Cellular Respiration

Name _____
Date _____
Period _____

Cellular respiration is a process used by plants and animals to create energy for the cells in the body. In respiration, sugar in the cells is broken down into smaller units of energy called Adenosine Tri-Phosphate (ATP.) The ATP acts as a battery that can plug into the cell and provide it with energy.

1. What is respiration?_____
2. What is ATP? _____
3. What is the ultimate source of energy that is broken down in respiration? _____
4. What is created when sugar is broken down? _____
5. What is the function of ATP in cells? _____

Cellular respiration also creates two waste products – CO_2 and H_2O. The CO_2 is what we breathe into the air when we exhale. Plants use this CO_2 during photosynthesis.

6. What process does the cell use to break down sugar? _____
7. What source of energy is made by this breakdown of sugar? _____
8. What two waste products are created by cellular respiration? _____

The reactants for cellular respiration (what is used) are oxygen and sugar. The products (what is made) are CO_2, H_2O, and energy. The formula for respiration is below:

<u>Reactants</u> <u>Products</u>

Sugar ($C_6H_{12}O_6$) + Oxygen (O_2) $\longrightarrow$ CO_2 + H_2O + energy

Notice that the products of cellular respiration are the reactants of photosynthesis. This means that cellular respiration provides plants with the ingredients they need to make sugar. Also notice that the reactants of cellular respiration are the products of photosynthesis. This means that photosynthesis provides cells with what they need to create energy. Without photosynthesis, they couldn't make energy and they would die. Without animals, plants would not have what they need to make food, and they would die. Both processes rely on the other to work.

Cellular Respiration: Sugar ($C_6H_{12}O_6$) + Oxygen (O_2) $\longrightarrow$ CO_2 + H_2O + ATP energy

Photosynthesis: CO_2 + H_2O + sunlight energy $\longrightarrow$ Sugar ($C_6H_{12}O_6$) + Oxygen (O_2)

9. What are the reactants of cellular respiration? _____
10. What are the products of cellular respiration? _____
11. Why are cell respiration and photosynthesis dependant on each other? _____
    _____

12. Fill in the table below

	Reactants	Products
Photosynthesis		
Cellular Respiration		

13. On the back side of this paper, draw the process of photosynthesis. Make sure you use the words listed below in your drawing. Carbon dioxide, water, mitochondria, sugar, oxygen, energy