

Name: _____

15 Pts.

On a separate sheet of paper solve the following showing all work and Box Final Answer. Express your answers in the correct units with the appropriate number of significant figures.

1. What is the density of an element if a sample having a mass of 43.2 g has a volume of 96.5 mL?
2. A sample of a gas has a volume of 4.0 L and a mass of 4.922 g. What is its density in g/cm^3 ?
3. Mercury has a density of 13.6 g/mL . What is the volume of a sample of mercury that has a mass of 224 g?
4. If a liquid has a density of 0.880 g/cm^3 , what volume of liquid would have a mass of 54 g?
5. What is the mass of 84 ml of a liquid if its density is 1.25 g/mL ?
6. What is the mass in g of 25 ml of oxygen gas if its density is 1.43 g/L ?
7. A student determines the mass and volume of three samples of a liquid to be:

	<u>Volume</u>	<u>Mass</u>
A	116 ml	85 g
B	168 ml	101 g
C	158 ml	115 g

Could all of these be samples of the same substance? If not, which could be?
8. A gas is confined in a rectangular tank 25.0 cm long, 8.0 cm high and 10.4 cm wide. If the density of the gas is 19.3 g/L , what is the mass of the gas?
9. What volume of Nickel will have the same mass as 300. mL of lead? Also predict which will have the larger volume for equal masses. $D_{\text{Ni}} = 8.908 \text{ g/ml}$ $D_{\text{Pb}} = 11.3 \text{ g/ml}$
10. Ethanol has a density of 0.7889 g/ml . Sea water has a density of 1.024 g/ml . What is the mass and density of a mixture that contains 40.0 ml of ethanol and 60.0 ml of sea water?
11. The most dense element is osmium. Density is 22.61 g/ml . What is the density of osmium in pounds / inch^3 ?
12. A student measures the mass and volume of samples of three liquids to be:

<u>Liquid</u>	<u>Volume</u>	<u>Mass</u>
A	48.5 mL	37.2 g
B	12.8 mL	174.1 g
C	64.7 mL	71.2 g

 - a. What is the density of each liquid?
 - b. These liquids do not mix, sketch the position of each if placed in a graduated cylinder.
13. Two liquids are mixed together. The mass and volume of the first liquid are 72.7 g and 68.7 cm^3 , respectively. The mass and volume of the second liquid are 44.3 g and 57.5 cm^3 , respectively. Calculate the overall density of these.
14. 49.65 g of Au is lowered into a graduated cylinder containing 25.0ml of water. What new level will the water rise to in the cylinder?
15. How many liters of water are needed to balance (equal) the mass of 500. Liters of aluminum?
16. How many pounds does 1.0 cubic foot of water weigh at 20°C ? Requires Dimensional Analysis
 $454\text{g} = 1\text{lbs.}$, $1 \text{ inch} = 2.54 \text{ cm}$
17. Substance A has a density of 1.88 g/ml . Substance B has a density of 3.06 g/ml . If 30.0 grams of A is mixed with 18.5 grams of B what is the density of the mixture?