WHY GROVE · ANSWER KEY

Photosynthesis worksheet: answers

Part A: Label the diagram

1. Light
2. CO_2 in
3. O_2 and water vapour out
4. Waxy cuticle
5. Upper epidermis
6. Palisade mesophyll
7. Spongy mesophyll
8. Lower epidermis
9. Stoma
10. Chloroplasts
11. Air space
12. Vein

Part B: Fill in the blanks

1. chloroplasts
2. chlorophyll
3. carbon dioxide
4. oxygen
5. glucose
6. stomata
7. thylakoid
8. stroma

Part C: Complete the equations

1. carbon dioxide + **water** → **glucose** + oxygen (using light energy)
2. **6**CO_2 + **6**H_2O → $C_6H_{12}O_6$ + **6**O_2

Part D: Answer the questions

1. The palisade layer is just below the top of the leaf, where light is strongest, so packing chloroplasts there lets the leaf capture the most light.
2. Closing the stomata cuts down water loss, so the plant doesn't wilt. The trade-off is that less carbon dioxide gets in, so photosynthesis slows down.
3. The light-dependent reactions happen on the thylakoid membranes. The Calvin cycle happens in the stroma.
4. From water. Water is split in the light-dependent reactions, and the oxygen is released as a waste gas.
5. Any two of: respiration to release energy; stored as starch; built into cellulose for cell walls; turned into sucrose to move around the plant; used to make proteins, fats and oils.
6. It goes down. Light supplies the energy for the light-dependent reactions, so in dim light less ATP and NADPH are made for the Calvin cycle.

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