PS Chemistry Chapter 16 Name(s)_____Period _____

Lab Partner(s)_____

Discovering Density & Viscosity of Fluids

Pre Lab:

Define density.

Define viscosity.

Materials:

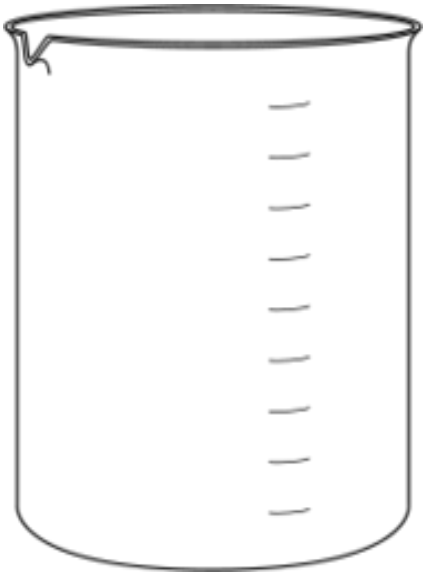
6-50 mL beakers	honey	penny	labeling marker
water	dish soap	whole peppercorn	
corn syrup	isopropyl alcohol	triple beam balance	0.5 cm piece of
vegetable oil	food coloring (2)	calculator	aluminum foil

Procedure I

1. Label the small beakers with a washable marker.
2. Measure the mass of each of the empty beakers.
3. Pour 10 mL of each of the fluids into separate beakers according to how they are labeled.
4. Add one drop of dye to the water and a different colored dye to the alcohol.
5. Determine the mass for each of the fluids. Record the mass in the data table.
6. Record the volume for each of the fluids in the data table.
7. Using the data recorded in the data table, calculate the density of each of the fluids.
8. Layer the fluids according to densities. Using your calculated densities determine which fluid is the most dense. That fluid will be the base (bottom) of the layers. Continuing adding the other fluids SLOWLY and CAREFULLY into the same beaker, pouring the least dense last. IMPORTANT: pour the fluids into the center of the cylinder. Make sure the fluids do not touch the sides of the cylinder while you are pouring.
9. As you are pouring the fluids observe the viscosity of each of the fluids. Record your observations.
10. Drop a penny, a whole pepper and 0.5-cm square piece of aluminum foil, one at a time in that order, into the same beaker already containing the layered fluids.
11. Record your observations below.
12. Discard the foil and pepper-corn in the garbage. Remove the penny and clean with soap and water, then dry. CAREFULLY flush the fluids down the sink while running water to rinse the sink thoroughly. Clean beakers with soap and water, then dry.
    Clean your area and wipe all spills with soap and water.

Observations:

- Draw a diagram to show the final product. Use color and labels appropriately.
- Label the beaker in mL.
- Label the foil, penny, peppercorn, and the fluids.



Data:

	Beaker 1	Beaker 2	Beaker 3	Beaker 4	Beaker 5	Beaker 6
Fluid						
Mass (g) Empty Beaker						
Mass (g) Beaker with Fluid						
Mass (g) Fluid						
Volume (mL) Fluid						
Calculated Density (g/mL)						
Viscosity						

Analysis:

1. Using the concept of density, explain why the contents of the beaker separated into layers. Be specific.

2. Did any of your layers mix or "switch" places? If so, explain why you think this happened.

3. What can you infer about the densities of each of the solid objects?

4. Estimate the density for the foil, the metal washer and the peppercorn.

5. Compare the viscosity of the fluids.

6. What would happen to the viscosities of the substances if you heated the substances?

7. What would happen to the densities of the substances if you heated the substances?

8. My intention was to include both milk and molasses in today's lab. If I wouldn't have forgotten to buy milk and molasses where would these substance have been in the beaker? (10 mL of molasses is 14 grams and 10 mL of milk is 10.3 grams). Explain.