Leaf structure under the microscope

Teacher / technician

YEAR 10 / LESSON 29 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Microscopy and setup observation only; this lesson does not claim a positive starch result before the following investigation.

Coverage and delivery

Shared Biology / Double Award: 2.21. Leaf adaptations; preparation for 2.23 starch investigation.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Microscopes / prepared leaf slides	1 set per pair	15 sets
Booklets / rulers	2 booklets and 1 ruler per pair	30 booklets; 15 rulers
Covered-leaf plant	staff-prepared, labelled	1 demonstration setup

Immediate safety

Handle slides by their edges and report broken glass. Carry microscopes securely, keep lenses clear of the slide and use fine focus at high power.

Preparation and delivery

Read alongside the student method

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1. Check prepared slides and select visible sections in advance. Keep a reference diagram available without treating it as a pupil observation.

2. Use a healthy previously destarched plant for the next lesson's light-exclusion comparison. Label the foil pattern and treatment duration before illumination.

Close of lesson

- Return labelled slides to their storage boxes; lower the stage, switch off and cover microscopes as directed.
- Leave the teacher's covered-leaf preparation in its assigned light treatment and keep the treatment map.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- A wider field makes the specimen easier to locate and reduces collision risk.
- ×100.
- They provide internal gas pathways and a large moist cell-surface area for exchange.
- It shortens diffusion distances.
- Xylem supplies water/mineral ions; phloem transports organic solutes such as sucrose.
- To compare the later starch pattern with the light treatment accurately rather than relying on memory.

References and provenance

Pearson Biology specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.