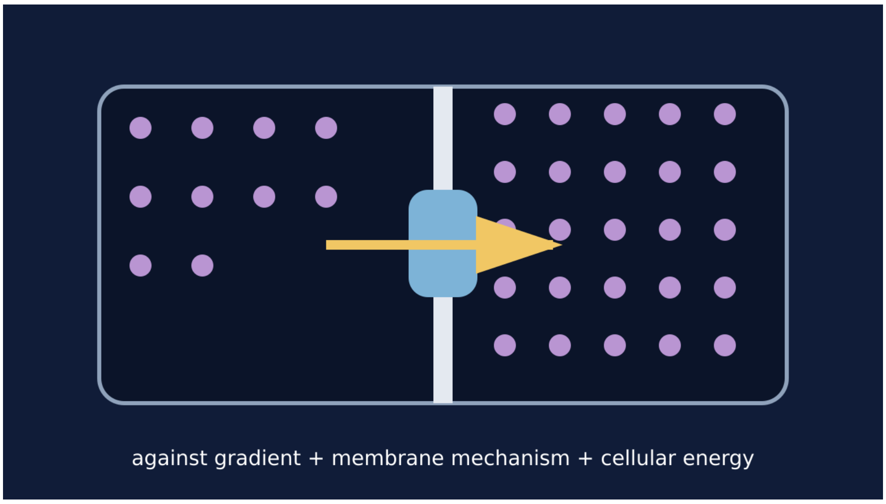
Mineral ions enter a root hair cell even when their concentration is already higher inside. Can diffusion alone explain this? Take a reason before revealing the answer.

09:37–09:42 | I Do

The observed movement is from lower concentration outside to higher concentration inside. That direction is against the concentration gradient, so diffusion cannot be the full explanation. Membrane proteins use energy from respiration to move the substance.

09:42–09:47 | We Do

Which combination identifies active transport? Answer: A substance moved against its concentration gradient and needed energy. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W6L1 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Diffusion: net particle movement is down a concentration gradient. It does not need energy from respiration. Osmosis: water moves through a partially permeable membrane. It does not need energy from respiration. Active transport: a substance moves against its concentration gradient using energy from respiration.

09:51–09:57 | We Do 2 · Task

Draw two equal-volume regions: 2 nitrate-ion counters outside and 8 inside, separated by a membrane. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

A cell keeps taking in nitrate ions when their concentration is lower outside than inside. Explain why active transport is needed. Predict what happens if respiration falls. Select one correction on the same work.

10:07–10:10 | Exit

Why is ‘active transport is fast diffusion’ scientifically wrong? Receive a specific learning request and agree the next action.

Watch for: Diffusion is random at particle level. The contrast is net movement down a gradient versus energy-dependent movement against it, not “diffusion never moves backwards”.

Least help first: Ask the pupil to compare concentrations and trace the movement arrow before naming the process.

W6L2 | Root Hairs And Gut

Wednesday | 09:30–10:10 | Explore

Say: Use two clues: direction relative to the gradient and dependence on respiration. “Root hair” or “gut” alone does not determine every transport mechanism.

09:30–09:33 | Arrival

Why can root hairs need active transport? Receive a short answer or a point to the image.

