Master 15 Photosynthesis and Cellular Respiration

Photosynthesis: $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{light energy} \rightarrow \text{C}_6\text{H}_12\text{O}_6 + 6\text{O}_2$

Chloroplast

Calvin cycle

Light-dependent reactions

NADPH + $H^+$ + $ATP$

Cellular Respiration: $\text{C}_6\text{H}_12\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy}$

Mitochondrion

Citric acid cycle

Electron transport chain

NADH + $H^+$, $FADH_2$

Energy: 36 $ATP$

Glycolysis: $\text{C}_6\text{H}_12\text{O}_6 \rightarrow 2\text{Pyruvic acid} + 2\text{ATP}$

Use with Chapter 9, Section 9.3
1. In what organelles do photosynthesis and cellular respiration take place?

2. Trace the path of oxygen, water, carbon dioxide, and glucose in the transparency.

3. Which organelle requires sunlight to function?

4. In what ways are photosynthesis and cellular respiration alike?

5. In what ways are photosynthesis and cellular respiration different?

6. What is the source of energy used by mitochondria?

7. Which two cycles are linked by the production and utilization of carbon dioxide? Where do these cycles occur?

8. Explain how the equations for photosynthesis and cellular respiration compare.