Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Page: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**How Does Your Breathing Rate Compare?**



**Problem:** How does your breathing rate change based on the type of activity your body is performing?

**Identify Variables:**

Independent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Control(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis:**

If \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Procedure:** You will be completing various aerobic activities and counting the number of breaths you take after each. You will then compare your breathing rate between the various activities in the form of a graph.

1. You will sit silently in your chair for 1 minute and breathe normally. At the end of the minute your partner will time you for 30 seconds while you count and then record the number of breaths taken in the 30 seconds.
2. Next you will march in place for 1 minute. Your partner will keep track of the time. After the minute is up, sit silently in your chair and count the number of breaths you take in 30 seconds. Record that number.
3. Repeat step two but this time march in place for 3 minutes while your partner times you. After 3 minutes sit silently in your chair and count the number of breaths you take in 30 seconds. Record your number.
4. Repeat everything from step 3 but this time march in place for 3 minutes and at the same time push press a text book over your head. When the 3 minutes is up, sit silently in chair and count your breaths for 30 seconds and record.
5. Switch roles with your partner and complete steps 1-4 again.
6. Your data should be recorded in a data table and should then be plotted on a graph.

**Data:**

|  |  |  |
| --- | --- | --- |
| **Activity** | **Breathing Rate** **(30 seconds)** | **Breathing Rate****(breaths per minute) Hint: multiply by 2** |
| **Normal**  |  |  |
| **March (1 minute)** |  |  |
| **March (3 minutes)** |  |  |
| **March (3 minutes w/book)** |  |  |

**Analysis:** Create a bar graph on a separate sheet of paper that displays your data. Be sure to give your graph a title, label the axes with titles, and use a ruler (straight lines, even spacing, etc.)

**Questions:**

1. Which of the activities resulted in the most number of breaths?
2. Why do you think that activity resulted in the highest number?
3. What is the ultimate purpose of breathing? (Note: do NOT say to stay alive. Be specific, what happens when we breathe?)

**Conclusion:**

Communicate your findings. Follow the steps below for writing a concise conclusion to your lab. This should be done on a **separate sheet of paper** and be **neatly** written using **correct grammar and punctuation**.

**STEPS for Writing a Lab Report:**

1. **Introduce the experiment in your conclusion.** Start out the conclusion by providing a brief overview of the experiment.
	* Describe the experiment in 1-2 sentences and discuss the objective of the experiment.
	* Also make sure to include your variables (independent, dependent, and control).
2. **Restate your procedures.** Give a brief summary of the process that you went through with your experiment. Give an overview of the experiment, which will help the reader visualize what you did.
* If you tried the experiment more than once, describe the reasons for doing so. Discuss changes that you made in your procedures.
* Brainstorm ways to explain your results in more depth. Go back through your lab notes, paying particular attention to the results you observed.
1. **Briefly describe what you discovered**. In a few sentences, summarize the results that you arrived at in your experiment. Summarize the data here; don’t include all of the results.
* Start this section with wording such as, “The results showed that…”
* You don’t need to give the raw data here. Just summarize the main points, calculate averages, or give a range of data to give an overall picture to the reader.
1. **Comment on whether or not your hypothesis is supported.** Your hypothesis is a statement that describes what the expected outcome will be. The hypothesis forms the basis of your experiment and drives the parts of your process.
	* Restate your hypothesis and then state clearly and concisely whether or not your hypothesis has been supported by the experiment. Was the experiment a success?
* Use simple language such as, “The results supported the hypothesis,” or “The results did not support the hypothesis.”
1. **Link your results to your hypothesis.** The results of your experiment have determined whether or not the hypothesis is supported. After noting this in your report, comment further by describing the meaning of your experiment’s results. Clarify why the results indicate a supported hypothesis or not.

**HINTS:**

1. **Write in the third person.** Avoid using “I,” “we” or “me” in your lab report. Instead, use language such as, “The hypothesis was supported…”
2. **Read through the full report.** Once you’ve finalized your conclusion, read through the entire report to make sure it is logical. Watch for any places where you might contradict yourself, and correct these instances. Your conclusion should reiterate what you learned from the experiment and how you came to understand these learning outcomes.
3. **Proofread your report.** Check for spelling and grammatical errors in your report. A report that contains errors can inadvertently decrease the report’s reliability. Take the time to ensure your report is error-free.