
Introduction to the Chemistry Laboratory

Chemistry is a discipline based on observations (as all sciences are). In lecture, you will learn the principles and theories that best explain the observations that have accumulated. The laboratory experience is the opportunity to see those principles and theories put into practice.

Purpose

1. Practice procedures commonly used in the laboratory.
2. Learn how to use commonly used equipment in the laboratory.

Materials

Test tube	2 - 50 mL beakers	Filtering flask
Test tube rack	Buchner funnel	Electronic balance
Beral pipet	Filter paper	Bunsen burner
Graduated cylinders	400 mL beaker	Wire gauze
Ring stand	Iron ring	Test tube clamp
Styrofoam cup	Weighing boat	

Part A

1. Draw a map of the room with safety items drawn on the location. The following should be included:
 - a. Shower
 - b. Eye Wash
 - c. Fire Extinguisher
 - d. Fire Blanket
 - e. Emergency Shut Off Valve
 - f. First Aid Kit
 - g. Broken Glass Container(s)

Part B

1. Obtain a piece of magnesium metal. Record your observation.
2. Mass a beral pipet.
3. Fill the pipet with hydrochloric acid.
4. Empty the hydrochloric acid into a test tube, supported in a test tube rack.
5. Drop the magnesium metal into the acid. Record your observations.
6. After 10 seconds, place a lit match at the mouth of the test tube. Record your observations.
7. Dispose of your liquid after the magnesium metal has completely reacted.

Part C

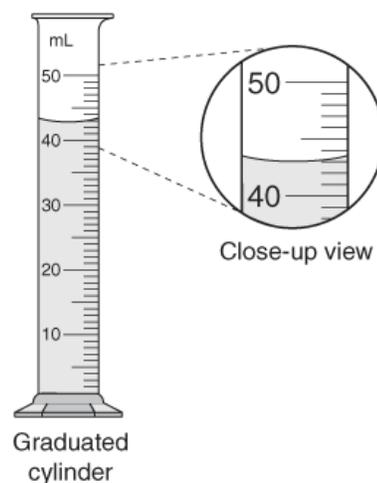
1. Mass an empty and dry beral pipet. Record your data.
2. Dispense approximately 30 mL of distilled water into a beaker.
3. Fill a beral pipet completely full (bulb and stem) with water from the beaker.
4. Mass the beral pipet filled with water. Record your data.
5. Empty the beral pipet back into the beaker.
6. Fill the same beral pipet with CaCl_2 , calcium chloride. Empty the CaCl_2 into a second 50 mL beaker. Repeat this process once more. You should have 2 full beral pipets of CaCl_2 in the second beaker.
7. Pull up water into the beral pipet, shake, and dispense the water into the beaker containing the CaCl_2 . Repeat this process 2 times.
8. Using the same beral pipet, fill with Na_2CO_3 , sodium carbonate.
9. Dispense the Na_2CO_3 into the beaker containing the CaCl_2 .
10. Pull up water into the beral pipet, shake, and dispense the water into the beaker containing the CaCl_2 and Na_2CO_3 . Repeat this process 2 times.
11. Stir the contents of the beaker with a stirring rod.
12. Mass a piece of filter paper. Record your data.
13. Mass the top portion of the Büchner funnel. Record your data.
14. Set up the filtering flask, Büchner funnel, and filter paper.
15. Attach the set up to the aspirator.
16. Turn on the water, pour your contents from the beaker into the funnel, and filter until all the liquid has been pulled through the funnel.
17. Rinse the beaker to obtain any left over solid in the beaker.
18. Snap the top of the funnel off, the bottom of the funnel, and mass. Record your data.

Part D

The volume of a liquid can be (and should be) measured with a specialized piece of glassware called a graduated cylinder. Volume is typically measured in milliliters. Each graduated cylinder you use will have a different graduation. Make sure you are aware of which cylinder you are using and the graduations on that cylinder.

Measuring with a graduated cylinder results in a meniscus. A meniscus is the curvature of the surface of the water. Water molecules are strongly attracted to the container. When looking at the surface, the water level is not straight. Measurement should be at the lowest point (see figure to the right). Students need to read the meniscus at eye level in order to get an accurate reading.

Students should place the graduated cylinder on the table and then lower their heads to be able to read the meniscus at eye level.



1. Measure the following volumes in their corresponding graduated cylinders.

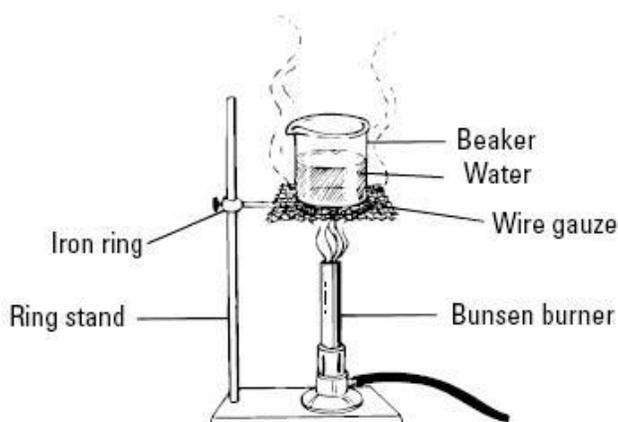
76 mL in a 100 mL graduated cylinder

5.8 mL in a 10 mL graduated cylinder

18.0 mL in a 25 mL graduated cylinder

Part E

1. Set up a Bunsen burner set up as in the diagram.



2. Mass 5 grams of a metal sample. Place the sample in a test.
3. Suspend the test tube in the water bath using a test tube clamp and heat for 5 minutes.
4. Record the temperature of the water.
5. Remove the metal from the test tube and place in a cup of cold water.
6. Pour the water off the metal and place the metal on a piece of paper towel.

Part F

On the back lab counter there is a station with equipment. Identify the various pieces of equipment. Write the number of each piece of equipment and its name.