

Name: Key Period: _____ Date: _____
 CP Chemistry – Unit 7 advanced review

Perform the following calculations. Please show all work to ensure that you receive maximum credit and **make sure that you use labels, sig figs, and circle your answer!**

1. What is the molar mass of ammonium nitrate?



$$\text{N } (2) \times 14.0 = 28.0$$

$$\text{H } (4) \times 1.0 = 4.0$$

$$\text{O } (3) \times 16.0 = 48.0$$

$$\boxed{80.0 \text{ g/mol}}$$

2. Calculate the number of moles of Na_2CO_3 in a 28.35g sample (you will need the molar mass of sodium carbonate, see the minimal review):

start!!

g $\rightarrow$ mol

$$\frac{28.35 \text{ g Na}_2\text{CO}_3}{106.0 \text{ g/mol}} = 0.26745223$$

$$\boxed{0.2675 \text{ mol}}$$

3. Calculate the mass (in g) of 2.47×10^{23} atoms of Lithium:

start

g $\rightarrow$ mol $\rightarrow$ atoms

$$\frac{2.47 \times 10^{23} \text{ atoms}}{6.022 \times 10^{23} \text{ atoms/mol}} \times 6.94 \text{ g/mol} = 2.846509$$

$$\boxed{2.85 \text{ g Li}}$$

4. How many molecules are in 18.0 grams of nitrogen gas?



start

$$\frac{18.0 \text{ g N}_2}{28.0 \text{ g/mol}} \times 6.022 \times 10^{23} \text{ molecules/mol} = 3.87 \times 10^{23} \text{ molecules}$$

5. Calculate the percent composition of hydrogen in nitric acid (you will need the molar mass).



$$\text{H } (1) \times 1.0 = 1.0$$

$$\text{N } (1) \times 14.0 = 14.0$$

$$\text{O } (3) \times 16.0 = 48.0$$

$$\underline{63.0 \text{ g/mol}}$$

$$\frac{1.0}{63.0} \times 100 = 1.6\% \text{ H}$$

molar mass

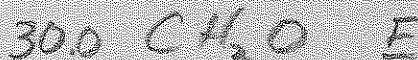
6. A compound with the empirical formula CH_2O , was found to have a molar mass of 149.8g. What is the molecular formula of the compound?

$$\text{C}(1) \times 12.0 = 12.0$$

$$\text{H}(2) \times 1.0 = 2.0$$

$$\text{O}(1) \times 16.0 = 16.0$$

$$\hline 30.0$$



149.8



$\times ? = 5$

7. Find the empirical formula:

Mass percent info: 40.27% C, 6.30% H, and 53.33% O

C	H	O
40.27	6.30	53.33
<u>12.0</u>	<u>1.0</u>	<u>16.0</u>
3.358	6.30	3.333
<u>1</u>	<u>1.9</u>	<u>1</u>
	2	

g/mol

