

## Photosynthesis Chapter 10

1. Distinguish between autotrophs and heterotrophs.
2. Describe the pathway taken by the CO<sub>2</sub> molecules used in photosynthesis from the atmosphere into the chloroplasts inside leaf cells.
3. Describe photosynthesis as a redox process.
4. For the reactants and products in photosynthesis, identify the steps in which each is used or produced.
5. Describe the path taken by carbon dioxide to reach the chloroplasts inside leaf cells.
6. The Calvin cycle requires ATP and NADPH, products of the light reactions. Provide a response to the claim that the light reactions don't depend on the Calvin cycle and, with continual light, could just keep on producing ATP and NADPH.
7. Explain why the leaves of most plants appear green.
8. Describe the events that occur when a photon is absorbed by a photosystem.
9. Identify the color of light that is least effective in providing energy for photosynthesis. Justify your response.
10. In an experiment, isolated chloroplasts placed in an illuminated solution with the required chemicals can produce ATP. Predict what would happen to the rate of ATP synthesis if a molecule is added to the solution that makes membranes freely permeable to hydrogen ions.
11. Explain how the high number of ATP and NADPH used by the Calvin cycle is consistent with the high energy content of glucose.
12. In an experiment, plant cells are exposed to a molecule that inhibits an enzyme of the Calvin cycle. Predict the effect of the molecule on the light reactions.
13. Describe photosynthesis and cellular respiration as reverse processes.