

## Instructions for the Formal Report:

1. The formal report must be prepared individually by each student. **Partners are not allowed to collaborate on this report other than sharing data.** Certain parts of the formal report are to be prepared using a word processor. These include the introduction and purpose, procedure, data, observations, and conclusion. Other parts, including graphs, charts, and/or pre-lab worksheets may simply be used as is, and attached to the formal report. Use correct grammar and be concise. **Don't forget to check spelling.** Remember, this is a technical paper, not a journal, cookbook, or novel. The report should be written in **3<sup>rd</sup> person, passive voice.**

### Examples:

*"In this lab, a semi-micro pycnometer was used to measure the mass and volume."* **NOT**  
*"In this lab, we will be using a semi-micro pycnometer to measure the mass and volume.*

*"The crucible was massed, heated and re-massed."* **NOT** *"We massed the crucible, heated it and re-massed it."* Each experiment should include the **title** and the **date** the experiment was performed.

2. Organize the report according to the format given below and in the order noted. Staple all pages together. There will be folders on the table in the classroom labeled "Lab Reports." Please place them in the appropriate folder for your class period.
3. No cover page or report cover is needed.

## Format:

**INTRODUCTION & PURPOSE:** The Introduction should contain the chemical principles or concepts which are being investigated, with a brief explanation of the theory involved. Include equations and other supportive details. Information may be obtained from the lab handout, your textbook, or other reference sources. A minimum of one secondary source (other than the lab handout) needs to be used to write the introduction. This is a **very important** part of the report and should be at least one page in length. The introduction should be where you explain your understanding of the chemical/physical principles being investigated. The statement of purpose should explain the reason for doing the experiment. It may be brief. Formulas and equations may be hand-written, unless you prefer to type them. A works cited section needs to be included. (Note: Google is not a reference but a search engine.)

**PROCEDURE, REFERENCE, & SAFETY:** The Procedure section should contain a **reference** to the title of the experiment being performed. When available, give the author, name of laboratory manual, date of publication and page numbers. Try to **summarize the procedure.** **Do not list individual steps!** Include notes on **SAFETY** in this section.

**OBSERVATIONS:** This section may be brief, but don't forget to include it. It should include such things as color or texture changes, temperature changes, quantities of material before and after the experiment, notes of functioning or mal-functioning of equipment, etc. If any adaptations have been made to the procedure, please describe them in this section.

**DATA:** The Data section of the report should normally be organized prior to performing the experiment, unless you are directed otherwise in the lab hand-out or by your teacher. It is very important that data be well organized. All data collected during the experiment should be properly **labeled** and contain the **correct number of significant figures.** Further organization of the data may be necessary upon completion of the experiment to make the required calculations or to answer questions. Most often a data sheet will be part of the lab hand-out.

- All data should be written in ink at the time that it was obtained. NO erasures are to be made; strike through incorrectly written data with a single line. (Example: ~~Strike through~~)
- The original data with an instructor's stamp should be turned in.
- Quantitative data should be listed in the form of a table or graph. Every measurement must have units (example: 3 cm not just 3). One estimated digit should be recorded as the final significant digit (unless equipment with a digital read-out is used).
- Qualitative data (observations) should be written in paragraph form. Include the common physical and chemical properties of each chemical you used during the experiment and all aspects of a chemical reaction (Example: changes in temperature, odor, solubility, or the production of light, a gas, or a precipitate).
- Drawings should be included in this section.

**CALCULATIONS:** Calculations should be done on the left-side page facing the actual data table. All calculations must be properly labeled and should support the data. Answers should be rounded to the **correct number of significant figures**.

**CONCLUSIONS:** In this section, **the results must be stated** along with an attempt to explain them. When experimental results are compared to theoretical results, percent error should be given with possible reasons for the error.

- DO NOT blame errors on the lab equipment (Example: "The balance mis-measured" or "dirty glassware" are unacceptable sources of error).
- DO NOT blame errors on your lab partner.
- Errors are caused by something in the lab procedure that can be corrected by performing the experiment in a focused fashion.
- If you calculated a percent error then restate the percent error in this section.
- Percent error is omitted from a qualitative lab.
- Give at least two (2) possible sources of error and the effects of the errors.
- Provide ways to correct the errors.

If percent error is not pertinent to the experiment, **a statement and brief explanation of findings** should be given. Questions included on the lab handout should be answered in this section. You might include your personal reaction to the experiment with recommendations to the teacher or to future students.

Remember that the lab notebook is like a journal for you in the laboratory. Anything written on documents that you are turning in should be neat and organized.