WLHS / AP Bio / Monson

Name **Date** **Per.**

Chapter 9 Study ?'s (part 2): Glycolysis and the Krebs Cycle (9.2 & 9.3; p. 168-172)

1) Complete the table below to summarize the **first two main stages** of cellular respiration (HINT: see title of these study questions!):

Name of stage:	**Where does it occur?**	**Summary description of events:**

2) ***SEE NOTES and CH 9:*** Create a chart or table in which you distinguish between: **oxidative phosphorylation** and **substrate-level phosphorylation**. (Include: their differences in location, method of phosphorylation, in which stages they occur, and relative amounts of energy produced)

3a) Summarize the **energy yield** of **GLYCOLYSIS** (per 1 molecule of glucose). Include ALL energy-storage molecules.

3b) Account for the 6 carbon atoms from the original molecule of glucose that entered glycolysis. ***(Where are they at the end of glycolysis?)***

3c) Does glycolysis require oxygen presence to occur?_____

4) **MAKE CONNECTIONS**: Step 3 in Figure 9.9 is a major point of regulation of glycolysis. The enzyme phosphofructokinase is allosterically regulated by ATP and related molecules. Considering the overall result of glycolysis, would you expect ATP to inhibit or stimulate activity of this enzyme? (HINT: make sure you consider the role of ATP as an allosteric regulator, not as a substrate of the enzyme!).

5a) Prior to the Krebs cycle, the 2 pyruvate molecules from glycolysis are converted to 2 molecules of acetyl CoA (this step is called "pyruvate oxidation"). In the space below, SUMMARIZE the 3 steps of this reaction:

1._____

2._____

3._____

5b) What is the **energy storage molecule** that is generated during this intermediate step?

_____

6a) In the Krebs cycle, what molecule is given off as "exhaust", or waste?_____

6b) For what reason is the Krebs cycle appropriately named a **CYCLE**? (HINT: which molecule is "recycled"?)

6c) For each acetate (acetyl CoA) molecule that enters the Krebs cycle, list the **number** and **type** of **energy molecules** that are generated, as well as the **number** and **type** of **"waste" molecules generated**. **What is the fate of each type of molecule you listed?? (where does it go or how is it used by the cell?)**
*****a chart may be helpful to organize all molecular products***

ENERGY STORAGE MOLECULES (LIST):	**HOW MANY PRODUCED? (per EACH acetyl CoA)**	**HOW MANY PRODUCED? (TOTAL)**	**FATE of molecule? (where does it go / how is it used by the cell?)**
WASTE MOLECULES:	**HOW MANY PRODUCED? (per EACH acetyl CoA)**	**HOW MANY PRODUCED? (TOTAL)**	**FATE of molecule? (where does it go / how is it used by the cell?)**