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Formal Lab Reports for Chemistry

The following format will be used for formal lab reports in Mr. Meighan's chemistry classes this year. Your formal lab report should be word processed or typed and be neat without mistakes crossed out or added information written in with pen or pencil. Your report should also be written in past tense since the lab has already been completed. There should also be no references to people (no: we, I, my partner, Mr. Meighan, us). The following sections should be labeled and in the order shown below.

Title of the Lab

Purpose:

This should be one or two sentences describing what you hope to accomplish in the lab.

Procedure:

This section is usually a paragraph or two (depending on the length of the lab) describing the procedure that was followed to perform the lab. Someone should be able to read your procedure and go back to the lab and do the lab exactly how you did.

Data & Observations:

All measurements and data tables should be in this section. Your data should be neatly organized (preferably in a table) and all measurements should be clearly labeled.

Calculations:

Any calculations from the lab should be in this section. If there are no calculations for a lab, then this section could be omitted. Your calculations should show the setup and the answer for each calculation and each calculation should be clearly labeled. If a percent error is done for the lab it should be shown in this section. If a graph is part of the lab it should be shown in this section. If the graph is done on a separate sheet of graph paper, then there should be a note in this section telling the reader to see the attached graph.

Conclusions:

This section should be a paragraph or two commenting on how the lab went. The following items should be in your conclusion paragraph:

- Talk about whether you accomplished your purpose or not. If not, explain why not.
- Comment on your percent error.
- List a minimum of three possible lab errors that may have occurred.
 - Be specific about your possible sources of error. Do not just mention human error as a source of error. What human error? Be specific.
 - Calculation mistakes are not considered lab errors, so they should not be included as one of your three sources of error.

Writing an Organic Chemistry Lab Report

Components of a Laboratory Notebook

The following components should be contained for each experiment, along with any additional material required by your instructor.

- Title and date
- Introduction (purpose, reaction)
- Physical data (including calculations)
- Procedure outline
- Data and observations
- Discussion of results (conclusions)

Prelab

Title and Date

Give the title of the experiment and the date on which it is done.

Introduction

In a sentence or two, state the purpose of the experiment. If the experiment is a preparative experiment, the introduction also includes the balanced equation for the reaction.

In organic chem, there are different types of experiments: technique and preparative. A technique experiment is one in which you are performing a technique for the first time and studying its details, for example, distillation and extraction. A preparative experiment is one in which a compound is synthesized from other reagents.

Physical Data

List the molecular weight, melting point, boiling point, density, solubility, and hazards of all pertinent chemicals used in the experiment. You can find this information in the CRC Handbook of Chemistry and Physics. (We have this book at school, and a CD-ROM version as well.) Or, you can find the information on the Internet (see: Hazard and Physical Data for Compounds page). [Chemfinder.com](http://www.cerif.com) is an excellent site to find this data. The physical data are most conveniently presented in tabular form, although in a preparative experiment you may put the amounts of reactants and products under the balanced equation for the reaction.

Calculate the amounts of reactants (or compounds to be purified) in moles and grams or mL (as applicable). In a preparative experiment, calculate the limiting reagent and the theoretical yield of the product. Be sure to include your calculations for these values.

Procedure

Chemistry Department

Name: _____

Section: _____

DATE: _____

Title: _____

Introduction:

In a sentence or two, state the purpose of the experiment. If the experiment is a preparative experiment, the introduction also includes the balanced equation for the reaction.

Physical Data:

List the molecular weight, melting point, boiling point, density, solubility, and hazards of all pertinent chemicals used in the experiment. You can find this information in the CRC Handbook of Chemistry and Physics. (We have this book at school, and a CD-ROM version as well.) Or, you can find the information on the Internet (see: Hazard and Physical Data for Compounds page). [Chemfinder.com](http://www.cerif.com) is an excellent site to find this data. The physical data are most conveniently presented in tabular form, although in a preparative experiment you may put the amounts of reactants and products under the balanced equation for the reaction.

Calculations:

Calculate the amounts of reactants (or compounds to be purified) in moles and grams or mL (as applicable). In a preparative experiment, calculate the limiting reagent and the theoretical yield of the product. Be sure to include your calculations for these values.

Procedure:

AP Chemistry: A Sample Formal Laboratory Report

This paper is designed to help you prepare a chemistry lab report. Keep it in your chemistry notebook. All chemistry lab reports must be written neatly and well organized to receive full credit. Lab reports may be written or typed. It is highly recommended that you use graph or engineering bond paper for written reports.

