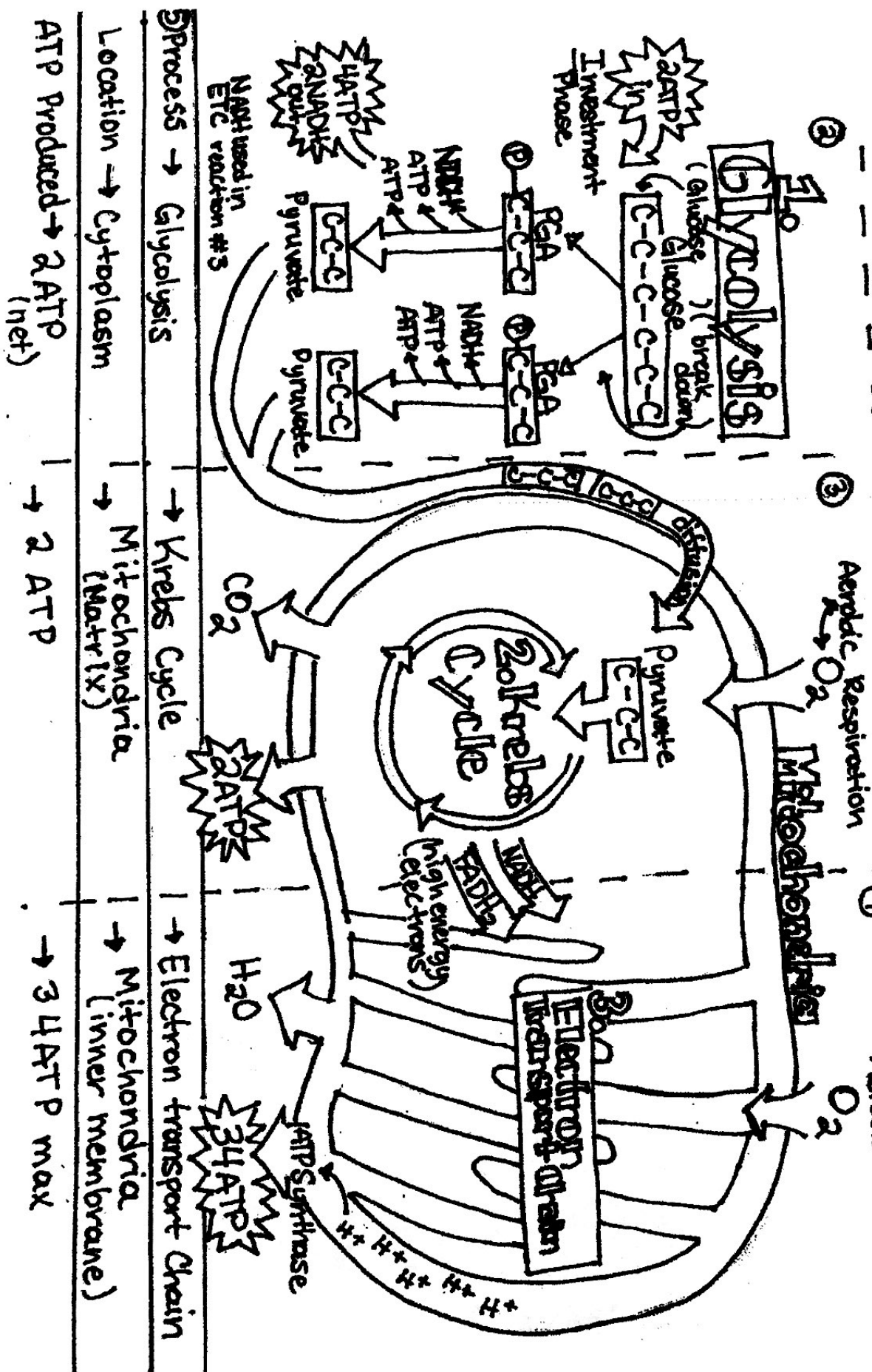


## Aerobic Respiration



# Cellular Respiration Coloring Page Instructions

*You will need to read these instructions and color based off the information on this page as you go through check off each box. You will be graded based on how close you got to my key so be careful when you color and which colors you use. Hint read entire instructions first of you might end up making a mistake in coloring.*

- ☐ Find the circle with the number 1 inside of it. Notice that this is the section of the title. Underneath the O there is an underscored 2. That is because the process of cellular respiration requires oxygen making it an aerobic process. Notice the equation for cellular respiration as discussed in class this reaction is essentially the reverse of the photosynthesis equation. It is taking Glucose and Oxygen (reactants) and converting them to Carbon Dioxide and Water (products). The energy released by the breakdown process is what is used to make ATP. Color the background of this section a **light blue**. Color the title that says "Cellular Respiration" **red**.
- ☐ Find the circle with the number 2 inside of it. This entire left-hand side all the way down to the bottom of the paper is all about the first stage in cellular respiration called Glycolysis which is in the cytoplasm of a cell. Glyco is referring to glycogen and lysis refers to the breakdown. Essentially the name is exactly what the stage is, the breakdown of glycogen into ultimately 2 pyruvates (3-carbon) molecules. This reaction requires 2 ATP molecules to get it started (investment phase) and then yields(makes) 4 ATP molecules and 2 NADH molecules (payoff phase). Not pictured but those NADH molecules will be used in the electron transport chain to produce more ATP. Color the background of this section **green** all the way down to the bottom of the page. Color "1. Glycolysis" and the carbon molecules **blue**. Color ATP and NADH and the arrows in this section **red**.
- ☐ Find the circle with the number 3 inside of it. This entire center section all the way to the bottom of the page is all about the second stage in cellular respiration called The Krebs Cycle. Notice that unlike glycolysis the Krebs cycle requires the presence of oxygen, it is aerobic respiration. In the Krebs cycle the 2 pyruvate molecules from glycolysis are broken down even further and this causes the release of  $\text{CO}_2$  into the atmosphere. This produces 2 more ATP molecules and NADH and  $\text{FADH}_2$ . Notice the "2. Krebs Cycle" in the center of the matrix. Color this title and space **pink**. Use the same color **pink** to color the background (everything outside of the mitochondria) all the way down to the bottom of the page. Color the intermembrane space of the mitochondria **orange** and the space inside the mitochondria also known as the matrix **yellow**. The matrix is where the Krebs cycle takes place. Color the arrows and ATP in this space **red**. Color pyruvate "C-C-C" **blue**.
- ☐ Find the circle with the number 4 inside of it. This entire section is for the Electron Transport Chain (ETC). You should color the mitochondria the same colors you used in the previous box if you have not done so already. Like the Krebs Cycle, the ETC is also an aerobic reaction meaning it requires oxygen. As you see NADH and  $\text{FADH}_2$  are coming into the ETC from the Krebs Cycle, if not already color these **red**. They will travel down the ETC donating their protons ( $\text{H}^+$ ) which will be used by ATP synthase to produce 34 molecules of ATP max (or 32 molecules usually) giving us a grand total of 38 ATP max. As a result of the reaction  $\text{H}_2\text{O}$  will be produced as waste. Take **purple** and color the background of this section all the way down to the bottom. Also color the title **purple**. Color arrows and 34 ATP **red**.