Assignment:3
Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_\_\_

**Cellular Respiration – Harvesting Cellular Energy**

**Overview of Cellular Respiration**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - occurs in the cytoplasm

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Respiration**

* Respiration \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ O2
* In cytoplasm
1. \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ Fermentation OR \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fermentation

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Respiration**

* Respiration \_\_\_\_\_\_\_\_\_\_ O2
* In mitochondria
1. \_\_\_\_\_\_\_\_\_\_\_\_\_ oxidation
2. \_\_\_\_\_\_\_\_ cycle
3. \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_

*With or without oxygen…***Stage 1: Glycolysis**

* Breaking down \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ “\_\_\_\_\_\_-\_\_\_\_\_\_\_” (splitting sugar)
	+ Ancient pathway which harvest energy
		- Is the starting point for \_\_\_\_\_\_ cellular respiration
	+ But it’s inefficient
		- Generates only \_\_\_\_\_\_\_ for every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Occurs in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Overview – 10 reactions
	+ Convert \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Produces \_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Uses \_\_\_\_\_\_\_\_\_\_
	+ End result: \_\_\_\_\_\_\_\_\_\_\_& \_\_\_\_\_\_\_\_\_\_\_\_\_

*If there is oxygen…***Stage 2 & 3: Oxidation of Pyruvate and Krebs Cycle**

**Mitochondria – Structure**

* Double membrane energy harvest organelle
	+ Smooth \_\_\_\_\_\_\_\_\_\_ membrane
	+ Highly \_\_\_\_\_\_\_\_\_\_\_ inner membrane
		- Cristae
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Fluid-filled space between membranes
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Inner fluid-filled space

**Oxidation of Pyruvate**

* Pyruvate enters mitochondrial matrix
	+ As it enters…
		- Breaks off a \_\_\_\_\_\_\_\_ and makes 2 \_\_\_\_\_\_\_\_\_
		- Makes 2 \_\_\_\_\_\_\_\_\_
		- Produces 2 \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_ molecules
	+ Acetyl CoA enters \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Krebs Cycle**

* So we fully broke down glucose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_ & ended up with \_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_!
* Krebs cycle produces large quantities of \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_
	+ Go to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_!
* Net gain = 2 \_\_\_\_\_\_\_, 8 \_\_\_\_\_\_\_\_\_\_\_\_\_ and 2 \_\_\_\_\_\_\_\_\_\_\_

**Stage 4: Electron Transport Chain**

**ATP accounting so far…**

* Glycolysis 🡪 \_\_\_ ATP
* Kreb’s Cycle 🡪 \_\_\_ ATP
* Life takes a lot of energy to run, need to extract more energy that \_\_\_ \_\_\_\_\_!

**Electron Transport Chain**

* Series of proteins built into\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Transport of electrons down ETC that bring \_\_\_\_\_\_\_\_\_\_\_\_\_ ions \_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_
* These hydrogen electrons fuel a protein that makes \_\_\_\_\_\_
* This stage make \_\_\_\_\_\_\_\_\_\_\_ from 1 glucose!
* Only happens WITH \_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* As \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ move through the \_\_\_\_\_\_\_\_\_\_\_\_\_, they drop off \_\_\_\_\_\_\_\_\_\_\_ and make \_\_\_\_\_\_\_\_\_

**We did it!**

* Set up a \_\_\_\_\_ gradient
* They want to move from \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_
* As they move to low the \_\_\_\_\_\_\_\_\_\_\_ flow through ATP synthase
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ATP