BIOLOGY YEAR 11 - MODULE 2 - LESSON 9

Gas Exchange in Plants

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

Plants need to exchange gases for both photosynthesis and respiration — but they have no lungs, no pump, and no circulatory system. Understanding how gas moves into and out of plant tissues, and how plants regulate that movement, is the focus of this lesson.

- Explain the role of stomata in gas exchange during photosynthesis and respiration
- Investigate gas exchange structures in plants

2. Success Criteria

By the end, you should be able to:

- Explain the role of stomata in gas exchange during photosynthesis and respiration
- Describe the guard cell mechanism for stomatal opening and closing
- Trace gas movement through a leaf during photosynthesis and respiration

3. Key Terms

unequally thick cell walls
the structural basis for the opening and closing mechanism

Stomata
open all the time to maximise gas exchange

They
the primary route for gas exchange between the leaf interior and the atmosphere — allowing CO_2 to enter for photosynthes

you learned that stomata
found predominantly on the lower epidermis of leaves to reduce water loss from direct sun exposure

water loss
an unavoidable cost of keeping stomata open for CO_2) NET: CO_2 in · O_2 out · H_2O vapour out

both processes
occurring at full rate simultaneously

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "Explain the role of stomata in gas exchange during photosynthesis and respiration". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Describe the guard cell mechanism for stomatal opening and closing". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Gas Exchange in Plants: "Trace gas movement through a leaf during photosynthesis and respiration".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Gas Exchange in Plants but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Gas Exchange in Plants?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Gas Exchange in Plants?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: Explain the role of stomata in gas exchange during photosynthesis and respiration

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Describe the guard cell mechanism for stomatal opening and closing

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Trace gas movement through a leaf during photosynthesis and respiration

BAND 5 4 MARKS

One thing I still need help with: