



Name: _____

Partner's Name(s): _____

Lab Date: _____ Lab Instructor Name: _____

AN INTRODUCTION TO THE GENERAL CHEMISTRY LAB LAB NOTEBOOK PAGES

All purpose, procedure(s), and data/observations must be recorded in the lab notebook in pen with permanent, waterproof ink (black or blue). Pencils, markers, highlighters, and correction fluid (white-out) are not permitted. No information can be recorded elsewhere and transferred after leaving the lab. Lab notebooks can be digital or paper; you may write directly on the lab notebook pages in your lab manual or download a digital copy onto your electronic device and then write in it. Refer to the Guide for Success in the General Chemistry Laboratory section in the front of this lab manual for more detailed instructions.

- ⦿ **Before Lab:** Make sure to complete the Purpose and Procedure sections, as well as any required data tables in the Data and Observations section, in your lab notebook pages.
- ⦿ **After Lab:** Upload your notebook pages to the appropriate Carmen assignment within 48 hours after the start time of your in-person lab session. If you used the notebook pages in your paper copy of your lab manual, you should scan or take photos of the pages. Do not remove them from your lab manual. Refer to the INK Notebook upload assignment in Carmen for more detailed instructions.

PURPOSE _____

For this experiment, we'll work together as a class to form a purpose in a few bullet points or sentences. We do this by describing the what, why, and how of the experiment. Consulting the Expected Learning Outcomes and the experimental procedure are often helpful.

PROCEDURE CITATION _____

Chemistry 1220: General Chemistry Laboratory Manual, Fall 2025–Summer 2026.; Weaver, T. A., Opoku-Agyeman, B., Fontes N. Da Silva, C., Welch, A. N., Stern, J. E., Wroblewski, R. A., Walter, C., van Helmond, A. Eds.; Van-Griner Learning: Cincinnati, OH; pp. 1–6.

PROCEDURE

PART A. PREPARATION OF A DILUTE ETHANOL SOLUTION

Below are examples of a Procedure Summary and a Procedure Outline (step-by-step) for this experiment. For future experiments, you may use either format in your lab notebook—completing both is not required.

Today, we will work together as a class to complete the procedure summary and fill in Step 7 in the provided procedure outline. Use these as references when preparing your lab notebook for future experiments.

PROCEDURE SUMMARY

What should I do if I make an error in my lab notebook?

Simply cross out the mistake with a single or double line (strikethrough), or a simple X, and then continue writing. Do not scribble anything out, use non-straight lines, white-out, an eraser, or the undo button (for digital notebooks). You should be able to see what was crossed out. Step 1a of the procedure outline includes an example of a single strikethrough.

PROCEDURE OUTLINE

Part A

- Obtain about 15 mL of ethanol solution in a ~~50-mL volumetric flask~~ beaker.
 - Obtain a 50-mL volumetric flask.
- Mass the empty flask with the cap to 0.0001 g.
- Using a volumetric pipet, transfer 10.00 mL of the ethanol solution to the flask.
 - Using the wash bottle, add distilled water to the flask until the bottom of the meniscus reaching the calibration line.
 - Cap the flask and invert to mix.
- Mass the filled flask and cap to determine the mass of the diluted ethanol.

PART B. PREPARATION AND DEVELOPMENT OF CHROMATOGRAMS

Examples of a Procedure Summary and Procedure Outline (step-by-step) for this experiment are shown below. You may use either when preparing your lab notebook for future experiments. You are not expected to do both for future experiments. Today, we'll fill in both the procedure summary and procedure outline so you have an example to reference in the future.

PROCEDURE SUMMARY

PROCEDURE OUTLINE

Part B

- Obtain a chromatography strip pre-loaded with unknown ink.
 - With a pencil label with "NB."
- Obtain 3 blank chromatography strips.
 - Label the top of the first blank strip with an "F" in pencil.
 - Label the second blank strip with an "S" in pencil.
 - Label the third blank strip with an "V" in pencil.
- Place a dot using the Pilot Fineliner about 1 cm from the bottom "F" of the strip.
- Place a dot using the Pentel SignPen about 1 cm from the bottom "S" of the strip.
 - Place a dot using the Expo Vis-à-Vis about 1 cm from the bottom "V" of the strip.
- Record observations of each strip.
 - Empty 1 partner's diluted ethanol into a 600-mL beaker.
 - Record observations of the diluted ethanol solution.
 - Insert a glass stir rod in through the holes of all 4 chromatography strips.
- Place the hanging strips over the ethanol solution, so the glass stir rod rests on the spout of the beaker.
 - Space out the chromatography strips so they do not touch.

7.

8.
 - a. Allow the liquid to climb up the strips for 10-15 min.
 - b. Remove strips from beaker and lay on paper towel to dry.
 - c. Record observations of each strip.
9.
 - a. Compare NB strip to F, S and V.
 - b. Answer all questions.

