Analysing potometer evidence

Student activity • observation and reasoning

YEAR 10 / LESSON 46 / BIOLOGY ONLY

The question

What conclusions do the measurements justify?

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

Equipment

- Student booklet, Lesson 42 results or the supplied labelled practice dataset
- Graph paper, calculator, pencil and ruler

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

Course coverage: Biology only: 2.58B. Transpiration investigation analysis.

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. Use actual Lesson 42 results or the labelled practice data below; never combine the two as experimental results.

2. Calculate displacement/time for each repeat, then the mean for each condition.

3. Plot a bar chart of condition means with units and repeat range.

4. If the internal capillary radius is known, calculate volume using $\pi r^2 d$.

5. Compare initial and final still-air readings for drift.

6. Write a conclusion including controls, variation and the distinction between uptake and water loss.

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

Invented arithmetic practice only: bubble displacements in 120 s are 6, 8, 7 mm in still air and 12, 14, 13 mm with a fan. Final still-air check: 8 mm. These are not classroom measurements.

Example / trial	Observation / evidence	Explanation / limit
Evidence / comparison		
Explanation		
Limit / correction		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Find the still-air mean rate.

2. Find the fan mean rate.

3. Which graph suits two categories?

4. Are repeats on one shoot independent plants?

5. What can a changed final control indicate?

6. Does uptake equal water loss exactly?