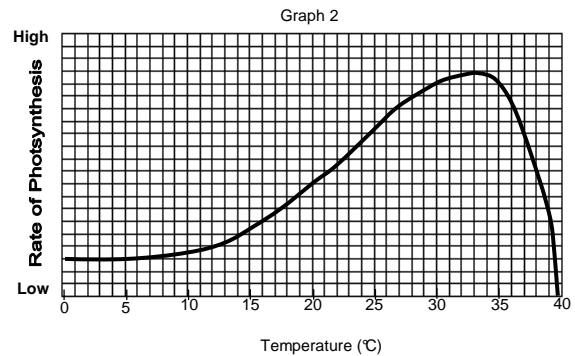
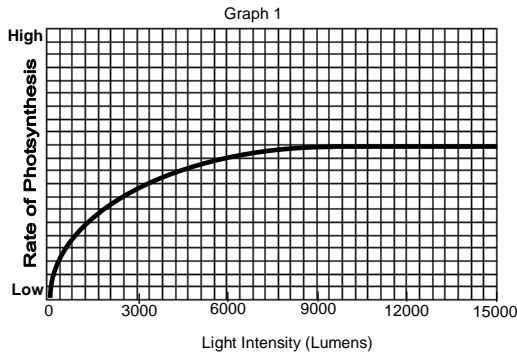


# TWO FACTORS AFFECTING PHOTOSYNTHESIS

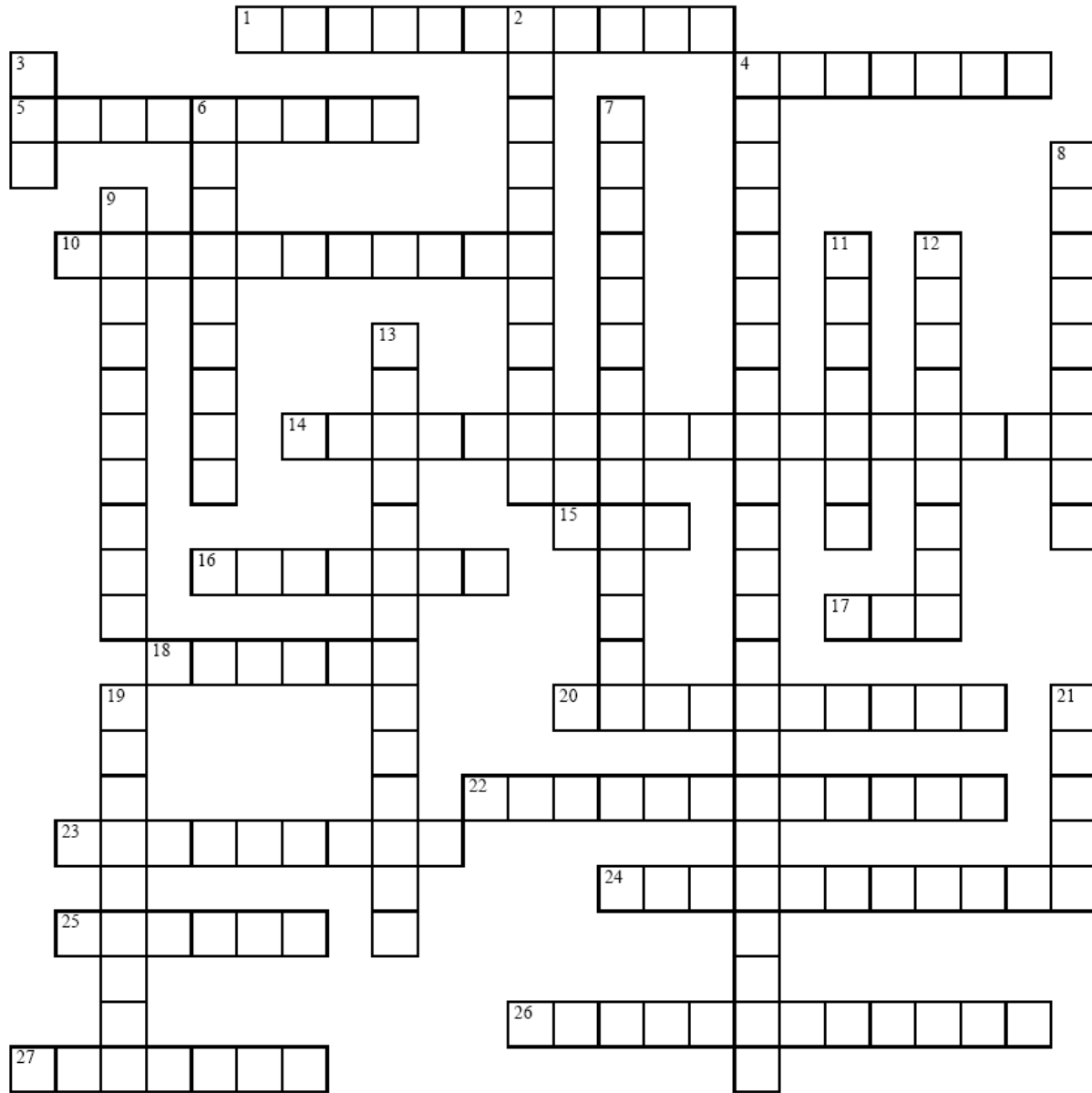
The rate at which photosynthesis occurs is not always the same. The amount of light, the level of temperature, the supply of carbon dioxide, the supply of water, and the availability of minerals are important factors that affect the rate of photosynthesis in land plants. The rate also varies by the species and its health and maturity.

