KEY

Unit 1 Quiz #2 Review – Density

Directions: Answer the questions and solve the problems. Show your work for each problem and circle your answer. Do not forget to include your units on your answer!

Formula	How to find DENSITY:
density = $\frac{\text{mass}}{\text{volume}}$	1. Measure the VOLUME and MASS of the sample. 2. Calculate the sample's DENSITY with the formula. **OR…**use the slope, if you have a graph!

Questions:

1. What is the equation for density? $D = \frac{m}{V}$
2. What is the density of water? 1.0 g/mL
3. In an oil spill, the oil seems to float on top of the water. Does oil or water have the lower density? Oil
4. In an oil spill, is the danger greater to birds and marine mammals than it is to fish and other organisms that live on the ocean bottom? Why? the oil stays on the surface of the ocean
5. How is the density of oil an advantage in the cleanup? you can just skim it off the surface of the water
6. Corn syrup sinks when poured in water. Does water or corn syrup have the higher density? corn syrup
7. Why would an oil spill be an even greater disaster if the density of oil were the same as that of corn syrup? the oil would go everywhere in the ocean and would be hard to contain

Problems:

1. A block of aluminum has a volume of 15.0 mL and a mass of 40.5 g. What is its density?

$$\text{density} = \frac{\text{Mass}}{\text{volume}} = \frac{40.5\text{ g}}{5.0\text{ mL}} = 40.5\text{ g} \div 15.0\text{ mL} = \underline{2.70\text{ g/mL}}$$

2. Mercury metal is poured into a graduated cylinder that holds exactly 22.5 mL. The mercury used to fill the cylinder is 306.0 g. What is the density of mercury?

$$D = \frac{m}{V} = \frac{306.0\text{ g}}{22.5\text{ mL}} = \boxed{13.6\ \frac{\text{g}}{\text{mL}}}$$

3. If the density of a diamond is 3.5g/cm^3, what would be the mass of a diamond whose volume is 0.5 cm^3?

$$m = D \times V = 3.5 \frac{g}{cm^3} \times 0.5 cm^3 = \boxed{1.75 g}$$

4. Pure gold has a density of 19.32 g/cm^3. How large would a piece of gold be if it had a mass of 318.97 g?

$$V = \frac{m}{D} = \frac{318.97 g}{19.32 g/cm^3} = \boxed{16.5 cm^3}$$

5. What is the mass of the alcohol that exactly fills a 200.0 mL container? The density of alcohol is 0.789 g/mL.

$$m = D \times V = 0.789 \frac{g}{mL} \times 200.0 mL = \boxed{157.8 g}$$

6. A rectangular block of copper metal weighs 1896 g. The dimensions of the block are 8.4 cm by 5.5 cm by 4.6 cm. From this data, what is the density of copper? (Hint: Find the volume of the block.)

$$V = l \times w \times h = 8.4 cm \times 5.5 cm \times 4.6 cm = 212.52 cm^3$$

$$D = \frac{m}{V} = \frac{1896 g}{212.52 cm^3} = \boxed{8.9 g/cm^3}$$

7. How many cm^3 would a 55.932 g sample of copper occupy if it has a density of 8.92 g/cm^3?

$$V = \frac{m}{D} = \frac{55.932 g}{8.92 g/cm^3} = \boxed{6.27 cm^3}$$