Laboratory #7: Quantitative Determination of an Empirical Formula

I. Hypothesis: If nitric acid is poured onto tin, a tin oxide will be produced. If we know the initial mass of the tin metal and the mass of the final product, we can determine the empirical formula of the tin oxide product. There should be a whole number ratio between oxygen and tin. (The hypothesis explains what is to be tested and will be written after reading the entire laboratory worksheet.)

II. Equipment:

- (Non-chemical equipment used in the experiment)
- evaporating dish
 - forceps
 - watch glass
 - beaker
 - writing pad
 - balance
 - burner with ring stand, ring and wire gauze

III. Reagents:

- (A listing of chemicals used in the experiment with their amounts and any warnings)
- tin metal (granulated) - 2 g
 - 5 cm³ (mL) nitric acid (HNO₃) **caution: severe burns**

IV. Procedure:

Each step of the procedure must be written here. You may paraphrase and shorten the explanations, but the reader must be able to perform the experiment from these instructions. (The procedure must be read carefully before the lab begins. Drawings of the experimental setup may be included here. The teacher may make changes to the procedure; make sure that you write any changes down!)

V. Data:

(If the laboratory report is handwritten use a ruler to draw data tables and graphs! Always include units with all data entries.)

Procedure	Trial 1	Trial 2
a. mass of dish and watch glass	74.14 g	
b. mass of dish, glass and tin	76.20 g	
c. mass of tin (m)	2.06 g	
d. mass of tin (m)	0.173 mol	
e. mass of dish, glass, and product	76.76 g	
f. mass of oxygen (m)	0.64 g	
g. moles of oxygen	0.040 mol	
h. molar ratio	2.02 : 1	
i. accepted ratio	2 : 1	
j. % error	1.00 %	

SAMPLE LAB REPORT

An advertisement on TV claims that plants grown with Miracle Gro (fertilizer) grow bigger and faster than plants that don't this product.

Miracle Grow Usefulness

Question: Will using Miracle Gro help plants grow bigger?

Hypothesis: I think that using Miracle Gro will make plants grow bigger. I believe this because I have seen people who garden use Miracle Gro and their gardens grow very quickly and the plants are large.

Materials: Miracle Gro, 20 rye grass plants in pots, a ruler, water, and a light source.

Procedure:

1. Gather your materials.
2. Set up 10 rye grass plants in individual pots under a light source.
3. Number the plants 1 through 10.
4. Plants 1, 2, 3, 4 and 5 will receive 50 mls of 1% Miracle Gro solution . (This is the experimental group)
5. Plants 6, 7, 8, 9, and 10 will not receive Miracle Gro. (This is the control group)
6. Add 50 mls of water to each control plant daily. Add 50 mls of 1% Miracle Gro solution to each experimental plant daily.
7. Measure the height of the rye grass in cm every 3 days and record results in data table.
8. Repeat steps 6 and 7 for 2 weeks.
9. Clean up your materials.

Data:

DAY	Plant Numbers- Height in cm									
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
1	4.3	4.2	4.6	5.1	5.0	4.5	5.0	4.5	4.3	4.9
4	4.7	4.7	5.0	5.5	5.5	4.8	5.3	4.8	4.6	5.2
7	5.3	5.4	5.5	6.0	5.9	5.1	5.8	5.2	4.9	5.5
10	5.8	5.9	6.0	6.6	6.5	5.4	5.9	5.5	5.2	5.8
13	6.2	6.4	6.5	7.1	7.0	5.7	6.3	5.9	5.6	6.2

Plants 1 through 5 received Miracle Gro plus water, and plants 6 through 10 received only water.

Plants 1 through 5 grew an average of 2 cm in 13 days.

Plants 6 through 10 grew an average of 1.35 cm in 13 days.

Plants 1 through 5 grew bigger than plants 6 through 10.

Conclusion: Fertilizers help plants grow by adding nitrogen to the soil. Plants need nitrogen so they can grow larger and repair themselves more efficiently. Bacteria and other decomposers naturally add nitrogen to the soil by breaking down dead matter from plants and animals. When these are broken down, the nitrogen that was once in them enters the soil, which can then be used by other plants.

During this lab, I was trying to determine if Miracle Gro Fertilizer helps plants grow bigger. My hypothesis was that it would help plants grow bigger because it is a very well-known fertilizer (and it wouldn't be so well known if it didn't work). My data supported my hypothesis. On average, plants number one through five grew 2 cm in 13 days and plants six through ten grew 1.35 cm. In 13 days. The only difference between plants one through five and plants six through ten is that plants one through five received Miracle Gro. Therefore using Miracle Gro resulted in bigger plants. One source of error that may have altered the data collected was that the experiment wasn't run for a long enough period of time.

I will use the information I learned from this experiment when I plant a garden this summer. I will be sure to use fertilizer on my garden to help the plants grow larger. I would like to learn more about whether certain fertilizers work better than others. Then I could use the best fertilizer on my garden.

