

Cellular Respiration Notes

Glycolysis, the ETC, Krebs Cycle & Fermentation

Name: _____ Date: _____ Block: _____

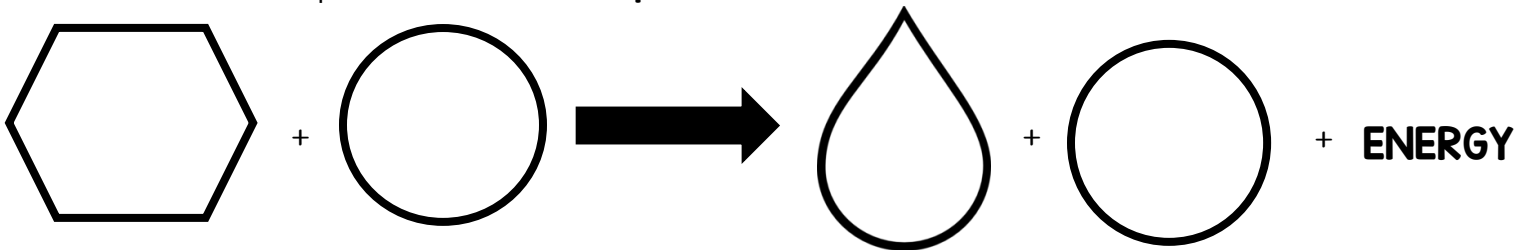
Let's Exercise, Chemical Energy & Food

1. **Respiration** is a **synonym** for what? _____
2. How much energy is in food? It varies. One gram of sugar glucose when burned in the presence of oxygen releases _____ calories of heat.
3. A _____ is the amount of energy needed to raise the temperature of 1 gram of water 1 degree Celsius.
4. **Releasing this energy** starts with a pathway called what? _____

Overview: Cellular Respiration

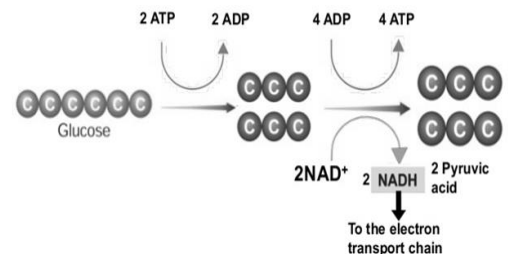
5. There are **three pathways** that make up the process of **Cellular Respiration**, what are they?

6. What is the equation of **Cellular Respiration**? Looks familiar huh?



Glycolysis

7. _____ is the process in which **one molecule of glucose** is broken _____ producing two molecules of _____, **a 3-Carbon compound**.
8. A cell needs to give a little energy, to get a little energy. At the beginning, how many molecules of ATP get used up? _____ When **glycolysis** is complete, _____ ATP molecules have been produce with a **net gain of how many ATP molecules?** _____



Fermentation

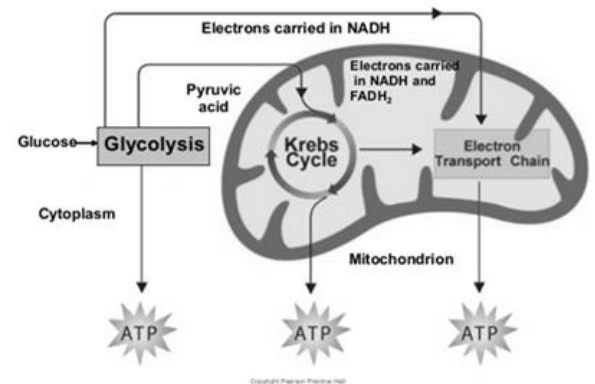
9. When oxygen is **NOT** present, glycolysis is followed by a different pathway. What is this pathway called?

10. During **fermentation**, cells convert _____ to _____ by passing high-energy electrons back to pyruvic acids.

11. Fermentation **does not** require what? _____ And is therefore considered

12. There are **two types** of fermentation, what are they?

13. This type of fermentation makes yeast and a few other microorganisms, forming ethyl **alcohol** and **carbon dioxide** as waste.



14. In many cells, the pyruvic acid accumulated as a result of glycolysis can be converted into _____. This process generates **NAD⁺** so that glycolysis can continue. What type of fermentation does this?

15. What happens to your body or muscles when there is a build-up of **lactic acid**? _____

Review of Glycolysis & the Krebs Cycle

16. Where does **glycolysis** take place? _____

17. How many **ATP** are generated at the **end of glycolysis**?

18. Since oxygen is required for the final steps of cellular respiration, these pathways are said to be what?

19. The second **step of cellular respiration** is known as the what?

20. What is broken down **into CO₂** in a series of energy extracting reactions?

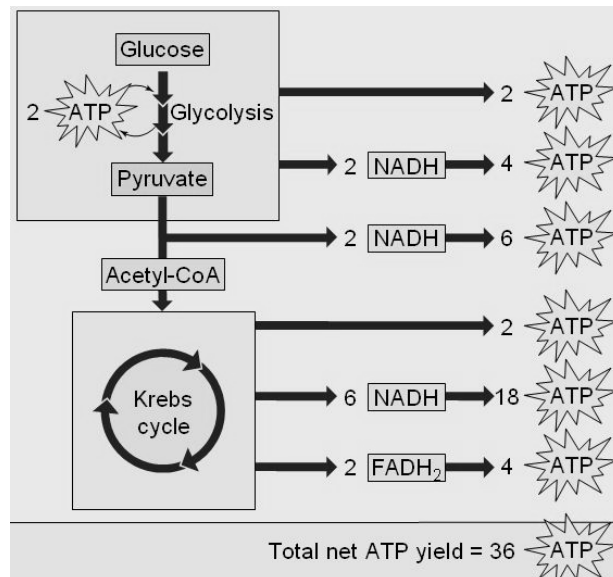
21. What is the **Krebs Cycle** also known as? _____

22. What is **released from your breath** after the Krebs cycle? _____

Electron Transport Chain

23. The Krebs Cycle generates high-energy electrons that are passed to _____ and _____. The electrons are passed from those **carriers** to the what?

24. On average, each pair of high-energy electrons that move down the electron transport chain provides enough energy to produce how many molecules of **ATP from ADP**? _____



The Totals

25. **Glycolysis** = _____ **ATP** molecules, in the presence of oxygen...it continues to the next two pathways.

26. **Krebs Cycle & Electron Transport Chain**= _____ **ATP**, **18 times** as much can be generated in the absence of oxygen.

27. **Efficiency?** _____% represents the energy from glucose, the other _____% is released as heat, which is the reason your body feels warmer after exercise!

28. Does **Cellular Respiration** happen in **plants** too? _____ **Why?** Because they also contain what organelle? _____