AP CHEMISTRY

TOPIC 1: CHEMICAL FOUNDATIONS, REVIEW

Day 8:

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1) Perform the indicated calculations on the following measured values, giving the final answer with the correct number of **significant figures**.

a) 12.734 – 3.0

b) 61 x 0.00745

c) $\dfrac{5\times10^{16}}{(4.78\ \times\ 32.314)}$

d) $\left(6.02\times10^{23}\ \div\ 4.14\times10^{17}\right)\ \div\ \left(8.31\times10^{-11}\ \div\ 9.2\times10^{-9}\right)$

2) The density of mercury is 13.6 g / cm^3. How many pounds (454 g = 1 lbs.) would one liter of mercury weigh?

3) During a recent baseball game, a pitcher threw a fastball that had a velocity of 93.7 mph.

a) calculate the velocity in meters per second.

b) calculate how long it took this pitch to travel from the mound to home plate (60 ft. 6 in.).

4) Identify the following elements:

a) $^{91}_{40}X$ b) $^{85}_{36}X$

c) $^{48}_{22}X$ d) $^{207}_{82}X$

5) Would you expect the following atoms to gain or lose electrons when forming ions? If so, how many would be gained or lost (and indicate the charge for each)?

a) Be b) Cl c) Al d) Li

e) S f) Ba g) Na h) P

6) Name each of the following compounds:

a) $MgSO_4$ b) NH_4Cl

c) $NaC_2H_3O_2$ d) N_2O_3

e) $KClO_4$ f) P_4O_{10}

g) NH_3 h) HBr

i) HIO_3 j) H_2SO_3

7) Write the formulas for each of the following compounds:

a) sodium sulfate
b) tin(II) fluoride
c) iron(III) oxide
d) calcium phosphate
e) lead(II) nitrate
f) manganese(IV) carbonate
g) carbon tetrachloride
h) hydrosulfuric acid
i) nitrous acid
j) potassium chlorate

8) A sample of sulfur has a mass of 5.37 g. How many atoms are in this sample?

9) How many milligrams of oxygen gas are in a 4.8×10^{20} molecules of oxygen gas?

10) How many kilograms are there in 0.36 moles of cobalt(III) acetate?

11) Determine the empirical formula of the compound that contains the following percentages of elements by mass:
C = 38.66%, H = 16.24%, N = 45.10%

12) Determine the molecular formula for a compound that has a molecular mass of 289.9 g/mol that contains the following percentages of elements by mass:
C = 49.67%, Cl = 48.92%, H = 1.39%

13) Balance the following equation:

____ NH_4OH + ____ $KAl(SO_4)_2 \bullet 12\ H_2O \rightarrow$ ____ $Al(OH)_3$ + ____ $(NH_4)_2SO_4$ + ____ KOH + ____ H_2O