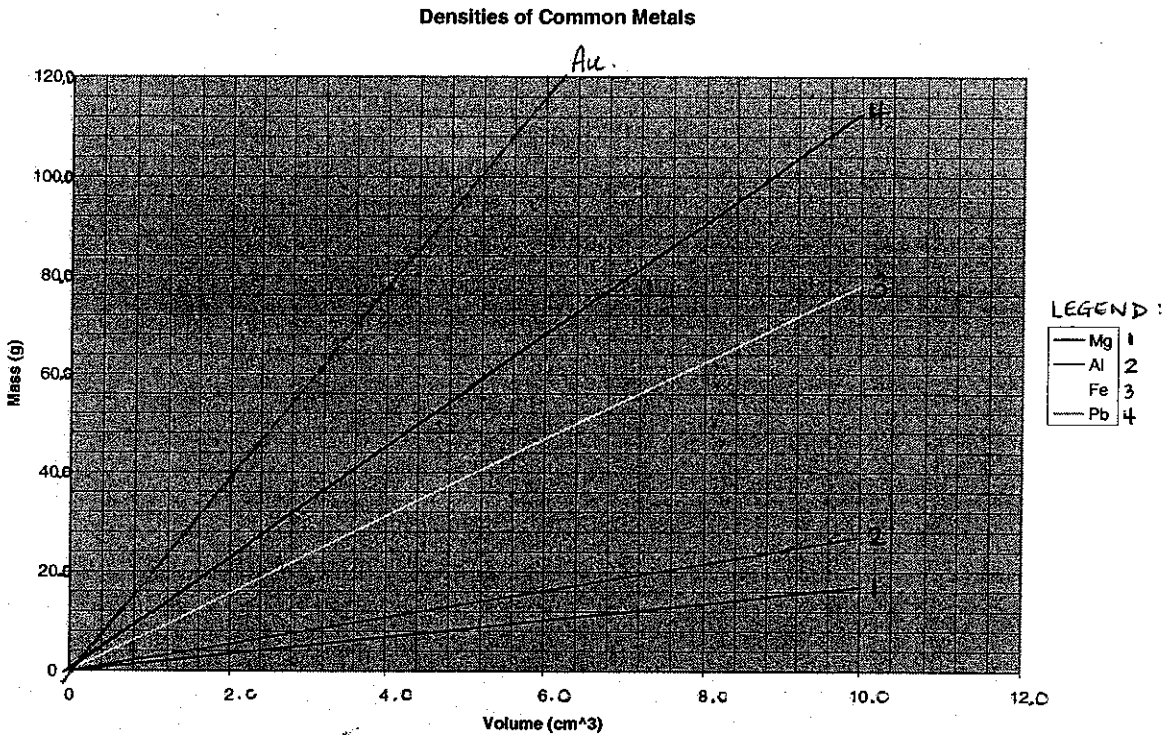
Graphing Density Worksheet Name: KEY

Part I – Solids



Using the graph provided above, answer the following questions:

1. Which metal depicted on the graph above possesses the highest density? How did you know?

Lead (Pb) → greatest slope

2. Calculate the mass of 7.00 cm^3 of Aluminum.

~ 19.00 g

3. Which is the dependent variable, and which is the independent variable?

Dependent = Mass Independent = Volume.

