Photosynthesis Classwork Name: _____

7th Grade PSI

1. Where do all organisms get their energy?

2. Name at least three living things that can perform photosynthesis.

3. What are the chemicals used in the process of photosynthesis?

4. Why are chloroplasts essential to photosynthesis?

5. Describe the two stages of photosynthesis.

6. Write the equation for photosynthesis.

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7. What is the primary purpose of the process of photosynthesis?
8. Explain what parts of the plant collect the materials for photosynthesis.
9. What is the Calvin Cycle?
10. Why is the Calvin Cycle considered the light independent reactions?
11. Why is the word sunlight written above the yield symbol in the photosynthesis equation?
12. Identify the reactants and products of photosynthesis.
13. Why is photosynthesis important to all life?

Cellular Respiration Classwork Name: _____

7th Grade PSI

14. In which parts of a cell does the process of cellular respiration take place?

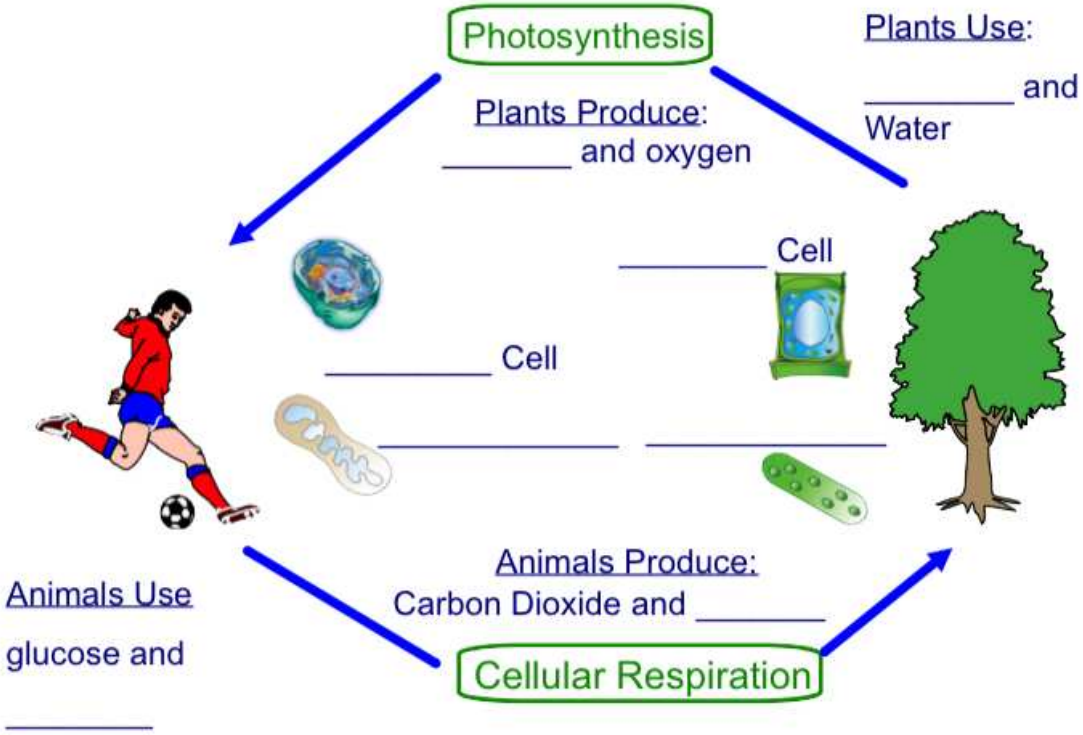
15. Explain how the products of photosynthesis are related to the process of cellular respiration.