The two graphs show the effects of light intensity and temperature on the rate of photosynthesis in land plants. These two factors affect many enzymes that control photosynthetic reactions (eg., photosystems, electron transport chains, etc.). Light intensity is measured in lumens, the SI unit for light flow. Study the graphs and answer the questions below.



1. What does Graph 1 tell about the effect of light intensity on the rate of photosynthesis?  
\_\_\_\_\_  
\_\_\_\_\_
2. What happens when light intensity rises over 9000 lumens?  
\_\_\_\_\_
3. What adaptive advantages would a plant have if its photosynthetic rate kept increasing above 9000 lumens?  
\_\_\_\_\_  
\_\_\_\_\_
4. What does Graph 2 show about the effect of temperature on the rate of photosynthesis?  
\_\_\_\_\_
5. What happens when the temperature rises past 33°C?  
\_\_\_\_\_
6. What might cause this change?  
\_\_\_\_\_  
\_\_\_\_\_
7. What light intensity and temperature levels allow the best photosynthesis rate?  
\_\_\_\_\_

# Photosynthesis



## ACROSS

1. Organelle where photosynthesis occurs.
4. Discrete particles of light.
5. Where the Light-Dependent Reaction occurs.
10. Orange accessory pigments.
14. Series of chemical reactions in a cell.
15. Type of plants where carbon fixation and the Calvin cycle occur in the same cell but at different times.
16. Aides in chemically binding carbon dioxide to RuBP.
17. The ultimate source of energy with most ecosystems.
18. Produced directly from the splitting of water.
20. Showed that light must be present for photosynthesis to occur.
22. Discovered the Light-Independent Reaction.
23. Makes up the cell walls in plants.
24. Must eat food to obtain energy.
25. Location of the Calvin Cycle.
26. Involves diffusion of hydrogen ions to make ATP.

## DOWN

2. Clusters of chlorophyll embedded within a protein.
3. Energy currency of the cell (Adenine, ribose & phosphates).
4. Accepts electrons from chlorophyll *a* in the photosystem.
6. Organisms that produce their own energy.
7. Incorporating carbon dioxide into organic compounds.
8. Ground tissue where most of the photosynthesis occurs.
9. Concluded most of a plant's mass comes from water.
11. Microscopic pores on leaves that regulated gas intake.
12. Chlorophyll is a type of this molecule.
13. Converting solar energy into chemical energy.
19. Discovered that plants release oxygen.
21. The electron carrier from the light-dependent reaction.