Review: photosynthesis and leaf exchange

Student activity • observation and reasoning

YEAR 10 / LESSON 36 / BIOLOGY + SCIENCE (DOUBLE AWARD)

The question

Can you connect the equation, leaf structures and practical evidence?

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: Shared photosynthesis review; Biology-only leaf gas-exchange extensions marked.

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. Write and balance the photosynthesis equation without notes, then explain the roles of light and chlorophyll.

2. Draw a leaf cross-section and link each labelled tissue to photosynthesis, transport or exchange.

3. Compare what a starch test and a pondweed bubble count can show; include one limitation of each.

4. Analyse the claim “more light always increases photosynthesis” using limiting factors and temperature control.

5. Biology extension: combine photosynthesis and respiration rates to explain net gas exchange in light and darkness.

6. Correct two misconceptions from your earlier work and state one measurable improvement to a practical.

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

Shared core includes photosynthesis, leaf adaptations and practical evidence. Biology extensions include detailed net leaf gas exchange and stomata. Use actual observations where available; do not replace unexpected outcomes with expected patterns.

Example / trial	Observation / evidence	Explanation / limit
Equation and tissue links		
Evidence and limitations		
Corrections / practical improvement		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. Give the balanced equation.

2. Why remove chlorophyll before adding iodine?

3. Why is bubble count a proxy?

4. What can limit rate when light is abundant?

5. Biology: does zero net CO_2 exchange mean neither process occurs?

6. Give one fair-test control for a light investigation.