16. Where does an organism find and take in glucose and oxygen?

17. Why is cellular respiration an exothermic process?

18. Why does the number of each molecule on each side of the cellular respiration equation stay the same?

19. Complete the drawing of matter and energy flow on Slide 37:



Cellular Respiration Homework Name: _____

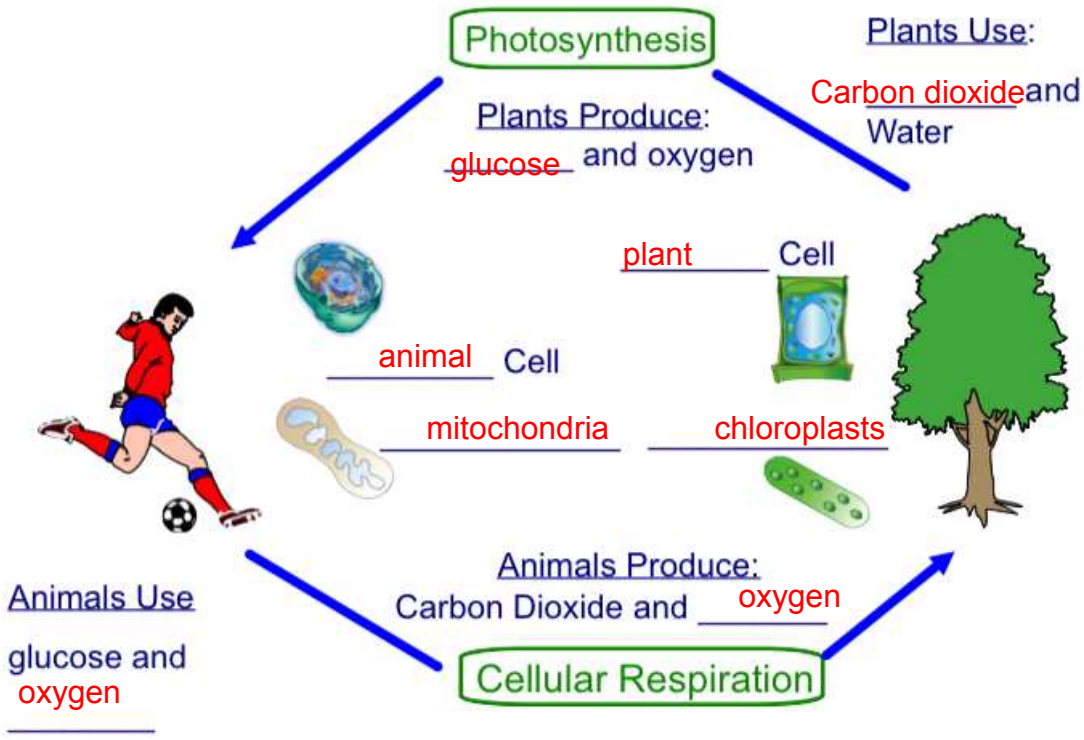
7th Grade PSI

20. What is ATP?
21. Write the equation for cellular respiration.
22. What are the reactants of cellular respiration? The products?
23. What is the relationship between photosynthesis and cellular respiration?
24. Describe how energy flows through the cycle of photosynthesis and cellular respiration.

Answer Key

1. The sun
2. Answer will vary. Sample response: plants, algae, bacteria.
3. Water, carbon dioxide, oxygen and glucose
4. Chloroplasts collect sunlight which is essential for the chemical process of photosynthesis.
5. Stage 1- collection of raw materials (sun, water, carbon dioxide). This is the light dependent stage
   Stage 2- process raw materials to form glucose and waste oxygen. This is the Calvin cycle or dark reactions where molecules are rearranged.
6. $6CO_2 + 6H_2O$ (sunlight)→ $C_6H_{12}O_6 + 6O_2$
7. To make organic molecules (sugars)
8. Chlorophyll located in chloroplasts collects sunlight. Plant roots collect water. The stomata of leaves collect carbon dioxide.
9. The stage of photosynthesis where energy from the sun is used to take apart and rearrange the molecules of carbon dioxide and water to form glucose and oxygen molecules.
10. It does not require light to work.
11. Sunlight is required in order for the second stage of photosynthesis to occur. The energy from the sun is used in the Calvin Cycle.
12. Reactants- $6CO_2 + 6H_2O$; Products - $C_6H_{12}O_6 + 6O_2$
13. It provides energy for all living things.
14. Mitochondria and cytoplasm
15. Glucose and oxygen (the products from photosynthesis) are the reactants in cellular respiration.
16. Glucose is found in food and taken in by eating it. Oxygen is found in the air and is taken in by breathing it in through the lungs or gills.
17. Energy is released
18. Cellular respiration does not create new molecules, but rather rearranges the reactant molecules in a chemical reaction to *form* new molecules.

19.



20. The source of power in the cell (adenosine triphosphate)
21. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + ATP$
22. Reactants- $C_6H_{12}O_6 + 6O_2$; Products- $6CO_2 + 6H_2O$ +ATP
23. They are opposites of each other. The products of photosynthesis are the raw materials for cellular respiration. The products of cellular respiration are the raw materials for photosynthesis.
24. Photosynthesis *stores* energy in glucose while cellular respiration uses this glucose in cellular respiration to *release* energy.