CLEAN UP AND WASTE DISPOSAL

All liquid waste should be added to the class Chemical Waste beaker. Be sure to fill out the Chemical Waste Disposal Form. Rinse and return all items (beakers, volumetric pipet, wash bottle, stir rod, yellow bulb, etc.) to your drawers. Return the volumetric flask and cap to your lab instructor. Chromatography paper should be discarded in the trash. After the yellow bulb has been removed, Pasteur pipets should be discarded in the Orange Glass Waste bucket. After cleaning up, wipe down your work area with 70% ethanol spray and a paper towel. Wash your hands thoroughly before leaving lab.

DATA AND OBSERVATIONS

When recording data, be sure to record all significant figures: all digits displayed on a balance, the appropriate precision of any glassware used, etc.

PART A. PREPARATION OF A DILUTE ETHANOL SOLUTION

Combined mass of empty volumetric flask and cap (g) _____

Volume of 95% ethanol transferred into vol. flask (mL) _____

Total volume of dilute ethanol solution in vol. flask (mL) _____

Combined mass of volumetric flask, cap, and dilute ethanol solution (g) _____

*Mass of dilute ethanol solution (g) _____

You will typically find questions related to your lab work within the provided lab notebook pages. Discuss these with your neighbors and lab instructor as needed. Record your final answer in your notebook. In most cases your Lab Instructor will need to review your responses before you leave in order to earn credit.

IF THE VOLUMETRIC PIPET WAS OVERFILLED (I.E. THE BOTTOM OF THE MENISCUS IS ABOVE THE CALIBRATION MARK), HOW WOULD THIS AFFECT THE FINAL CONCENTRATION OF ETHANOL IN THE DILUTE SOLUTION? WHAT WOULD BE THE BEST WAY TO RESOLVE THIS ISSUE?

IF THE VOLUMETRIC FLASK WAS OVERFILLED (I.E. THE BOTTOM OF THE MENISCUS IS OVER THE CALIBRATION MARK), HOW WOULD THIS AFFECT THE FINAL CONCENTRATION OF ETHANOL IN THE DILUTE SOLUTION? WHAT WOULD BE THE PROPER WAY TO RESOLVE THIS ISSUE?

* Indicates this value is calculated, not directly measured.

CHEMISTRY 1220: EXPERIMENT 0

You will frequently be asked to record observations in your lab notebook. Use words and/or drawings to accurately describe information obtained using your senses: sight, smell, sound, etc. Be detailed; describe textures, colors, relative amounts, etc.

OBSERVATIONS OF UNDEVELOPED CHROMATOGRAMS			
NB	F	S	V

OBSERVATIONS OF DILUTE ETHANOL SOLUTION

OBSERVATIONS OF DEVELOPED CHROMATOGRAMS			
NB	F	S	V

WHICH KNOWN PEN CHROMATOGRAPHY STRIP (F, S OR V) LOOKS MOST LIKE THE NB CHROMATOGRAPHY STRIP? BASED ON THIS DATA AND THE INFORMATION GIVEN IN THE OVERVIEW, WHO IS THE AUTHOR OF THE NOTEBOOK PAGE?

IN-LAB QUESTIONS

Answer the following questions in your lab notebook or lab manual. They will be graded for completion (you will receive full points as long as all are answered and checked by your lab instructor before you leave).

1. Which section(s) of the lab notebook are you required to prepare **before** arriving to lab?

2. While writing in your notebook, you notice a mistake in the procedure you prepared. What should you do to correct this error?

Hint: An error was made in Step 1 of the step-by-step procedure provided for this experiment. How was it corrected?

3.
 - a. When recording data, what constitutes a properly labeled data element?

 - b. If your data is quantitative (numerical), what should you consider when recording a value?

- c. If your data is qualitative (non-numerical), what kind of descriptors should you use?
4. Diya made a mistake when recording her combined *mass of empty volumetric flask and cap (g)*. She used whiteout to erase her mistake from her notebook. Is this acceptable? Consider why scientists keep a lab notebook.
5. Gemma noticed while completing her post-lab at home that she recorded the *combined mass of empty volumetric flask and cap (g)* as 39.065 g. She is very confident that the mass was actually 39.1065 g. Which mass should she enter into the post-lab? Why?
6. Bartholomew did not complete Part E of Experiment ABC, but his friend Ernest did and his data looks very similar to Bartholomew's. What should Bartholomew do to obtain Part E data for his post-lab? Should he copy Ernest's data and present it as his own?
7. Your lab notebook must be submitted to the correct assignment on Carmen within 48 hours of lab. What file types are accepted? What would the file name be for the Experiment XYZ notebook?

