

Laboratory Techniques Overview

Name: _____ Section: _____ Partners: _____

There are many laboratory techniques that you will be responsible for reading and understanding before coming to class each week. Each technique is referenced throughout the current weeks laboratory experiment procedure. This week you will be required to conduct several activities to familiarize yourself with the five most common techniques in a general chemistry laboratory. Please read through and complete each activity. Once you are done, turn this assignment into your instructor for a grade.

I. Calculations: (10 points) – To Be Done In Lab During Your Scheduled Section

Read through the “Showing calculations in your report” and “Significant figures” techniques. Perform the following calculations and **show all work just like it is shown in the Techniques Document**.

- A. One common technique for finding the volume of an object is by displacement. The initial volume of water in a graduated cylinder is recorded. The object is then placed into the graduated cylinder and the final volume of the water in the graduated cylinder is recorded. Subtracting the initial volume from the final volume will give the volume of water displaced by the object. This is the volume of the object. Using the volume data listed below, calculate the volume of the object for the two trials. Show all work just like it is shown in the Techniques Document.

Table 1: Volume Data

	Trial 1	Trial 2
Initial Volume	51.0 mL	50.0 mL
Final Volume	62.5 mL	60.5 mL

Formula:

Work:

Answer: _____

- B. Another common calculation in lab is to find an average. Find the average of the two volumes from IA.
Formula:

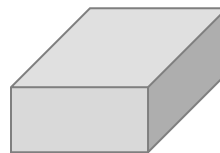
Work:

Answer: _____

- C. The volume of a rectangular block can be found by calculation. Using the given data, find the volume of the rectangular block.

Table 2: Rectangular Block Data

Length	Width	Height
12.25 cm	7.90 cm	3.68 cm



Formula:

Work:

Answer: _____

II. Reading a Balance: (10 points)

Read through the “Using and analytical balance” technique. Find the station with two objects that you need to weigh next to a balance. Weigh each object and correctly record the weight on your lab report sheet.

- A. Weigh the aluminum rectangular prism: _____
- B. Weighing out solid chemicals requires a few extra steps. One common technique is to place a weigh boat on the balance and then tare the weigh boat. Obtain a weigh boat from next to the balance and press the tare button. Make sure all of the glass doors are closed tight. Using a scoopula, weigh out approximately 1-g of NaCl. Try to get as close to 1-g as you can without going over. If you realized you scooped too much, the correct procedure is to place the excess into a waste beaker, NEVER back into the original container. Placing excess back into the original container can introduce impurities and contaminate the entire container. This is true for liquids as well.

Record the exact weight of the NaCl from the balance here: _____

Empty your weigh boat into the waste beaker next to the balance and clean the balance area. There is a brush next to the balance to brush off any solid that spilled on or around the metal tray. This is important to do each and every time you use the balance since some chemicals can react with the materials the balance is composed of and over time this does destroy our balances.

III. Reading a Meniscus: (10 points)

Read through the “Reading a meniscus in various pieces of glassware” technique. Find the station set-up with common pieces of glassware and record the volume of the meniscus for each below:

	First Attempt:	Second Attempt: <i>(only if required)</i>
A. 100-mL graduated cylinder	_____	_____
B. 10-mL graduated cylinder	_____	_____
C. 25-mL buret	_____	_____

Check your answers with your instructor. You may need to go back and try this again.

- D. Go to the hood and use the pump to dispense 50-mL of water into a 150-mL beaker. The pump is pre-set to 50-mL so do not adjust the setting. Look at the increment marks on the pump. What decimal place should the pump volume be recorded to?
- ones place
 - tenths place
 - hundredths place
 - thousandths place

Read the volume on the 150-mL beaker and record your answer here to the correct significant figures:

Does the volume on the beaker match the volume on the pump? Yes or No.

Explain your findings:

IV. Operating a Bunsen Burner: (10 points)

Find where the Bunsen burner and striker are stored for your lab bench. Pull it out and check the hose for cracks. Follow the techniques document "Using a Bunsen burner" to create a 2-inch flame with an inner and outer blue cone. Once each student at your desk has successfully operated the Bunsen burner let your instructor know you are ready for his or her signature. You will be required to demonstrate your technique to your instructor before obtaining their signature. Always turn off the Bunsen burner at the gas spigot on the bench, never by rotating the dial or shaft. Turning the dial or shaft does not turn off the gas!

Instructor's Signature: _____

V. Handling Chemicals: (10 points)

Read through the "Handling chemicals" section of the techniques document. Understanding how to handle your waste is essential for a general chemistry laboratory. All solid and liquid waste must be placed in an appropriately labeled waste container, never down the sink. The waste containers for this course will always be located in the hood. Sometimes two different types of waste containers may be necessary depending on the experiment and the chemical waste generated.

- Locate the two different waste containers in the hood.
- Draw the waste containers in the space below. Include the waste container label on your drawing with the exact contents of the waste containers.