09:33–09:37 | Starter

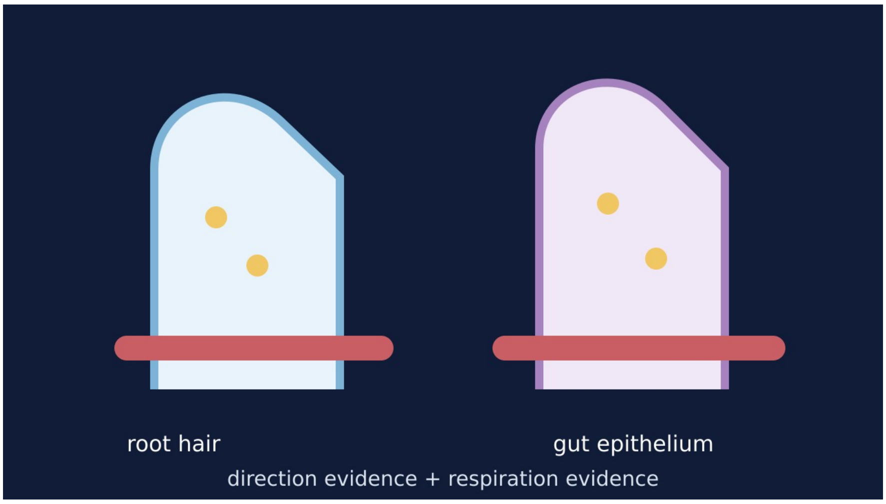
Mineral uptake falls when root cells receive less oxygen. Which explanation should be investigated first? Take a reason before revealing the answer.

09:37–09:42 | I Do

Root hair cells contact soil water across a large surface area and may take up mineral ions against a gradient. Small-intestine cells absorb digested food. Diffusion can help, but active transport can keep uptake going against the gradient. Evidence that uptake falls when respiration is inhibited supports an energy-dependent mechanism.

09:42–09:47 | We Do

Which evidence most strongly supports active transport rather than diffusion alone? Answer: Uptake continues against the gradient and falls when respiration is inhibited. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W6L2 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Evidence 1: direction against the concentration gradient. Evidence 2: uptake changes when respiration or energy supply changes. Large surface area and many transport proteins allow more uptake. Energy released by respiration supports active uptake.

09:51–09:57 | We Do 2 · Task

Read the concentration evidence. The numbers are model values in the same units. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

Glucose concentration in the small intestine becomes lower than in an epithelial cell, but glucose uptake continues. Uptake falls when respiration is inhibited. Explain the mechanism and link one cell adaptation to its function. Select one correction on the same work.

10:07–10:10 | Exit

Why is ‘root hair cells have a large surface area’ incomplete without a function link? Receive a specific learning request and agree the next action.

Watch for: The gut can use more than one transport mechanism. Here the stated against-gradient uptake and energy evidence support active transport.

Least help first: Ask whether concentration evidence alone is enough, then prompt for a second clue about energy or respiration.

W6L3 | Compare Transport

Friday | 09:30–10:10 | Do

> **Say:** Read the evidence before naming the process. Some statements belong to more than one process; some scenarios do not contain enough information.

09:30–09:33 | Arrival

Which process moves water only? Receive a short answer or a point to the image.

09:33–09:37 | Starter

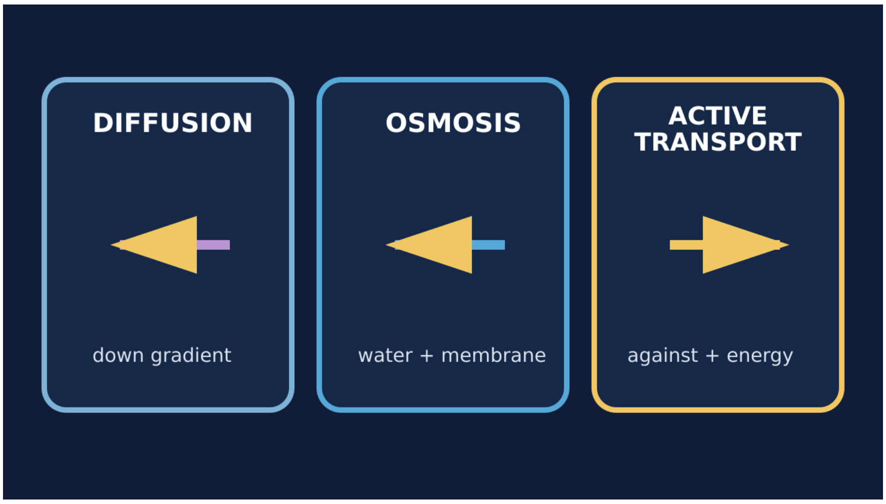
Water enters a plant cell through a partially permeable membrane. Which single clue should decide the process first? Take a reason before revealing the answer.

