Practice: transport and respiration

Student activity • observation and reasoning

YEAR 10 / LESSON 26 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

Can you distinguish what the evidence shows from what it merely suggests?

Use the supplied examples, record your reasoning and correct it using evidence.

Equipment

- Student booklet, paper models, pencil and ruler

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

Course coverage: Original shared-core practice: transport, respiration and fermentation.

Plan, model or apparatus sketch

Draw and label the apparatus or biological model; identify one limitation.

Method and reasoning

Read the whole sequence before starting

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1. Attempt the six original questions independently, showing equations, calculations and biological reasons.

2. Use the fictional values in the reference box only for the specified calculations. Do not present them as class measurements.

3. For investigation questions identify both the variable being changed and a plausible alternative explanation that a control addresses.

4. Use the teacher guide to correct each answer in a different colour, keeping your initial attempt visible.

5. Sort mistakes into knowledge, calculation or interpretation; explain one correction to a partner.

6. Choose a specific revision task and answer one of the questions again without looking at the guide.

Cleanup

- Return models and keep the corrected work.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Practice data only: a potato cylinder changes from 0.90 to 0.99 g. A live-seed flask rises from 22 to 27 °C, while a killed-seed flask rises from 22 to 24 °C and the room warms from 22 to 24 °C. A dough sample changes from 50 to 65 cm³ in 30 minutes.

Example / trial	Observation / evidence	Explanation / limit
Calculation and working		
Evidence and alternative explanation		
Correction and revision target		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Calculate the potato percentage mass change.

2. Explain the likely net water movement.

3. What evidence in the flask data supports an effect beyond room warming?

4. Give the balanced aerobic respiration equation.

5. Calculate the mean dough-volume increase per minute over the interval.

6. Why is this dough value not a direct measurement of anaerobic respiration rate?