Study Guide (Ch.'s 8-9) - Photosynthesis and Cellular Respiration

Photosynthesis

1. Energy is the ability to do work.
2. What are the parts of the ATP molecule? Adenine, ribose sugar, three phosphate groups
3. What kind of organisms are autotrophs or producers? Plants, algae, photosynthetic bacteria, seaweed, kelp
4. What process do all autotrophs do? Photosynthesis
5. What are the reactants for photosynthesis? Water and carbon dioxide (sunlight is also needed)
6. What are the products for photosynthesis? Glucose and oxygen
7. What three factors affect the rate of photosynthesis? Sunlight, temperature, amount of water
8. Describe the structure of the chloroplast.
    a. The granum is a stack of thylakoids. The light dependent reactions occur within the thylakoid membrane and produce ATP and NADPH to fuel the light-independent reactions which occur in the stroma.
    b. The stroma is the jelly that fills the empty space inside the chloroplast. In the stroma, carbon dioxide and the ATP and NADPH from the light-dependent reactions are used to create glucose.
9. The light independent reactions do not directly require sunlight, they just require the energy produced during the light-dependent reactions.
10. What kind of gas would be given off by something doing photosynthesis? Oxygen
11. When does photolysis occur and what happens? Photolysis occurs in the light dependent stage of photosynthesis. Sunlight is used to split water.
12. When is oxygen released during photosynthesis? During the light-dependent cycle.
13. Why are plants green? Because the chlorophyll pigment in leaves reflects green light at your eye.

Cellular Respiration

14. What kinds of organisms do cellular respiration? All organisms do cellular respiration
15. How is energy realeased from ATP? When a phosphate is removed from ATP, energy will be released.
16. What are the two types of anaerobic respiration? Lactic acid fermentation and alcoholic fermentation
17. Aerobic respiration and anaerobic respiration both start with what process? Glycolysis
18. The electron transport chain and the krebs cycle are both part of aerobic respiration.
19. Fermentation occurs in the absence of oxygen.
20. Alcoholic fermentation is important in making bread and alcoholic beverages.
21. Anaerobic respiration (fermentation) creates only 2 ATP, while aerobic respiration produces 36 ATP.
22. What builds up in your muscles as a result of lactic acid fermentation? Lactic acid
23. What kind of gas would be given off by something doing cellular respiration? Carbon dioxide
24. What are the reactants of cellular respiration? Glucose and oxygen