09:37–09:42 | I Do

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

09:42–09:47 | We Do

Which sentence compares rather than lists? Answer: Both can move substances across membranes, whereas only active transport can move against a concentration gradient using cellular energy. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W6L3 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

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

09:51–09:57 | We Do 2 · Task

Cut the four scenario cards or number them on paper; a seated route works equally well. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

Compare diffusion and active transport. Then decide which process best explains each case: (1) oxygen entering blood from alveoli; (2) water entering a root hair cell through its partially permeable membrane; (3) mineral ions entering a root hair cell against their concentration gradient. Justify each decision. Select one correction on the same work.

10:07–10:10 | Exit

Complete with precision: only active transport… Receive a specific learning request and agree the next action.

Watch for: “Water only” points to osmosis, but the membrane and relative solutions still matter. Movement through a membrane alone does not prove active transport.

Least help first: Ask for the deciding clue before accepting a process label; then ask for one linked comparison.

Week 7 | Review and response

Weekly teaching plan | LAUNCH Science | Autumn 1

Timetable: Monday, Wednesday and Friday | Period 1 | 09:30–10:10

Week commencing: ___________________

Day	Lesson	Learning focus
Monday	W7L1 · Introduce	I can retrieve and connect microscopy, transport, practical and data ideas before choosing what to revisit.
Wednesday	W7L2 · Explore	I can decode a command word, select the required answer shape and improve a Biology response.
Friday	W7L3 · Do	I can independently apply Topic 1 Biology, use answer-shape feedback and improve my original work.

Prepare once for the week

Open this week's folder. Download or sync the complete folder to the classroom PC. Start the named PowerPoint in Slide Show mode. Print the selected PDF route; the Word sheet is an editable master. Keep teaching plans and mark schemes in staff storage.

Print the assessment for Friday. Use Q2, Q3 and Q5 only in the ten-minute Independent Task: 11 marks. The full 24-mark paper requires a separate 25-minute slot. Keep first attempts and scores private, and agree one precise next action.

Teaching decisions

Use one shared route: PowerPoint activity, paper or the linked online model. A video replaces up to 90 seconds of the relevant model, rather than adding time. Use the prompt and still diagram if playback is unavailable. Linked videos are freesciencelessons GCSE concept explanations; their AQA practical numbering is not this centre's assessment record.

If more time is needed, drop optional continuation. Keep one model, one supported attempt and independent evidence, then the Exit. Offer the least help first and leave the pupil's choice and explanation theirs.

Timetable source: Timetables 2026_2027 (2).xlsx, Launch B5/D5/F5; Matt D3/D9/D15.

W7L1 | Review

Monday | 09:30–10:10 | Introduce

> **Say:** This reviews cells, microscopy and transport taught so far. It is not a claim that every part of GCSE Topic 1, including enzymes, has been completed.

09:30–09:33 | Arrival

Write the magnification relationship. Receive a short answer or a point to the image.

