Name _____ Period _____

Lab 1 – Colorful Liquids **60 Points**

Introduction

In this lab we will be observing a physical property, the color of matter. We will also be practicing measuring of liquids using a graduated cylinder and beakers.

Measuring Volume of a liquid

Liquids are measured in lab using a variety of lab equipment, the most common being the graduated cylinder. The graduated cylinder measures volume like a ruler, with 1mL = $1cm^3$ being the standard measurement. With the most common version, the graduated cylinder has measurement mark at 1mL, with a precision of 0.1mL. Due to this precision good quality volume measures are obtainable. Due to the shape of the graduated cylinder, the liquid will form a meniscus, or curved section long the sides of the cylinder. Always measure volume at the lowest point of the curve for the most accurate results.

Colorful Liquids

One common property of liquids is their color and the interaction of colors. Color itself is the result of light as it interacts with the material being viewed and can change in various ways. In this lab we will be starting with the three basic colors (*red, blue, and yellow*) and mixing the colors to create the secondary colors (*orange, green and violet*). In addition we will see how different liquids with different volumes can add together to produce a larger volume of liquid in a measuring device.

Pre-Lab Questions

1. Why are graduated cylinders used for measuring liquids over beakers?

2. What is a meniscus and how do meniscus affect the measurement process for a liquid?

3. Why are we using colored liquids in the lab as opposed to clear water?

Pre-Lab Procedures

1. Obtain 3 large [100mL or larger] beakers provided, one filled with each color (*blue, red, and yellow*) and take to your lab station;
2. Obtain empty 6 small beakers [100mL or smaller] and take to your lab station;
3. Lay the 6 small beakers out in a row and label them A – F from left to right;
4. Obtain a large (20mL or larger) graduated cylinder and take to your lab station;
5. Obtain a few paper towels from the towel rolls to clean up any spills on your lab station

Lab Procedures

1. Follow the directions below to add liquids from the three main (*blue, red, yellow*) containers to the small beakers. Use the graduated cylinders to measure the liquids:
    a. 19mL red liquid to A
    b. 18mL yellow liquid to C
    c. 18mL blue liquid to E
    d. *From C*, 4mL to D
    e. *From E*, 7mL to D
    f. 4mL blue liquid to F
    g. 7mL red liquid to F
    h. *From A*, 8mL to B
    i. *From C*, 3mL to B
2. Swirl all the beakers to mix the colors and record the color on the data table
3. Starting with beaker A, pour each beaker into the graduated cylinder, record the volume on the data table and return back to beaker

Cleanup

1. Return beakers with *blue, red, and yellow* liquid to the stock table
2. Dump liquid into sink, rinse out beakers, place on towel in front to dry

Data Table

Complete the data table below with the measurements above

Beaker Letter	Final Color of Liquid (*Each Beaker*)	Amount of Liquid (*mL*) (*Each Beaker*)	Correct Amount of Liquid (*mL*) (*Each Beaker, Provided*)
A			
B			
C			
D			
E			
F			

Questions

1. Why was the amount of liquid and the correct amount of liquid likely different in the lab?

2. Why did the colors change within the lab by mixing the main colors together?