Chemistry lab report format. Chemistry lab report sample pdf. Chemistry lab report template. Chemistry lab report conclusion example. Chemistry lab report example university. Chemistry lab report template word. Chemistry lab report example. Chemistry lab report discussion example.

Any calculations or chemical equations used for arriving at the results can be added in this section of the lab report writing for chemistry. This should be followed by the main findings of the experiment. ReferencesAny published work that was cited in-text of the Chemistry homework answers should be mentioned here. You can ask your instructors for the format your institute follows or can use the following standard format.**Title Page**All the general information about the experiment is included on the title page. The appendix should be properly referenced in the main body of the lab report.**Homework help for chemistry lab report**Following this guide will make you able to write a lab report successfully. Ensure that the data in the tabular format and graph is correctly labeled and correlates to the text of the report.All the observed data should be explained in detail. The abstract should contain the objective of the experiment and briefly describe the methodology, results, and conclusion. You can make use of flowcharts to explain the scientific methods followed. Any specific precautions one should take while carrying out the experiment should also be mentioned. Start with mentioning the purpose and hypothesis in brief. The abstract gives a detailed summary of the lab report. After completing the experiment in the laboratory the next step is to document the process and findings. If you face any difficulties in following the experimental methodology, describe that and the way you resolved it. When you perform an experiment in chemistry there are lots of chemical equations that are involved. Any trends or deviations observed should be highlighted and the reason for the same should be deliberated upon. If you are a student of science you will know that lab reports are a vital part of the science curriculum. When writing a lab report for chemistry, keep in mind that you can capture methodology, observations, and results accurately. Include summaries of relevant research to make the topic easier to understand for your reader. The introduction can be a couple of paragraphs long.**Materials and Methodology**List all the materials and equipment that were used during the experiment. Wherever you refer to any previous research make sure to give the due credit to the original author. Any background information related to the experiment can be added in this section of the lab report for chemistry. The conclusion has to be precise and no new ideas or information should be introduced here. The referencing style can be as per the lab manual or any standard academically approved styles can be used.**Appendix**Any calculation, chemical equation, or data presented in tables or graphs which you feel are too lengthy for the main lab report can be included here. The hypothesis along with the aim and the objectives of the experiment are to be stated here, but with the right guidance and step-by-step instructions, you can excel at writing lab reports for chemistry. You can also discuss the further implications of your results. **Conclusion**This section gives the entire summary of the experiment. The introduction portion should clearly answer the purpose of the experiment. After this, mention the date of the experiment, the name of the course you are taking, and the name of your instructor.**Abstract**Even though the abstract is placed at the beginning of the report it should ideally be written at the end when writing a lab report for chemistry. A reader should be able to get the summary of the entire experiment by just reading the abstract. **Introduction**The purpose of the introduction while writing a lab report for chemistry is to make your reader aware of the need for the experiment. If there were any sources of error you can record them in this section. This is to ensure that you can give the required time and attention to each section of the lab report.**Write a lab report for chemistry: Key steps**There are many formats for writing a chemistry lab report. Each step should be documented such that the reader can exactly reproduce the experiment after reading your lab report for chemistry. When you write a chemistry lab report, you have to ensure that when a reader goes through your report, they can replicate the experiment with ease. Writing a lab report for chemistry can be quite intimidating at first with all the formulae, complex chemical equations, graphs, etc. Write the title of the experiment followed by your name, in case it was a group experiment then mention the names of all your teammates. You can compare your observed data with the expected data and analyze the reason for the differences if any. You can also suggest ways in which your experiment could be improved upon. Mention the relevant chemical equations that were a part of the experimental procedure in this section.**Get Chemistry Homework Answers**Observations and ResultsAll the data collected as a result of the experiment should be carefully and accurately mentioned in this section. **TutorBin** with a large number of experts with advanced degrees in chemistry and related scientific fields will be able to provide you with a well-written and scientifically accurate lab report for chemistry.**Get Chemistry Homework Answers** Detailed calculations can be added in the appendix section.**Discussion** Once you have reported your observations the next step is to interpret the results. Your recommendations can help others to perform the experiment better. You can also draw diagrams to explain the experimental setup. In case you still need help in writing a lab report for chemistry, you can get in touch with **TutorBin**. The abstract should be concise and consist of one or two paragraphs. The data can be presented using tables and graphs. The diagram should be clearly labeled. This should be followed by highlighting the experimental procedure step-by-step. With practice, you will find it easy to write a chemistry lab report.**Before you begin writing a lab report for chemistry, jot down the different sections of the report and chalk out the timelines for each part of the lab report.**

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