Name:

Date:

Science

Mrs. Nork

Density is the **ratio** of the **mass** of the substance to the **volume** of the substance at a given temperature. Density has units of **g/ cm3 or g/mL** for liquids and solids, and **g/L** for gases. Density **varies** with change in **temperature.**

*Solve each problem below and show your calculations in the space provided:

1. A gold-colored ring has a mass of 18.9 grams and a volume of 1.12 mL. Is the ring pure gold? (The density of gold is 19.3 g/mL.)

2. What volume would a 0.871 gram sample of air occupy if the density of air is 1.29 g/L?

3. Pumice is volcanic rock that contains many trapped air bubbles. A 225 gram sample occupied 236.6 mL. What is the density of pumice? Will pumice float on water? (The density of water is 1.0 g/mL.)

4. A cup of sugar has a volume of 237 mL. What is the mass of the cup of sugar if the density is 1.59 g/mL?

5. Which has the greater mass, 1 liter of water or l liter of gasoline? The density of water is 1.00 g/mL and that of gasoline is approximately 0.68 g/mL.

6. A crumpet recipe calls for 175 grams of flour. According to Julia Child's data, the density of flour is 0.620 g/mL. How many mL of flour are neededfor this recipe?

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7. From their density values, decide whether each of the following substances will sink or float when placed in sea water, which has a density of 1.025 g/mL.

Gasoline 0.66 g/mL Asphalt 1.2 g/mL

Mercury 13.6 g/mL Cork 0.26 g/mL

8. Mercury is a liquid metal having a density of 13.6 g/mL. What is the volume of 1.00 lb of mercury metal?

9. A sample of lead is found to have a mass of 32.6 g. A graduated cylinder contains 2.8 mL of water. After the lead sample is added to the cylinder the water level reads 5.7 mL. Calculate the density of the lead sample.

10. A piece of magnesium is in the shape of a cylinder with a height of 5.62 cm and a diameter of 1.34 cm. If the magnesium sample has a mass of 14.1 g, what is the density of the sample?