Dry Lab: Cellular Respiration

A dry lab is when you learn about a lab experiment without actually performing the experiment yourself. In today's lab exercise you will be going through the motions of the cellular respiration lab for the AP Exam. The purpose of this exercise is for you to become familiar with the lab and to analyze sample results.

Selected Background (From AP Program Manual): "In this experiment you will work with seeds that are living but dormant. A seed contains an embryo plant and a food supply surrounded by a seed coat. When the necessary conditions are met, germination occurs, and the rate of cellular respiration greatly increases. In this lab you will measure oxygen consumption during germination."

Note: You will be working as a group to understand the lab and analyze data, but all work in your lab notebook should be your own—you should not copy phrases or diagrams from others or from the materials that you are being provided with.

Step 1: Background Information

1. Read through the Background Information and the procedure that has been provided for you. Discuss it with your lab group so that you can answer the following questions:
   - What are you measuring in this lab experiment? (be specific)
   - What is the experimental organism that you are using?
   - What are the conditions that you are placing the organism at?
2. After you think you understand the purpose of the lab and the specific conditions you are testing, **write a title and introduction for this lab in your lab notebook**.
   - **NOTE**: Since this is a dry lab, your title should start with "Dry Lab" followed by a more specific title. (Ex: Dry Lab: Determining if Alu is present in the PV92 region)
3. **As a group, make a prediction as to what you think will happen in the experiment. You should write this in your introduction.**

Step 2: Understanding the Procedure

4. Read through the Procedure in more detail.
   - Use the materials that have been provided to your lab group to help familiarize yourself with the equipment that it used.
   - Put the laminated procedure cards in the correct order according to the procedure. Make sure you know what the purpose of each step is.
   - Use the materials provided to set up 2 different respirometers—one with peas and one control respirometer.
5. **Draw a flow chart of the procedure in your lab notebook**.
   - **You can use the laminated cards as a guide but your flowchart should also include diagrams of the set up/equipment and other additional information.** You do NOT need to write down every step— the goal is to understand the main idea of each major step.
6. **Show your flowchart and respirometers to your teacher to receive a stamp**. You will need to answer questions to show you understand the procedure and purpose of this lab. At this time, your teacher will also give you sample data to analyze and conclusion questions to answer.

Step 3: Data Analysis and Conclusions

7. **Paste the sample results into your lab notebook under the heading "Sample Results"**. You do not need to have anyone confirm these results in your notebook.
8. Take some time to look over these results to make sure you understand how the graph was drawn and what the numbers mean. You should be able to answer the following questions:
   - What do the headings in the table mean? What do you have to subtract from what? **Why** do you subtract them?
   - Using the data, how many mL of O_2 is consumed by the germinating peas at 25 ℃ after 15 minutes?
9. Paste the conclusion questions into your lab notebook and answer them.

*** Don't forget to date every page and to put this lab into your table of contents! ***