09:33–09:37 | Starter

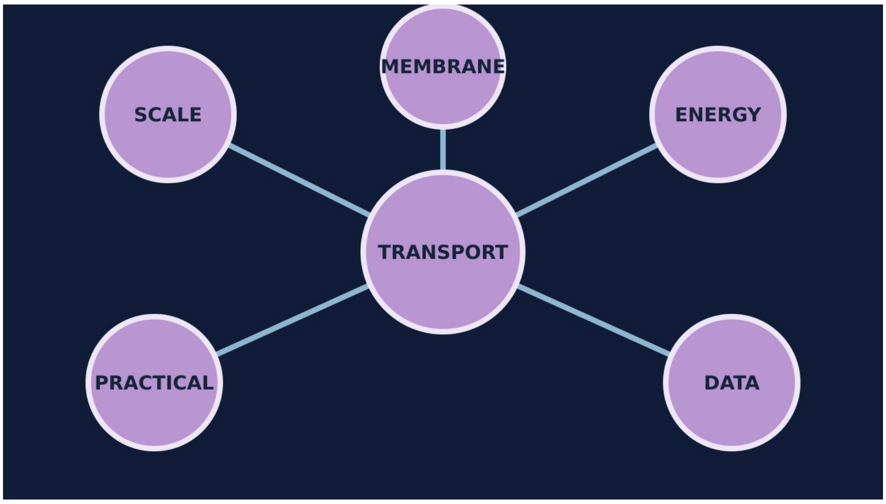
Which link is strongest: magnification ↔ unit conversion, osmosis ↔ percentage change in mass, or active transport ↔ respiration? Take a reason before revealing the answer.

09:37–09:42 | I Do

Retrieve an idea before opening its support card. Link concepts using a reason, not only a line between labels. Treat a wrong first response as a signal for the next retrieval item, not a permanent pupil label.

09:42–09:47 | We Do

Which connection is scientifically justified? Answer: A thinner alveolar wall shortens diffusion distance. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W7L1 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Microscopy links to magnification, units, scale and measurement uncertainty. Transport links to gradients, membranes, surface area, distance and energy. Practicals link variables to raw data, calculations, graphs, conclusions and evaluation.

09:51–09:57 | We Do 2 · Task

Teach the three cell adaptations below before using them in the map. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

Create a connected explanation using at least five of these ideas: magnification, micrometre, diffusion, concentration gradient, osmosis, percentage change, active transport, respiration, anomaly and control variable. Explain each link rather than listing terms. Select one correction on the same work.

10:07–10:10 | Exit

Which single connection do you now need to practise next, and what evidence led you to choose it? Receive a specific learning request and agree the next action.

Watch for: Do not turn confidence colours into public rankings. Ask for a piece of work or a corrected explanation to support a review choice.

Least help first: Ask for the reason connecting two ideas; do not turn the map into rapid-fire recall or a public score.

W7L2 | Command Words

Wednesday | 09:30–10:10 | Explore

Say: The command word tells you the kind of answer. Marks depend on the question and its mark scheme, not magic words such as “whereas”.

09:30–09:33 | Arrival

What does ‘describe’ ask you to do with data? Receive a short answer or a point to the image.

09:33–09:37 | Starter

A response says ‘The potato lost mass.’ Which command word could this satisfy most directly: state, explain or evaluate? Take a reason before revealing the answer.

09:37–09:42 | I Do

Underline the command word and identify the answer shape before retrieving content. Use the data or context evidence named in the question. Add only the reasoning demanded: explanation, comparison, calculation steps or evaluation chain.

09:42–09:47 | We Do

Which answer best fits ‘evaluate the method’? Answer: Unequal cylinder diameter changes surface area, so concentration is not the only cause; use equal diameters. Ask for the deciding step.

Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W7L2 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

State: give a concise fact or value. Describe: identify the pattern or feature shown by evidence. Explain: link scientific cause to consequence. Compare: give relevant similarities and differences, linked to the question. Calculate: show relationship, substitution, working and unit. Evaluate: weigh relevant evidence or method strengths and limits; justify a judgement or improvement. Suggest: propose a scientifically plausible response to the context.

09:51–09:57 | We Do 2 · Task

Identify the command word before you answer. Use the shared-task board; reveal only after a pupil decision.

09:57–10:07 | Independent Task

For each command word, write the first sentence or calculation line you would use: (1) describe the osmosis graph trend; (2) explain why a thin alveolar wall increases gas exchange; (3) compare diffusion and active transport; (4) evaluate inconsistent blotting; (5) calculate magnification from 30 mm and 75 µm. Select one correction on the same work.

