



Topic: Energy Flow Worksheet

Summary: Students will fill out the worksheet based on cellular energy including photosynthesis and cellular respiration.

Goals & Objectives: Students will be able to explain how energy is transferred in nature and the equations of photosynthesis and cellular respiration.

Time Length: 20 minutes

NGSS Standards: HS-LS1-5, HS-LS1-7. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Materials:

Textbook, class notes, and pencil or pen

Procedures:

Hand out this worksheet as a review of cellular energy. Many questions repeat the same concepts but ask the question in a different way.

Accommodations:

Students with an IEP may work with a partner filling in the definitions.

Evaluation:

Questions 1-30 are worth $\frac{1}{2}$ point each for a total of 15 points.

Energy Flow Worksheet

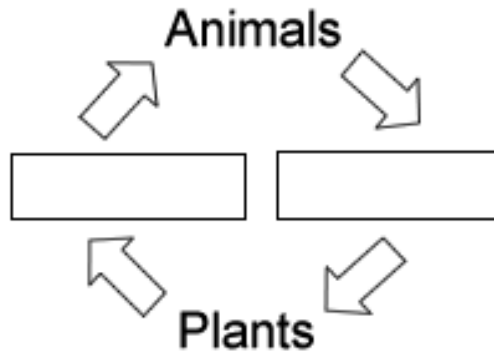
(Write definitions or explanations)

1. Autotrophs get energy from _____
2. Heterotrophs get energy from _____
3. Are animals considered an autotroph or a heterotroph? _____
4. Are plants considered an autotroph or a heterotroph? _____
5. What does ATP do for the cell? _____
6. Does ADP have stored chemical energy usable for the cell? _____
7. What is different between ATP and ADP _____

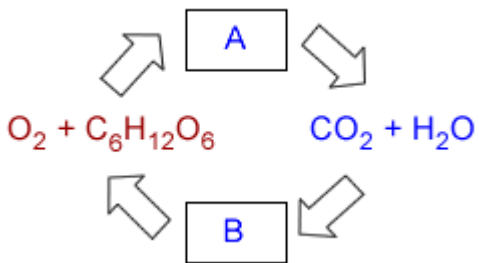
8. Energy releasing equation: ATP → _____ + _____ + Released Energy
9. What organelle performs photosynthesis? _____
10. What process converts light energy into chemical energy? _____
11. Photosynthesis Equation: _____ + _____ + Light → _____ + _____
12. What does photosynthesis release into the air? _____
13. What are the reactants of photosynthesis? _____
14. What are the products of cellular respiration? _____
15. What organelle performs cellular respiration? _____
16. What process releases the chemical energy stored in food? _____
17. Cellular Respiration Equation: _____ + _____ → _____ + _____ + _____
18. What does cellular respiration release into the air? _____
19. What are the reactants of cellular respiration? _____
20. What are the products of photosynthesis? _____
21. How are photosynthesis and cellular respiration related? _____

22. What organelle is used in cellular respiration if oxygen is present? _____
23. This is called _____ respiration. (meaning with oxygen)
24. What happens if oxygen is not present? _____
25. When would a cell produce the most ATP, with or with out oxygen? _____
26. Why do plants have mitochondrion? _____

27. Fill in the cycle below using the reactants for both cellular respiration and photosynthesis.



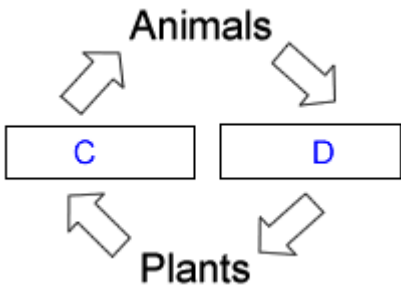
28. What is the process in box A and in box B?



A) _____

B) _____

29. What are the molecules created in step C and step D?



C) _____

D) _____

30. Compare and contrast photosynthesis and cellular respiration using the Venn diagram below.

