

Assignment 4 - Cellular Respiration & Fermentation

1. Explain the difference between a calorie (c) and a kilocalorie (C).

2. Nutrition facts listed on various foods indicate the amount of calories per serving. Are the calories on these labels indicating calories or kilories? _____

3. What body system is responsible for physical and chemical digestion of food in humans?

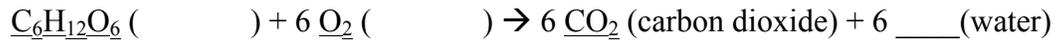
4. What body system distributes absorbed nutrients throughout the body, so that the cells comprising the tissues may receive these nutrients? _____

5. Draw a diagram of a mitochondrion. Label ALL of the following: outer membrane, inner membrane, intermembrane space, matrix.



6. Define cellular respiration:

7. Complete the following overall chemical equation for cellular respiration by writing in the chemical formula where underlined and the name of the molecule within the parentheses.



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8. List the 5 steps in cellular respiration:

- 1.
2. Preparatory step
- 3.
- 4.
5. Oxidative phosphorylation

9. For glycolysis, complete the following table:

Glycolysis	
Is oxygen required for this process?	
Where does it occur?	
What reactant is required?	
How much of each of the following products are produced?	_____ ATP _____ NADH _____ Pyruvate

10. Prior to entering the mitochondrion, pyruvate must be converted in _____. This is called the _____ step and occurs in the _____.

11. For the preparatory step, complete the following table:

Preparatory Step	
Is oxygen required for this process?	
Where does it occur?	
What reactant is required?	
How much of each of the following products are produced?	_____ CO ₂ _____ NADH _____ Acetyl CoA

12. For the citric acid cycle, complete the following table:

Citric Acid Cycle (Kreb's Cycle)	
Is oxygen required for this process?	
Where does it occur?	
What reactant is required at the beginning of the citric acid cycle?	
How much of each of the following products are produced?	_____ CO ₂ _____ NADH _____ FADH _____ ATP

13. What is the fate of the carbon dioxide made in the preparatory step and citric acid cycle?

1. Plants
2. Animals

14. What is the fate of NADH and FADH from the citric acid cycle?

15. For the electron transport chain, complete the following table:

Electron Transport Chain	
Is oxygen required for this process?	
Where does it occur?	
What reactant is required at the beginning of the electron transport chain?	
Where are hydrogen ions pumped?	

16. What is the function of the ATP synthase?
