Measuring viscosity of water and glycerine

Experiment

1. We have a selection of small copper spheres, clear plastic cylinders, and two liquids, water and glycerine. Your task is to measure the viscosity of the liquids
2. Estimate the time to reach terminal velocity for a ball about the size of the ones that we have to choose (use the value generated by MP)
3. Estimate the terminal velocity and time to reach the bottom of the cylinder in water, in glycerine?
4. Measure the diameter of several balls and then drop these into ones of the glycerine-filled tubes. We will do this together as a class.
5. Film the balls dropping through water. Practice a few times to be sure that you can track the balls accurately as they fall.
6. Analyze your movies. Do the balls reach terminal velocity?
7. Now pout out the water and dry the tubes. Do the same as 5 and 6, except use glycerine.
8. Repeat 7 for several diameters of balls. How do you expect a graph of v_{term} vs. r to scale? Plot this graph.
9. Clean your area up.
    a. Pour the glycerine back into the container, being careful not to pour in the copper shot
    b. Swirl a little water in your cylinder and pour it and the copper shot back into the bowls.
    c. Rinse the cylinders
    d. Put all equipment back into the plastic bin

Analysis

1. Write this section based on the results of 1-9. Email me a copy and I will evaluate it for you.

Rubric for report – See next document Will be due on Mon., March 12.