Honors Chemistry Hour\_\_\_\_\_ Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Dr. Wexler  
Lab: Density Challenge  
Date assigned\_\_\_\_\_\_\_\_\_

What is density?

Density is defined as mass per unit volume. For the purposes of this course, we use the derived unit g/mL for a liquid and g/cm3 for a solid. Of course, other combinations of mass and volume units are legitimate but in practice are less commonly used.

Density is an important concept that applies to all forms of matter, especially the ones we experience every day - solids, liquids, and gases. Density affects many aspects of our existence, from ocean circulation, weather and climate, plate tectonics, and atmospheric layers to why we don’t float off into space. The fact is that gravity affects materials of different density differently. That is why cold air sinks and hot air rises – gravity attracts cold air more strongly causing it to displace the less dense hot air upwards.

Your goal:

The purpose of this lab is to challenge you to figure out how to order four colored solutions according to their relative densities (most dense to least dense). There are a number of ways to succeed in this challenge. I only ask that you document your procedure and results. I would like you find one qualitative solution (involving observation or behavior) and one quantitative solution (involving precise measurement) to the problem. When you collect quantitative data, be sure to display it in the form of a table.

Write your two procedures and corresponding results below: be neat and organized! I highly suggest that you brainstorm as a team, then divide into two subteams in order to complete the assignment in the time available.

1. Quantitative procedure and table of results. Summarize conclusion (most dense to least dense by color)
2. Qualitative procedure and description of results. Summarize conclusion (most dense to least dense by color)