4. What is the difference in mass between 6.00 cm^3 of Magnesium and 6.00 cm^3 of Iron?

Mass Mg = 10.00 g mass Fe = 47.00 g Difference = 37.00 g

5. The density of Gold (Au) is 19.3 g/cm^3. Sketch its density line on the graph above.

6. Calculate the mass of 4.00 cm^3 of Gold.

Mass = $dV = \left(19.3\ g/cm^3\right)\left(4.00\ cm^3\right) =$ 77.2 g

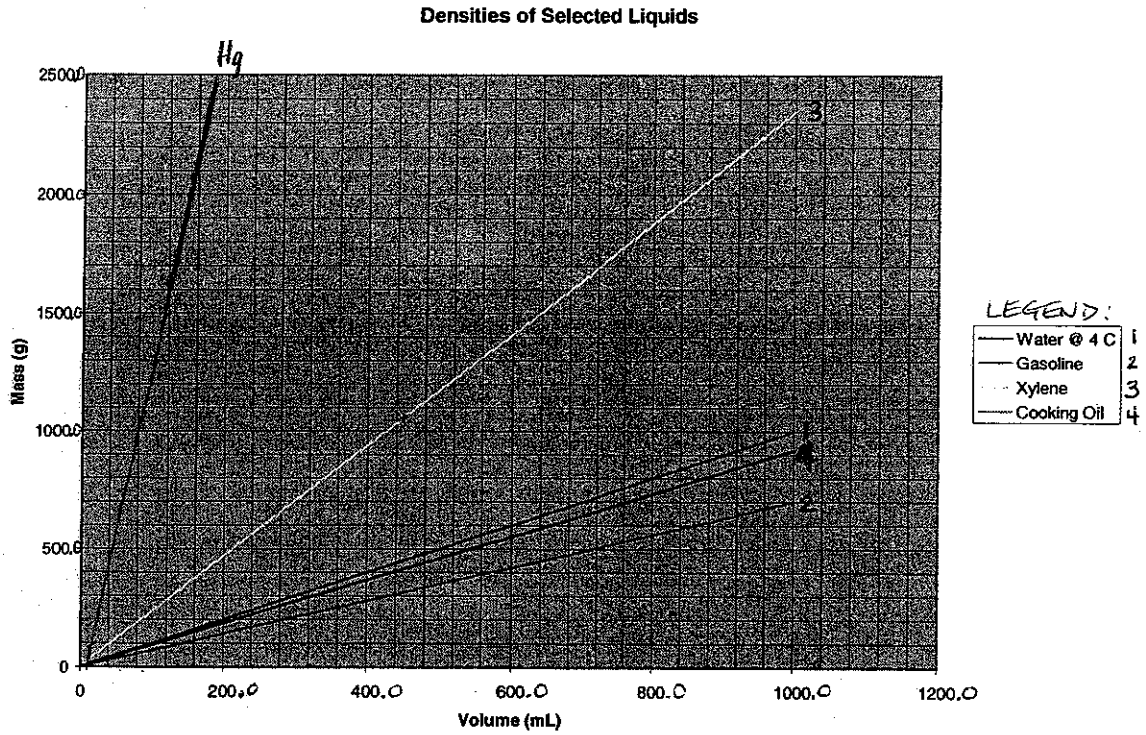
7. Calculate the density of each metal (excluding Gold) depicted above.

$d(Al) = \frac{19.00\ g}{7.00\ cm^3} = 2.71\ g/cm^3$ $d(Fe) = \frac{47.00\ g}{6.00\ cm^3} = 7.83\ g/cm^3$

$d(Mg) = \frac{10.00\ g}{6.00\ cm^3} = 1.67\ g/cm^3$ $d(Pb) = \frac{45.00\ g}{4.00\ cm^3} = 11.3\ g/cm^3$

8. Calculate the density of 6.50 g of Lead. $d(Pb) = 11.3\ g/cm^3$ regardless of mass.

Part II – Liquids



1. Which of the above liquids possesses the lowest density? How did you know?

GASOLINE → lowest slope.

2. Calculate the mass of 450.00 mL of Xylene.

1050 g xylene = 1.05×10^3 g xylene

3. Calculate the mass of 680.00 mL of cooking oil.

630 g cooking oil.

4. Determine the difference in mass between 500.00 mL of gasoline and 500.00 mL of cooking oil.

mass (gasoline) = 350 g mass (oil) = 460 g

difference = 110 g

5. Calculate the density of each liquid depicted above.

$d(\text{xylene}) = \frac{1050\ g}{450\ mL} = 2.33\ g/mL$ $d(\text{gas}) = \frac{350\ g}{500\ mL} = 0.70\ g/mL$

$d(\text{c. oil}) = \frac{630}{680\ mL} = 0.93\ g/mL$ $d(\text{water}) = \frac{600\ g}{600\ mL} = 1.0\ g/mL$

6. The density of Mercury (Hg) is 13.6 g/mL. Sketch its density line on the graph above.

Part III – Gases

Using the attached graphing paper and the following densities, create a graph similar to those above for the following gases:

CO_2 (Carbon Dioxide)	0.001977 g/cm^3
N_2 (Nitrogen)	0.001251 g/cm^3
O_2 (Oxygen)	0.001429 g/cm^3
Air (78% N_2 + 21% O_2)	0.001293 g/cm^3

On the 'y' axis, plot mass in (g). On the 'x' axis, plot volume in (L) or (dm^3)
***Remember…1 cm^3 = 1 mL.

Create a Legend for your graph, as well as a title. Plot your points and sketch a line that 'best fits' those points.