**Volume Lab**

**Purpose**: To practice measuring, using chemistry equipment.

**Materials**:

Food coloring Test tube holder 6 (25 mL) test tubes Pipette

3 (50 mL) beakers 50 mL graduated cylinder

**Helpful Hints:**

* When reading a graduated cylinder, make sure you set it down and get eye level with it.
* Food coloring can stain clothing or hands.
* Make sure to rinse your graduated cylinder between measurements.

**Procedure**:

1. Put a paper towel under the test tubes and write on it so each test tube is labeled: A, B, C, D, E, F
2. Fill the 3 (50 mL) beakers halfway with water. Add 4 drops of food coloring (red, blue and yellow only) to each beaker, so that you have one beaker of red water, one beaker of blue water and one beaker of yellow water.
3. Into test tube A, measure 19 mL of red water.
4. Into test tube C, measure 18 mL of yellow water.
5. Into test tube E, measure 18 mL of blue water.
6. From test tube C, measure 4 mL and pour the 4 mL into test tube D.
7. From test tube E, measure 7 mL and add it to test tube D. Mix.
8. From the beaker of blue water, measure 4 mL and pour it into test tube F. Then from the beaker of red water, measure 7 mL and add it to test tube F. Mix.
9. From test tube A, measure 8 mL of water and pour it into test tube B. From test tube C, measure 3 mL and add it to test tube B. Mix.
10. Measure the liquid in all six test tubes and record.
11. Wash all of your dishes and hang them up to dry.

**Data**: Make a data table and record both the color and the measured amount of water for all 6 test tubes.

**Questions**:

1. Describe the appearance of your results.
2. Describe 4 pieces of equipment used in this lab and explain the purpose of each.
3. Calculate the volume of liquid that SHOULD have been in each tube. What do you notice about the theoretical volume and the experimental volume?
4. Why is it obvious if a lab groups did not measure accurately for this experiment?
5. What does volume measure?

**Lab Write Up:**

* Purpose
* Data
* Analysis questions (Use complete sentences!)
* Conclusion (Short paragraph with a summary of what you did and what your results were)
* Discussion of theory (Discussion of the science ideas used in this lab. Usually about 3 paragraphs.)
* Sources of error (Lists of reasons why results did not turn out as expected.)