BASIC LABORATORY TECHNIQUES

OBJECTIVES

The student will be able to:

1. use the proper laboratory techniques to do the following;
    a. pour liquids from a glass-stoppered bottle.
    b. transfer solids from a bottle.
    c. heat liquids in a beaker.
    d. heat liquids in a test tube.
    e. light and adjust a Bunsen burner.
    f. measure to 0.1 cm with a metric ruler.
    g. use a graduated cylinder to measure volume.
    h. use an analytical balance to measure mass.
2. report measurements to reflect the precision of the measuring instruments.

BACKGROUND

Your instructor will explain and demonstrate the following techniques:

a. pouring liquids from a glass-stoppered bottle,

b. transferring solids from a bottle,

c. heating liquids in a beaker,

d. heating liquids in a test tube,

e. lighting and adjusting the Bunsen burner,

f. reporting a length measurement to reflect the precision of a metric ruler,

g. reporting a temperature measurement to reflect the precision of a thermometer,

h. measuring liquid volume with a graduated cylinder and reporting your measurement to reflect the precision of your measurement,

i. measuring mass on an analytical balance and reporting your measurement to reflect the precision of your measurement.

PROCEDURE

1. Light your Bunsen burner.

    a. Write a description of the flame on your data sheet.

    b. Close the valve on the bottom of the burner. Write a description of the flame.

    c. Find the hottest and coolest portions of the flame by holding your wire gauze with your crucible tongs in the flame about ½ inch above the barrel of the Bunsen burner.

        1). The gauze will glow red-orange when it is hot.

        2). The hottest part of the flame will have the greatest area that is red-orange.

    d. Answer the questions on the data sheet.

2. Find the line near the window in the lab. Use a metric ruler to measure the length of the line in centimeters. Record this length on the data sheet.

3. Find the thermometer in the hood hanging from a ring stand. Record the temperature in °C.

4. Find the three graduated cylinders on the shelf by the windows. Record the volumes of the water in each graduated cylinder in mL. Report your values in such a way as to reflect the uncertainty of your measurements.

5. Measure the mass of your smallest beaker in grams.

6. Measure the mass of 5 milliliters of water using the following technique.

    a. With the small beaker on the balance, press the tare button.

    b. Remove the beaker from the balance and add 5.0 mL of water to it from a 10-mL graduated cylinder.

    c. Return the beaker and water to the balance.

    d. Record the mass of the water.

NAME _____

DATA SHEET FOR BASIC LABORATORY TECHNIQUES

Bunsen Burner

a. What does the flame look like:

1). when the valve is open?

2). when the valve is closed?

b. What color should the flame be when you are heating an object?

c. Draw a picture of the flame and show where you found the hot and cool sections. Where is the hottest part of the flame?

Complete the following table.

Length of the line in centimeters	
Temperature from the thermometer	
Volume of water in milliliters (1)	
Volume of water in milliliters (2)	
Volume of water in milliliters (3)	
Mass of beaker in grams	
Mass of water in grams	