Glucose Metabolism Worksheet

You should be able to:
a. Cite the overall equation for aerobic respiration and relate the reactants and products to the three metabolic pathways of cellular respiration.
b. Associate the structure of the mitochondria with the Krebs cycle and respiratory chain.
c. Tell how many ATP are produced by each of the three pathways.
d. Discuss the function of the Krebs cycle as a metabolic mill.
Describe the process of anaerobic respiration, relating it to glycolysis and indicating its advantages and drawbacks.

Review Questions:

1. The equation ADP + P_i → ATP is energy (requiring or releasing) requiring

2. When cells require energy for synthetic reactions, they "spend" ATP

3. In the pathway A $\xrightarrow{1}$ B $\xrightarrow{2}$ C $\xrightarrow{3}$ D $\xrightarrow{4}$ E, the letters stand for reactants and the numbers stand for enzymes. Each and every reaction in a cell requires an enzyme. If this pathway represented glycolysis, what molecule would E represent? Pyruvic acid The letter A in relation to number 1 is a substrate, and the letter C in relation to number 2 is a product.

4. The first pathway in glucose metabolism is glycolysis. The transition reaction leads to the next pathway, called the Kreb's cycle or the citric acid cycle.

5. NAD carries electrons to the ETC where most of the ATP of cellular respiration is formed.

6. Which pathway in question 4 contributes the most electrons to the respiratory chain (the electron transport system)? Kreb's

7. When NAD accepts electrons from a substrate (while accepting hydrogen ions), it is reduced. When NADH donates its electrons to the ETC, (and therefore looses its Hydrogen ions) it becomes oxidized

LEO GER