Guidelines for Lab Follow-up Work

Overview:

1. Each lab follow-up work may have different expectations.
    a. Read the follow-up at the end of each protocol for specific instructions.
2. Each lab follow-up may *not* require all the sections of a typical lab report.
    a. Any expected section must be completed according to these guidelines.
3. Submit required sections in the proper order as outlined in this document:
    a. Title Page, Purpose, Introduction, etc. ...
4. The text must be in:
    a. Times 12-point font and double spaced.
    b. A passive voice (i.e. no personal pronouns).
    c. Past tense. Example: “The solution was stirred until there was a colour change.”
5. Points will be given for:
    a. proper format and organization of the report,
    b. spelling and grammar,
    c. proper chemical notations,
    d. scientific symbols, etc.
6. Include page numbers (ex. Page 1 of 4).
7. Submit your work on Moodle as a PDF to avoid issues with numbers and equations.

Title Page:

- Include the following information:
    1. Brief Title (1-2 lines) *in your own words* (including any unknown codes)
    2. Name and Partner's name.
    3. Teacher's name.
    4. Name of the institution.
    5. Name of the course.
    6. Course number.
    7. Group number.
    8. Date of the lab.
- See the last page of this document for an example.

Purpose:

- Stated in your own words.
- Do *not* copy given objectives.

Introduction:

- Written in paragraph form (unless stated otherwise).
- Provide background information about the lab.
- Demonstrate understanding of the purpose of the lab in relation to the protocol.
- If required, include a hypothesis.

Protocol:

- Written in paragraph form.
- Include materials and/or equipment, and quantity used in context.
- Do not include lists. Example: "Using a balance, 4.0 g of NaCl was measured in a weigh boat."

Results and Observations:

- Include *all* data – observations, measurements, and/or calculated values - using Tables and/or Figures.
- Include constants, units, and uncertainties of the experiment: date and time of the lab, room temperature, and pressure.
- **Tables:**
    - Organizes data.
    - Numbered independently from figures, and in sequence.
    - Descriptive title *above* the table clearly indicates what is being shown.
        - Ex. *Table 1: Volume, mass, and density of the NaCl solution.*
    - If appropriate, include 1-2 sentences that describe *trends* of the data and observations. Do not simply restate what is on the table.
    - Do NOT analyze the data in this section.
    - More than one table is allowed.
- **Figures:**
    - Visually represents results (ex. graphs, photos, etc.).

- Numbered independently from tables, and in sequence.
- Descriptive title *below* the figure clearly indicates what is being shown.
    - Ex. *Figure 1: Experimental density of sugar solution using class data.*
    - Ex. *Figure 2: Test tube containing bromine in hexane and water, showing the distinct orange colour in the hexane layer.*
- For graphs:
    - For titles, do not just repeat axis labels.
    - Label axes and include units.
    - Use an appropriate scale.
    - Include a trendline (i.e. best fit line or curve).
    - Display the trendline equation and R^2 value.
- Include 1-2 sentences that describe *trends*. Use the trendline equation and R^2 value.
- Do NOT analyze the data in this section.
- More than one graph is allowed.

- **Other information:**
    - Refer to calculations in the appendix when appropriate.
        - Ex. *Calculations for the limiting reagent are found in Appendix A.*
    - Include significant figures and uncertainties where applicable.
    - The written text of this section should focus on the highlights in the data and direct the reader to specific Tables and Figures.
        - Ex: *The temperature increased on the third day (Figure 1).*

Analysis:

- As instructed for a specific lab - either follow-up questions or written as an essay.
- Revisit the purpose and include a summary of the protocol to set the stage for the analysis.
- Things to consider in the analysis:
    - *What does the data mean and how does it relate to the purpose of the lab?*
    - *Using the data, look for patterns and relationships.*
    - *Include examples of the data to support statements.*
- Address significant sources of error and how they directly relate to experimental and/or calculated values.
- Suggest improvements to the protocol.

Conclusion:

- Summarize (~ 10 lines) the results in context of the purpose or hypothesis.
- Suggest future scientific enquiries to further the knowledge of this topic.

References:

- Use the NAME-YEAR system as presented by CSE (Council of Science Editors): https://www.scientificstyleandformat.org/Tools/SSF-Citation-Quick-Guide.html

Appendix:

- Properly titled sections.
- Sample calculations:
    - Include informative titles, formulas, units, and significant figures.
    - General Chemistry:
        - Ideally, calculations, equations, etc. can be properly formatted on the computer.
        - A picture of hand-written calculations is accepted but must be neat and legible.
    - Chemistry of Solutions:
        - Calculations, equations, etc. must be properly formatted on the computer.
- Properly cited tables or figures from other sources.
- A digital record of the Lab Notebook:
    - Each page of the corresponding experiment must take a full page in the report.
    - Each page must be legible and clear.
    - Include the signature of the teacher or lab technician.

SAMPLE COVER PAGE

All information should be centered.
Use Times New Roman, 12-point font with 1-inch margins.

COLLÉGIAL INTERNATIONAL
SAINTE-ANNE

Lab #5: Determining the Concentration of a Solution Using Spectroscopy.

Jack Brown and Jill Blue
Generally Chemistry
202-NYA-05
Group 01

Ms. Sillyauskas

December 32, 2100