Name_____

Hour_____

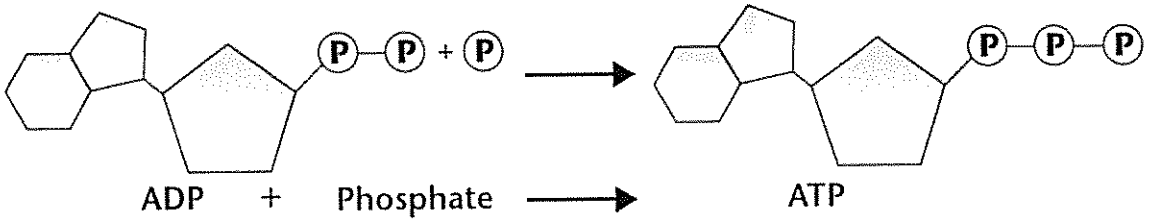
Date_____

Unit 4 (Ch. 8) Cellular Energy Packet

ATP

1. ATP is an acronym that stands for _____.

2. ATP is the basic energy source of all cells and is essential for cells to do work. Energy is stored by cells when ADP (**A**denosine **Di**Phosphate) is converted into ATP. Energy is released when ATP loses a phosphate and becomes ADP. Label the *energy storing reaction* and the *energy releasing reaction* on the pictures below.



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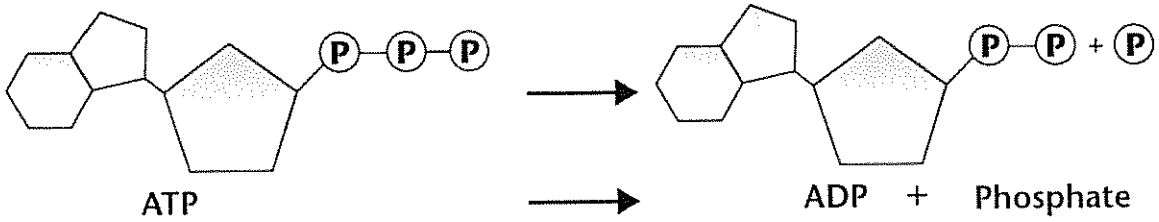


_____

3. How many phosphate groups are in one molecule of ATP? _____

4. How many phosphate groups are in one molecule of ADP? _____

5. How many phosphate groups are in one molecule of AMP? _____

6. Energy cannot be created nor destroyed and energy is converted into different forms are the laws of _____.

Photosynthesis

7. All living things (autotrophs and heterotrophs) get their energy either directly or indirectly from the ultimate source of energy known as the _____.

8. The anabolic pathway in which light energy from the sun is converted into chemical energy (food=glucose) for the cell is called _____.

9. Where does photosynthesis take place in the cell (cell organelle)? _____.

10. The green pigment that traps energy from the sunlight is called _____.

11. The two stages of photosynthesis are called:

    Part 1 _____ Reactions = Light-Dependent Reactions

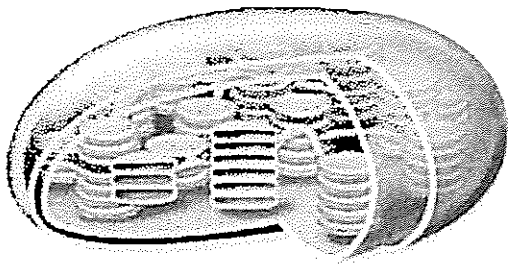
    AND

    Part 2 _____ Reactions = Light-Independent Reactions = _____ Cycle

12. The light reactions take place in the _____ of chloroplasts, while the dark reactions take place in the _____ of chloroplasts.

13. Label the following items (**thylakoid, granum (grana), stroma**) on the picture of the chloroplast below and explain where the light and dark reactions take place.

CHLOROPLAST



14. Write out the general chemical equation for photosynthesis and label the reactants and products.

15. Fill in the following table for the two stages of photosynthesis:

PHOTOSYNTHESIS	USES (REACTANTS)	PRODUCES (PRODUCTS)
PART 1 LIGHT-DEPENDENT REACTIONS (LIGHT REACTIONS)		
PART 2 LIGHT-INDEPENDENT REACTIONS (CALVIN CYCLE OR DARK REACTIONS)		

Cellular Respiration

16. The catabolic pathway where sugar is broken down to make ATP (energy) is called _____.

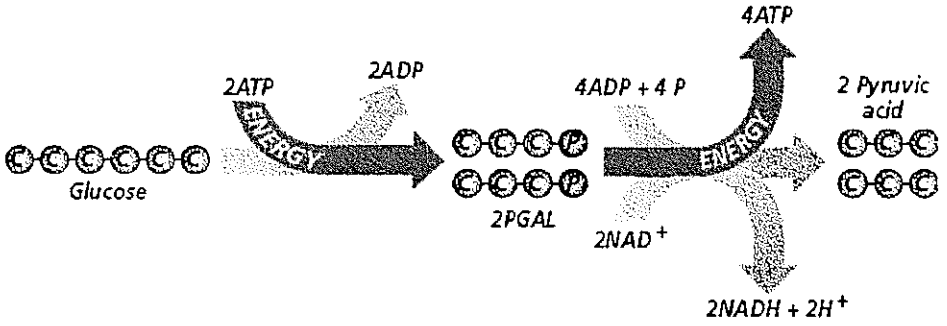
17. Write out the general chemical equation for cellular respiration and label the reactants and products.

18. Fill in the following table for the three stages of cellular respiration:

Stage of Cellular Respiration	Where in the cell?	Aerobic (with O_2) or Anaerobic (without O_2)?	Net ATP Produced?
1.			
2.			
3.			

Net Total ATP = _____

19. Which stage of cellular respiration is shown by the picture below?



REACTANT PRODUCT

Name of Stage of Cellular Respiration _____

Does this stage of cellular respiration happen in plants, animals, or both plants and animals? Circle one.

20. The process that occurs after glycolysis when NO oxygen is available (anaerobic process), that occurs in the cytoplasm to regenerate NAD^+ (another energy molecule) for glycolysis is called _____.

21. Fill in the following table for the two types of fermentation:

Type of Fermentation	Aerobic (with O_2) or Anaerobic (without O_2)?	Types of Living Organisms?	Net ATP Produced?
1.			2
2.			2

22. Lactic acid causes muscle _____ and builds up when _____ is lacking or in short supply during strenuous exercise.

23. Compare and contrast **photosynthesis** and **cellular respiration (3 similarities and 3 differences)**.

Photosynthesis	Both	Cellular Respiration
•	•	•
•	•	•
•	•	•
Where in the cell? _____		**Where in the cell?** _____ and _____
Example of an organism using this process. _____		**Example of an organism using this process.** _____