

## DENSITY COLUMN

Equipment: balance, (3) 200mL beakers, (2) 100 mL graduated cylinders, sugar, spatula, stirring rod, water, food coloring, dropper

### Procedure:

- A) Label the beakers 1, 2, and 3. Use the balance to measure the mass of each empty beaker and record it in the data table.
- B) Obtain a graduated cylinder and measure 25 mL of water into each of the beakers.
- C) Use the balance to measure sugar samples of 10g and 20g. Put 20g of sugar in beaker #1 and 10g of sugar in beaker #2. Stir. There will be no sugar in beaker #3.
- D) Use the food coloring to make each beaker a different color (try not to make them too dark).
- E) Use the balance to measure the mass of each full beaker (water, sugar and food coloring) and record it in the data table. Determine the actual mass of the sample by subtraction.
- F) Use the graduated cylinder to measure the volume of the contents of each full beaker again and record in data table.
- G) Empty each beaker into a graduated cylinder (Tricky - you have to figure out how to do it!)
- H) Determine the density of each beaker.
- I) Stand back and admire your work!

	Empty Mass (g)	Full Mass (g)	Actual Mass (g)	Volume (mL)	Density (g/mL)
Beaker #1					
Beaker #2					
Beaker #3					

Density worksheet:

Name \_\_\_\_\_

1. What is the density of an object with a mass of 25.5 g and that displaces 6.2 mL of water?
2. A rock has a density of  $4.85 \text{ g/cm}^3$ . What is its mass if it displaces  $22.5 \text{ cm}^3$  of water?
3. What is the volume of 58.3 g of a liquid if its density is  $0.788 \text{ g/cm}^3$ .
4. What is the density of a liquid with a mass of 25.0 g and a volume of  $30.0 \text{ cm}^3$ ?
5. A student determines that the mass of a metal rod is 12.0 g. He places 10.0 mL of water in a 25 mL graduated cylinder. When the metal rod is placed in the water, the graduated cylinder then reads 15.0 mL. What is the density of the metal rod?
6. The density of alcohol at  $20.0 \text{ C}$  is  $0.78945 \text{ g/cm}^3$ . What volume would be required to obtain 100.0 g of alcohol?
7. What volume would be required in Problem 6 if 1.00 kg were used?
8. How many grams are there in 1.00 L of alcohol?