Topic: Cell Energy 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

Standards: CA Biology *1f Students know* usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide. *1g. Students know* the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide.

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 1-32 are worth ½ point each and question 34 is worth 4 points for a total of 20 points.

: _____ _____

Date:_____ l:_____

Cell Energy Study Guide

(Write definitions or explanations)

1. Autotrophs get energy from _____
2. Heterotrophs get energy from _____
3. What does ATP do for the cell? _____
4. Does ADP have stored chemical energy usable for the cell? _____
5. What is different between ATP and ADP _____

_____

6. Energy releasing equation: __ATP__ → _____ + _____ + ___Energy___
7. What organelle performs photosynthesis? _____
8. What process converts light energy into chemical energy? _____
9. Photosynthesis Equation: _____ + _____ + Light → _____ + _____
10. What are the 3 stages of photosynthesis?
    1) Absorption of _____ = primary pigment _____
    2) Conversion of _____
    3) Storage of _____ = _____ cycle
11. Which stages would be considered a light reaction? _____
12. Which stages would be considered a dark reaction? _____
13. What pigment absorbs light on the thylakoid membrane? _____
14. What does photosynthesis release into the air? _____
15. What are the reactants of photosynthesis? _____
16. What are the products of cellular respiration? _____
17. What organelle performs cellular respiration? _____
18. What process releases the chemical energy stored in food? _____
19. Cellular Respiration Equation: _____ + _____ → _____ + _____ + _____
20. What are the 2 stages of cellular respiration?
    1) Breakdown of _____ = stage name: _____
    2) Production of _____ = _____ cycle
21. What does cellular respiration release into the air? _____
22. What are the reactants of cellular respiration? _____

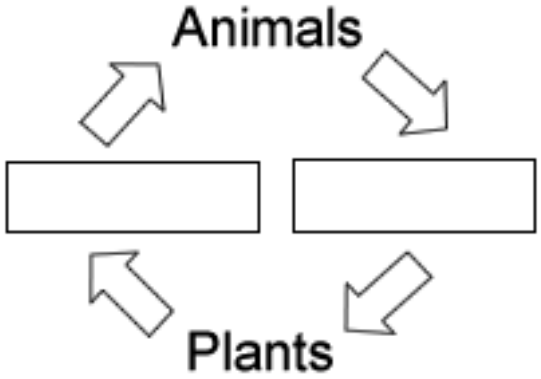
23. What are the products of photosynthesis? _____

24. Is the mitochondria used for aerobic respiration? _____

25. Is the mitochondria used for anaerobic respiration? _____

26. How are photosynthesis and cellular respiration related? _____

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



28. What organelle is used in cellular respiration if oxygen is present? _____

29. This is called _____ respiration. (meaning with oxygen)

30. What happens if oxygen is not present? _____

31. When would a cell produce the most ATP, with or with out oxygen? _____

32. Why do plants have mitochondrion? _____

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