10:07–10:10 | Exit

Which command word most often needs a scientific ‘because’ link, and why? Receive a specific learning request and agree the next action.

Watch for: “Evaluate” is more than listing improvements: weigh relevant evidence or method strengths/limits and make a supported judgement where asked.

Least help first: Ask which command word sets the answer shape before prompting Biology content.

W7L3 | Assessment And Response

Friday | 09:30–10:10 | Do

> **Say:** This is original low-stakes classroom assessment, not an official Pearson paper and not a grade predictor. Use agreed access arrangements and keep results private.

09:30–09:33 | Arrival

What should happen before opening an answer checklist? Receive a short answer or a point to the image.

09:33–09:37 | Starter

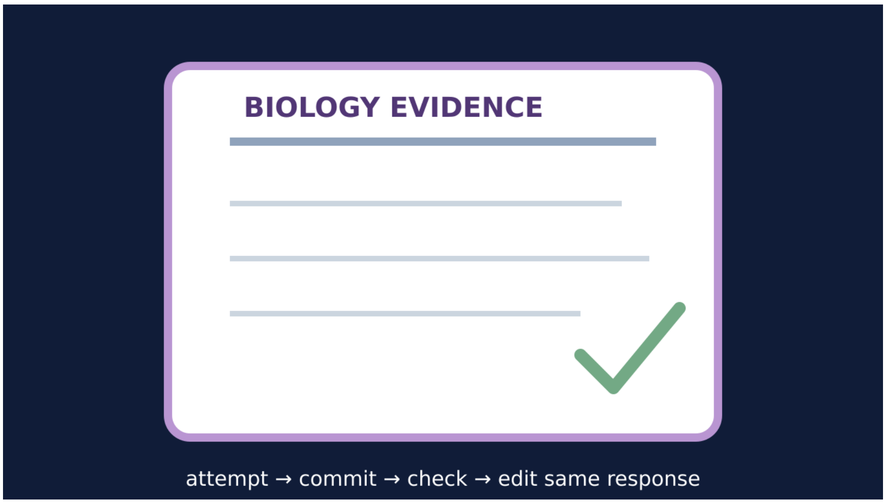
Which mode best protects independence today: focus on one item, question-by-question, or full-paper mode? Choose and give a reason. Take a reason before revealing the answer.

09:37–09:42 | I Do

Read the command word and evidence before writing. Show calculation relationships, substitutions and units rather than a final number alone. Commit the response before using a teaching checklist; then edit the same work.

09:42–09:47 | We Do

After committing an explanation, what is the most useful next action? Answer: Open the answer-shape checklist, identify one missing link and edit the same answer. Ask for the deciding step.



Teaching visual from the matching online lesson. A model, not evidence of practical completion. Use within the modelling time.

W7L3 | Continue the lesson

Second half | Keep the same 40-minute sequence

09:47–09:51 | I Do 2

Calculation item: relationship → unit conversion → working → plausible answer. Data item: pattern → evidence values → cautious interpretation. Explanation item: science idea → because → consequence. Practical item: issue → result consequence → improvement. Application item: select relevant evidence and transfer the process.

09:51–09:57 | We Do 2 · Task

Use a separate practice example. Identify the command word and answer shape; save assessment Q2, Q3 and Q5 for the first attempt.

09:57–10:07 | Independent Task

Assessment Q2, Q3 and Q5 only, 11 marks. Do not reveal the mark scheme during the first attempt. Select one correction on the same work.

10:07–10:10 | Exit

What changed in your work because feedback was received, and what should happen next? Receive a specific learning request and agree the next action.

Watch for: A 25-minute paper cannot fit inside a 10-minute Independent Task. The main lesson uses a selected short set; the complete paper is a separately scheduled option.

Least help first: Ask which command word and answer-shape element is missing; preserve authorship and avoid dictating the final response.