

Name _____

PHOTOSYNTHESIS READING GUIDE

Directions— Address each of the following in the spaces provided.

1. Describe the three stages of photosynthesis.
2. What is the overall chemical reaction for photosynthesis?
3. How many molecules of CO_2 and H_2O are needed to make one molecule of $\text{C}_6\text{H}_{12}\text{O}_6$?
4. Which two stages are included in the “light reactions” of photosynthesis?
5. What is meant by a pigment and why do we see pigments as being the colors they are?
6. What are the frequencies of light that are absorbed and reflected by chlorophyll?
7. Describe the relationship among the following: chloroplast, thylakoid membranes, and chlorophyll molecules.
8. Describe what happens when light strikes a chlorophyll molecule.
9. Where do plants obtain electrons to replace those that are lost when light strikes chlorophyll?

10. Describe the destination of oxygen, electrons and hydrogen ions when water molecules are split in photosynthesis (where do these things go?)
11. In stage two, where do electrons go after they are released from chlorophyll?
12. Define what is meant by an electron transport chain.
13. Describe what happens to hydrogen ions every time an electron is accepted and released from the electron transport chain?
14. Describe how hydrogen ions can become highly concentrated inside of the thylakoid membrane and then participate in the formation of ATP.
15. Describe the role of NADP⁺ as the final electron acceptor in the electron transport chain and how NADPH is formed.
16. Summarize in five sentences what happens in the light dependent reactions of photosynthesis.

17. What is the source of carbon atoms in the third stage of photosynthesis that are used to make organic compounds?

18. Describe what is meant by carbon fixation.

19. Summarize the Calvin Cycle (light independent reactions) in four steps being careful to point out the role of the ATP and NADPH formed in the light dependent reactions.