

Solutions

Each answer shows the steps, then the **result**.

2.1

- most photosynthesis happens in the **palisade mesophyll**

2.2

- stomata let **carbon dioxide in and oxygen out** (gas exchange)

3.1 B

- palisade cells are **packed with chloroplasts near the top** of the leaf
- A, C and D would reduce photosynthesis

3.2

(a)

- a broad leaf has a **large surface area** to catch more light

(b)

- air spaces let CO₂ and O₂ **move easily**
- to and from the cells

3.3

- guard cells **open and close** the stomata
- to control **gas exchange** (and water loss)

3.4

(a)

- **palisade**: tall cells full of chloroplasts at the top — most light absorbed
- **spongy**: large air spaces — gases **diffuse quickly**
- **stomata**: pores that open and close — CO₂ in, O₂ out, close to cut water loss

(b)

- the lower surface is **shaded and cooler**
- so **less water evaporates** than from the hot upper surface

(c)

- water arrives in the **xylem**
- sugars leave in the **phloem**

(d)

- **flat**: large surface area to catch light and exchange gases
- **thin**: short distance for CO₂ to **diffuse**