

6.2 Leaf structure

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS stomata 气孔 • mesophyll 叶肉 • cuticle 角质层 • palisade mesophyll 栅栏叶肉 • air spaces 气腔

Objective

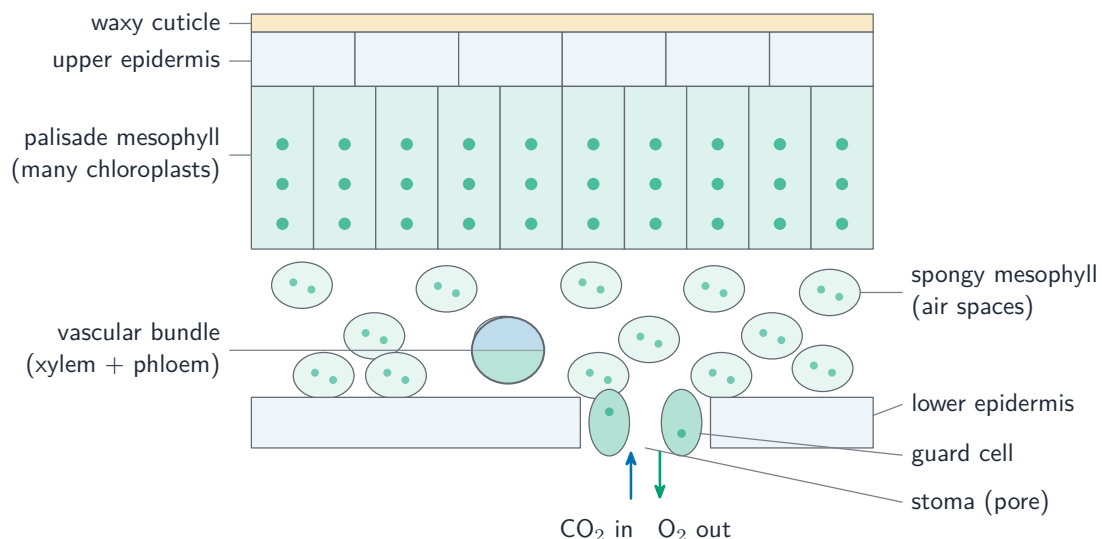
Build the skills to answer exam questions on **leaf structure** 叶的结构 — the tissues of a leaf and how each is **adapted** 适应 for photosynthesis and gas exchange.

You must be able to:

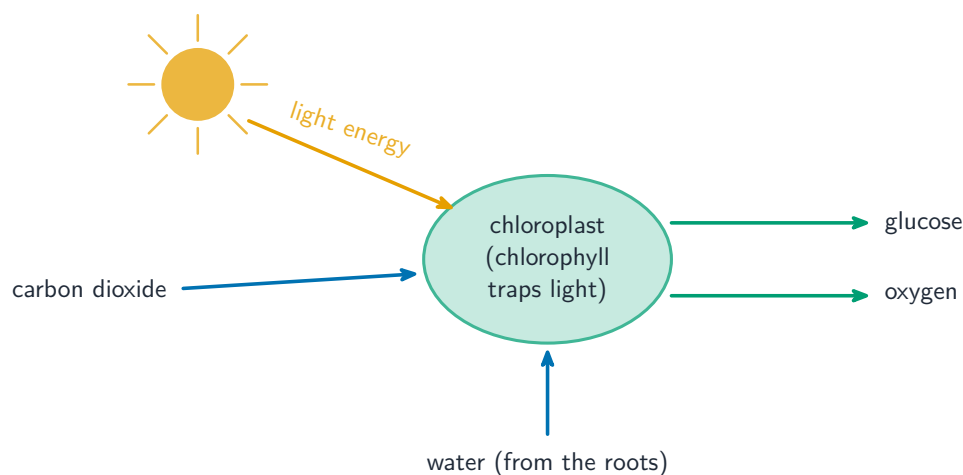
- name the leaf tissues and give the job of each
- explain how leaf features suit photosynthesis
- describe the role of stomata and guard cells

1 Worked examples

■ The leaf in cross-section



Each tissue is adapted for photosynthesis and gas exchange



The leaf is the organ of photosynthesis

- **palisade mesophyll:** packed with chloroplasts, near the top → most photosynthesis.
- **spongy mesophyll:** air spaces → gases move easily.
- **stomata** (lower surface) with **guard cells** → let CO₂ in, O₂ out.

2 Practice

2.1 Name the leaf tissue where most photosynthesis happens. [1]

2.2 State the function of the stomata. [1]

3 Exam-style questions

3.1 Palisade mesophyll cells are well suited to photosynthesis because they: [1]

- **A** have no chloroplasts
- **B** are packed with chloroplasts near the top of the leaf
- **C** are deep in the leaf
- **D** have a thick cuticle

3.2 A leaf is broad and thin.

(a) Explain how being broad helps the leaf. [1]

(b) Explain how the air spaces in the spongy mesophyll help. [2]

3.3 State the role of the guard cells. [2]

Solutions

2.1 the palisade mesophyll.

2.2 they let carbon dioxide in and oxygen out (gas exchange).

3.1 B. Palisade cells are packed with chloroplasts near the top.

3.2 (a) a large surface area catches more light.

(b) the air spaces let gases (CO_2 and O_2) move easily to and from the cells.

3.3 the guard cells open and close the stomata to control gas exchange (and water loss).