Laboratory Experiment #2 – Volume Lab

Part 1 – Count Your Drops

HOW MANY DROPS OF WATER WILL IT TAKE TO EQUAL 1 milliliter?

Take a guess here  _____

Follow the directions to find the number of drops in 1 mL of water, and then answer the questions.

Materials:

50 mL beaker filled with water
25 mL Graduated Cylinder
Eyedropper

Procedure:

1) Fill a small graduated cylinder with 10 mL of water
2) Count the number of drops it takes to raise the water to 11 mL. Record the number in the chart below.
3) Leave the water in the graduated cylinder and count the number of drops it takes to raise the water to 12 mL. Again record the number in the chart.
4) Leave the water in the cylinder and count the number of drops it takes to raise the water to 13 mL. Once again, record the number in the chart.
5) Calculate the average number of drops

No. of drops to 11 mL	No. of drops to 12 mL	No. of drops to 13 mL	Average

Results:

a) Based on your guess and the experiment, calculate absolute and experimental error. Show all work!

b) Based on your guess and the experiment, how many drops would it take to make 1 liter? Show your work!

Part 2 – Count Your Drops on a Coin

HOW MANY DROPS OF WATER CAN FIT ONTO A COIN WITHOUT OVERFLOWING?

Take a guess here  _____

Follow the directions to find the number of drops of water that can fit onto a coin, and then answer the questions.

Materials:

50 mL beaker filled with water
50 mL beaker filled with soapy water
A coin
Eyedropper

Procedure:

1) Fill a beaker halfway with water
2) Using the eyedropper, count the number of drops it takes to fill the surface of coin before it overflows.
3) Do this 3 times with the same coin and record your results in the table below.
4) Calculate the average.

No. of drops for Trial 1	No. of drops for Trial 2	No. of drops for Trial 3	Average

HOW MANY DROPS OF SOAPY WATER CAN FIT ONTO A COIN WITHOUT OVERFLOWING?

Take a guess here ⇒ [ ]

Procedure:

1) Fill a beaker halfway with soapy water
2) Using the eyedropper, count the number of drops it takes to fill the surface of coin before it overflows.
3) Do this 3 times with the same coin and record your results in the table below.
4) Calculate the average.

No. of drops for Trial 1	No. of drops for Trial 2	No. of drops for Trial 3	Average

Results:

a) Were your predictions correct?

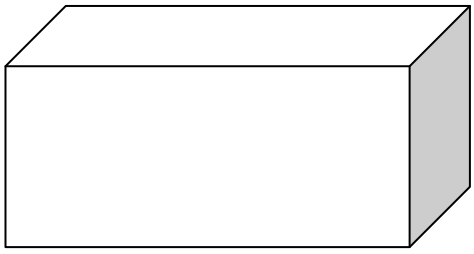
b) How does soap affects the surface tension of water? (HINT: if you do not know what surface tension is, research it on your own)

c) How do you think sugar (sucrose) affects the surface tension of water?

Part 3 – Volume of a Box

What is the volume of the box and the range uncertainty below?

Calculate the volume of this box along with the range uncertainty. Put your answer into the space below. Don't forget the significant figures!



Put your answer here ⇒ [ ]

Part 4 – Surface Area of a Marble

What is Surface Area of a Marble?

Using a graduated cylinder, water and marbles, determine the surface area of the marble. Show all your work!

Put your answer here 

Part 5 – Color Challenge

Obtain following items from your teacher:

3 x 50 mL beakers with colored water (25 mL of each color: red, blue, yellow)
25 mL or 50 mL graduated cylinder
Eyedropper
Mohr pipette
6 test tubes labeled A, B, C. D. E, and F

Perform each step outlined below using accurate measurements:

1) Measure 17 mL of RED water from the beaker and pour it into test tube A
2) Measure 21 mL of YELLOW water from the beaker and pour it into test tube C
3) Measure 22 mL of BLUE water from the beaker and pour it into test tube E
4) Measure 5 mL of water from test tube A and pour it into test tube B
5) Measure 6 mL of water from test tube C and pour it into test tube D
6) Measure 8 mL of water from test tube E and pour it into test tube F
7) Measure 5 mL of water from test tube C and pour it into test tube B
8) Measure 2 mL of water from test tube A and pour it into test tube F
9) Measure 4 mL of water from test tube E and pour it into test tube D

Test Tube	Color	Final Amount (mL)
A		
B		
C		
D		
E		
F		