**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ UGAmyID \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Identifying Materials using Density**

Density is an intensive property, which means that it is a characteristic of the substance and does not change based on the amount of substance present. Because of this, density can be used to identify substances. You will use a simulation to explore density using water-displacement and identify substances.

Go to <https://phet.colorado.edu/sims/html/density/latest/density_all.html> and double-click on “Mystery.” There is a balance, a water tank, sets of blocks, and a density table.

1. What is the starting volume of the water tank?
2. Click on block 1B and drag it to the balance. What is its mass?
3. Click on block 1B and drop it in the water tank. What is the new total volume? What is the volume difference?
4. Divide the mass in kg by the volume difference in liters. What is the density?
5. Click the plus sign at the density table. What is the identity of the substance?

Do this process again for each block in set 1, answering questions 2 - 5 each time (the answer to question 1 will always be the same, provided you remove all blocks from the tank). Label each set of questions with the block label (1A, 1B, 1C, etc). When you are finished, answer and discuss the extension questions with your group.

Extension questions

\*Compare the masses of the blocks. What observations can you make? How do your observations relate to the density of the substances?

\*What information can we obtain about mass, volume, and density by looking at the blocks?

\*What information could we obtain about mass, volume, and density if we could hold the blocks?