

14. 25.2mL of water is poured into a graduated cylinder. A 22.6g stone is dropped in, and the water level rises to 32.4mL. Find the stone's density.

$$V = 32.4 - 25.2 = 7.2 \text{ ml}$$

$$D = \frac{22.6 \text{ g}}{7.2 \text{ ml}} \quad D = 3.1 \text{ g/ml}$$

15. Define **density**: \_\_\_\_\_

16. The density of various liquids and solids are listed below. If placed in a graduated cylinder, in which order would they settle?

Water: 1.0 g/mL

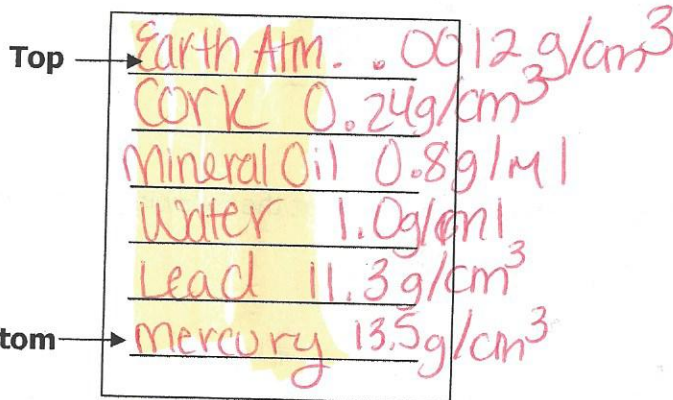
Mineral Oil: 0.8 g/mL

Mercury: 13.5 g/cm<sup>3</sup>

Lead: 11.3 g/cm<sup>3</sup>

Cork: 0.24 g/cm<sup>3</sup>

Earth's Atmosphere (Air): 0.0012 g/cm<sup>3</sup>



**D. Write each number in scientific notation.**

17. 0.0000786 =  $7.86 \times 10^{-5}$

18. 1,360,000 =  $1.36 \times 10^6$

19. 0.067 =  $6.7 \times 10^{-2}$

20. 3,952 =  $3.952 \times 10^3$

**E. Write each number in standard notation**

21.  $6.17 \times 10^3$

6,170

22.  $7.3 \times 10^6$

7,300,000

23.  $5.413 \times 10^{-8}$

0.00000005413

24.  $3 \times 10^{-8}$

0.00000003

**F. Significant Figures:** Write how many significant figures are in the following numbers.

25.) 5.40 3

28.) 1,000 1

31.) 0.00120 3

26.) 210 2

29.) 101.0100 7

32.) 0.0102 3

27.) 801.5 4

30.) 12,000 2

33.) 2,370.0 5

**G. Calculations and Significant Figures:** Perform the following calculations and report your answer with the correct sig figs and/or decimal places.

34.  $0.021 + 31.000005 = 31.021$  (3 past decimal)

36.  $57.06 - 0.5 = 56.6$  (1 past decimal)

35.  $583.00 \div 83 = 7.0$  (2SF)

37.  $787 \times 3.0 = 2400$  (2SF)

7.02409

2361

Fill in the chart

	Atom or Ion Name	Symbol	Atomic Number	Average Atomic Mass	Mass #	Proton	Neutron	Electron
Cation	51. Tin	$^{119}_{50}\text{Sn}^{+4}$	50	118.7	119	50	$119 - 50 = 69$	$50 - 4 = 46$
Isotope	52. Gold	$^{195}_{79}\text{Au}$	79	196.9	<del>195</del>	79	116	79
Anion	53. Chlorine	$^{35}_{17}\text{Cl}^{-1}$	17	35.453	35	17	18	18
Isotope Cation	54. Cesium	$^{130}_{55}\text{Cs}^{+1}$	55	132.9	130	55	75	54 $55 - 1 = 54$
Cation	55. Manganese	$^{53}_{25}\text{Mn}^{+2}$	25	54.9	55	25	30	$25 + 2 = 23$
Cation	56. Copper	$^{64}_{29}\text{Cu}^{+2}$	29	63.54	64	29	35	27 $29 - 2 = 27$

Label the following properties as either metals (M) or non-metals (NM)

57. Normally found as gases NM  
 58. Good conductor of electricity M  
 59. Dull brittle solids NM  
 60. Solid at room temperature M

61. Smooth and shiny when solid M  
 62. Bad conductor of electricity NM

63. 69.17 % of the atoms of an element have a mass of 62.940 amu. The rest of the atoms have a mass of 64.928 amu. Calculate the average atomic mass of this element and identify it from the periodic table. Show your work!

$$\begin{aligned}
 &0.6917(62.940) = 43.535598 \\
 &0.3083(64.928) = + 20.0173024 \\
 &\hline
 &63.5529004
 \end{aligned}$$

64. You have three isotopes of Uranium with varying abundance. Calculate the average atomic mass to the nearest whole number. Show your work! You have 82% of Uranium-238, 8% of Uranium-235, and 10% of Uranium-239.

$$\begin{aligned}
 &0.82(238) \\
 &0.08(235) \\
 &0.10(239) = \underline{237.86}
 \end{aligned}$$

65. This isotope of Protactinium,  $^{234}_{91}\text{Pa}$  has \_\_\_\_\_.

- a. 234 neutrons, 91 protons, and 52 electrons  
 b. 143 neutrons, 91 protons, and 91 electrons

- c. 143 neutrons, 91 neutrons, and 143 electrons  
 d. 52 neutrons, 234 protons, 91 electrons

66. An atom of an element contains 23 electrons. What element is it? (Remember you should assume an atom is neutral, until you find out otherwise.)

- a. Vanadium  
 b. Nobelium

- c. Antimony  
 d. Scandium



# Percent Error

$$\frac{|\text{Experiment value} - \text{Actual value}|}{\text{Actual value}} \times 100$$

Example:

M&M claims 15g of M&M's come in each bag. Jorge weighed 14.5grams in lab. What was the percent error.

$$\frac{14.5 - 15}{15} \times 100$$

$$\frac{.5}{15} \times 100 = \boxed{3.\bar{3}\%}$$