B3.1 Gas exchange in plants

What the Cell · DP Biology · note-taking sheet · plant statements B3.1.7–10

Name _____ **Date** _____

How to use this sheet: go through the slides and videos with it, then close them and write from memory. Use your own words and add page numbers from the book where you want more detail.

B3.1.7 How leaves are adapted to exchange gases

Textbook pp. 283–286

Structure	How it is adapted to gas exchange
Waxy cuticle	
Epidermis	
Air spaces	
Spongy mesophyll	
Stomatal guard cells	
Veins	

Explain how guard cells open and close a stoma. Use the words **turgid** and **flaccid**.

B3.1.8 How tissues are arranged in a leaf

Textbook pp. 284–286

Draw a plan diagram of a transverse section of a dicot leaf. Label the **waxy cuticle**, **upper and lower epidermis**, **palisade mesophyll**, **spongy mesophyll**, **xylem** and **phloem**.

B3.1.9 Why gas exchange leads to transpiration

Textbook pp. 286–288

Explain why a leaf cannot take in carbon dioxide without losing water vapour.

Factor	Effect of an increase	Explanation, using concentration gradients
Temperature		
Humidity		
Wind		
Light		

What does a potometer actually measure? Why is this not exactly the same as transpiration?

B3.1.10 Stomatal density

Textbook pp. 289–291

Record your results from the leaf cast practical.

	Field 1	Field 2	Field 3	Mean
Stomata counted				

Field diameter: _____ mm Area of field ($3.14 \times r^2$): _____ mm^2 Density: _____ per mm^2

Suggest why stomatal density differs between species.

Before you finish

Tick the ones you can explain without notes. Circle anything to ask about.

- ☐ Each leaf adaptation
- ☐ How guard cells work
- ☐ A plan diagram of a leaf
- ☐ Why transpiration happens
- ☐ Four factors affecting its rate
- ☐ How a potometer works
- ☐ How to make a leaf cast
- ☐ How to calculate density