

***Unit 3: Photosynthesis
PowerPoint Questions***

Discovery of Photosynthesis:

1. List the reactants of photosynthesis.
2. List the products of photosynthesis.
3. What did Van Helmont concluded from his experiment?
4. What did Priestley conclude from his experiment?
5. Ingenhousz concluded that plants require _____ to produce the “burning gas”, oxygen.
6. What did Robert Mayer propose?
7. Samuel Ruben and Martin Kamen discovered that O₂ is liberated from _____.
8. What process did Melvin Calvin discovery? *List three names for process!*
9. Rudolpf Marcus discovered the _____.

Photosynthesis Part I:

1. Photosynthesis is an _____ reaction because it combines simple molecules into more complex molecules. Converts _____ energy into _____ energy.
2. Is photosynthesis an endergonic or exergonic reaction? Explain why.
3. What serves as the carbon source for photosynthesis?
4. Sunlight is absorbed as packets of energy called _____ (particles of light)

5. Besides CO₂, _____ is also used in photosynthesis to produce _____ molecules such as the sugar _____.
6. Plants can make their own food so they are called _____ (aka producers). Heterotrophs are consumers. Examples of producers _____, _____, and _____.
7. Photosynthesis occurs mainly in the _____ of plants.
8. Pores in the underside of leaves are called _____, while the cells in leaves that contain chlorophyll are called _____ cells.
9. The organelle in mesophyll cells that contains chlorophyll is called the _____.
10. Name two gases exchanged through the stomata of a leaf?
11. Besides gases, _____ vapor can be lost from a leaf.
12. How many membranes does a chloroplast have?
13. Stacks of thylakoids are called _____ and are _____ to each other. Stroma is a solution surrounding _____.
14. Chlorophyll molecules are located in the _____ membranes and harvest light _____. What is at the center of chlorophyll?
15. Chlorophyll and other pigments absorb _____ of light from 400nm to 700nm.
16. Chlorophyll absorbs _____ and _____ colors of light the best.
17. During the fall, what happens to the amount of chlorophyll being produced by plants?
18. Why do leaves turn colors in the fall?
19. What is a redox reaction?
20. _____ is the loss of electrons, while _____ is the addition or gaining of electrons.
21. _____ is oxidized and _____ is reduced in photosynthesis.

Photosynthesis Part II:

1. Name the first part of photosynthesis.
2. Light reactions use energy from the _____ to produce _____ and the energy carrier _____.
3. The second part of photosynthesis is called the _____ cycle.
4. Does the Calvin cycle require light energy?
5. The Calvin cycle is also called the _____ fixation or the _____ pathway.
6. Where do the light reactions of photosynthesis take place in a chloroplast?
7. Name the two possible routes energized electrons can take during the light reactions of photosynthesis.
8. The cyclic electron flow only uses _____ I in the thylakoid membranes and has chlorophyll a molecules at the photosystem's reaction center that absorbs _____ wavelength of light.
9. The only energy generated in the cyclic electron flow is _____.
10. The noncyclic electron flow uses both photosystem _____ and _____.
12. The noncyclic electron flow generates the gas _____, as well as _____ and the energy carrier _____.
13. Both photosystem I and II use the _____ transport _____ (ETC) to produce ATP.
14. Water is split in _____, while NADPH is made in _____.
15. Oxygen made by plants comes from the splitting of _____.
16. _____ is the energy molecule used by cells and must be remade by ATP _____ or chemiosmosis.
17. ATP _____ is the enzyme used to make ATP from ADP.
18. Most plants on Earth (80%) are known as _____ plants and use the _____ cycle to make sugars.
19. The Calvin cycle does _____ require light energy and occurs in the _____ of the chloroplast.
20. The energy for the Calvin cycle is _____ and _____ made during the light reactions.
21. The gas _____ is used in the Calvin cycle to make the sugar _____.

22. When conditions are hot and dry, _____ are closed to prevent water loss.
23. C₄ plants make a _____ carbon sugar called malate in the mesophyll cells that enters bundle sheath cells.
24. Name two CAM plants.
25. CAM plants _____ their stomata during the hot day and _____ them at night.
26. In CAM plants, the _____ reactions occur during the day, while the _____ cycle occurs at night when the stomata open and let _____ enter.
27. By closing their stomata during the day, CAM plants conserve _____.
28. What three conditions can affect the rate of photosynthesis?
- 1.
 - 2.
 - 3.