

Guidelines for Lab Report

Writing formal laboratory reports is a commonly used method for stating experimental results and drawing conclusions and sharing those findings with others. This allows for advances to be made in all areas of science. This semester you will be required to write a formal lab report about the data you have collected during an experiment. The key points to remember when writing lab reports are to be clear, concise, and to follow a logical order. You will need to use proper grammar and sentence structure in order to effectively communicate your information. Below you will find some guidelines and an outline which describes the sections which should be included in your report. Please feel free to ask questions if you are confused or need clarification.

- The report should be typed, double spaced, in a font that is easy to read.
- Keep in mind as you write that your target audience for your report is a peer with a comparable science background but no specific knowledge of this particular lab. Write in such a way that if a student in your class were absent for the entire experiment, he or she could pick up your report and repeat the same experiment and calculations.
- Your report should include a title page which includes the names of the lab partners, a title for the experiment which reflects the purpose and/or procedure, and the due date. This should be centered on its own separate sheet

Sample Outline

Pre-Lab Questions

Retype and answer the following pre-lab questions. Do not use the pre-lab questions from the lab paper handed out in class.

Given the following information, answer questions 1- 5

To calibrate a calorimeter, a methanol burner was used to heat water in a can and the following data was collected.

- A. The energy content or fuel value of methanol is 726 kilojoules/mole
- B. The initial mass of the burner was 127.22 g and the final mass was 125.97 g
- C. The mass of the can and water was 68.56 g
- D. The initial temperature of the water was 20.8°C and the final temperature was 83.9°C.
- E. A potato chip was later burned in the calorimeter. Its initial mass was 3.449 grams and its final mass was 2.375 grams. The mass of the can and water was 70.66 grams. The initial temp of the water was 21.7°C and the final temp was 25.9°C.

1. Convert the fuel value from kJ/mole to kcal/gram
2. Calculate the amount of heat released by burning the methanol in kcal.
3. Calculate the specific heat capacity of the calorimeter in kcal/g °C.
4. Calculate the energy content (fuel value) for the potato chip in kcal/g
5. Calculate the amount of kcal that a 28.3 gram serving of the potato chips would contain.

Purpose

A clear and precise statement at the beginning of the report should identify the exact purpose of the investigation. What does the lab demonstrate or what question is the lab attempting to answer? Type out and explain the significance of any equations that will be used for calculations and give the meaning of each symbol in the equation.

Materials

Provide a complete list of supplies and materials that were used while performing the experiment.

Safety

Summarize the safety concerns associated with this experiment.

Procedure

Summarize the procedure used during the lab. You do not have to give every minute detail listed in the instruction packet, but be sure to cover all of the major points. The reader should be able to recreate this experiment by following this section of the report.

This should not be a step-by-step list. This should be in narrative form using complete sentences written in the past tense. You should avoid the use of pronouns and proper names.

Wrong Example: We added 15 mL of hydrochloric acid to the beaker.

Good Example: Fifteen milliliters of hydrochloric acid was added to the beaker.

Data

The data that you collected should be neatly organized in tables. You can create them in Excel and copy them to your paper, or create them directly in Word. Each table should have a title telling what is shown. Be sure to label the necessary rows and columns as well as provide units for each reported number. Only raw data from the experiment should be included in this section. Do not include any values which require an equation or calculation.

Calculations

Any calculations you do should be done in this section. Results that are calculated from raw data should be included with the calculations. Provide at least one clear example of each calculation made by you in the analysis of your raw data. Make sure that the reader can easily follow your operations from raw data to final calculation. In addition to the example calculations, all other calculated values should be summarized in a table. All calculated values in the example or in the table must have the correct units. Any tables, graphs, or figures given as part of your analysis should be labeled.

Discussion

Explain the results of the experiment. In this lab report, you should discuss how the calculations of your experimental energy content compared to the nutritional information provided by the food companies. Discuss any trends that you might find in the results. Be sure to include possible sources of experimental error and discuss what you would do differently if you were to repeat this experiment.