

Today: Finish ch.3

September 18<sup>th</sup>

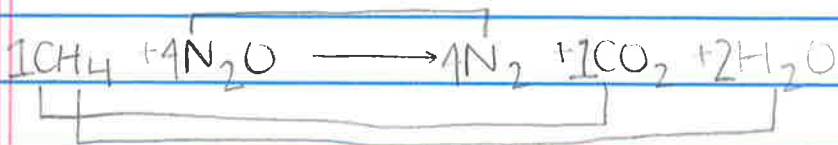
Thursday: Problem Club w/ Kendall, Eppey III, 7:30-9pm

Friday: Start ch.7

Link @  
chm203  
website!

\* Quizlet flashcards for solubility rules

\* Quizlet flashcards for acid nomenclature



Suppose 22.0g CH<sub>4</sub> is reacted with 179g N<sub>2</sub>O. What is the LR?  
What is the TY of CO<sub>2</sub> in grams? What mass of the excess reagent is left over?

16.042g/mol 44.02g/mol



GO Moles!

22.0g 179g  
1.371mol 4.066mol (LR)

÷ 1 ÷ 4

1.37 1.02



$$\text{TY} = \frac{4.066 \text{ mol N}_2\text{O}}{4 \text{ mol N}_2\text{O}} \left| \frac{1 \text{ mol CO}_2}{1 \text{ mol CO}_2} \right| \frac{44.01 \text{ g}}{1 \text{ mol CO}_2} = \boxed{44.71 \text{ g CO}_2}$$

$$m_{\text{CH}_4 \text{ used up}} = \frac{4.066 \text{ mol N}_2\text{O}}{4 \text{ mol N}_2\text{O}} \left| \frac{1 \text{ mol CH}_4}{1 \text{ mol CH}_4} \right| \frac{16.043 \text{ g CH}_4}{1 \text{ mol CH}_4} = 16.3 \text{ g CH}_4$$

$$\rightarrow 22.0 \text{ g} - 16.3 \text{ g} = \boxed{5.69 \text{ g CH}_4}$$

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What is the percent by mass of every element in iron(II) sulfate?



MM	Fe	$55.85 \text{ g} \times 1 = 55.85$	% Fe	$= 100 \times \frac{55.85}{151.91} = 36.77\% \text{ Fe}$
	S	$32.06 \text{ g} \times 1 = 32.06$	% S	$= 100 \times \frac{32.06}{151.91} = 21.10\% \text{ S}$
	O	$16.00 \text{ g} \times 4 = 64.00$	% O	$= 100 \times \frac{64.00}{151.91} = 42.13\% \text{ O}$
				$151.91 \text{ g/mol}$
				$100\%$

A sample known to contain Fe, S and O has 36.77% Fe, 21.12% S, and the rest oxygen. What is its simplest formula?

Assume 100g sample    GO MOLES OF ATOMS     $\div$  by smallest

36.77g Fe	$\div 55.85 \text{ g/mol} = 0.6584 \text{ mol Fe}$	1.00 $\rightarrow$ 1
21.12g S	$\div 32.06 \text{ g/mol} = 0.6588 \text{ mol S}$	1.00 $\rightarrow$ 1
42.11g O	$\div 16.00 \text{ g/mol} = 2.633 \text{ mol O}$	3.99 $\rightarrow$ 4

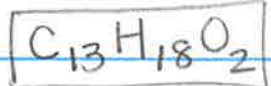


Ibuprofen contains C, H & O. It is 75.69% C and 8.796% H. What is its formula?

$100\% - 75.69\% - 8.796\% = 15.514\% \text{ O}$

Assume 100g sample    GO MOLES     $\div$  by smallest

75.69g C	$\div 12.011 = 6.302 \text{ mol C}$	6.5 $\rightarrow$ 6.5
8.796g H	$\div 1.008 = 8.726 \text{ mol H}$	8.9 $\rightarrow$ 9
15.514g O	$\div 16.00 = 0.9696 \text{ mol O}$	1.00 $\rightarrow$ 1



Fructose is 40.00% C and 6.71% H and the rest Oxygen. It has a MM of 180 g/mol.

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What is the simplest formula and the molecular formula?

Assume 100g sample GO MOLES!

↳ = empirical formula  
÷ by smallest

$$40 \text{ g C} \div 12.011 \text{ g/mol C} = 3.3303 \text{ mol C} \quad 1.00 \rightarrow 1$$

$$6.71 \text{ g H} \div 1.008 \text{ g/mol H} = 6.657 \text{ mol H} \quad 1.99 \rightarrow 2$$

$$53.29 \text{ g O} \div 16.00 \text{ g/mol O} = 3.3306 \text{ mol O} \quad 1.00 \rightarrow 1$$



↳  $180 \text{ g} / 30.027 \text{ g} = 6^* \rightarrow \boxed{\text{C}_6\text{H}_{12}\text{O}_6}$

Coumadin C, H, O

0.4440 mg Sample → 1.204 mg CO<sub>2</sub> and 0.2076 mg H<sub>2</sub>O

- 0.3286 g C

0.0232 g H

0.0922 g O

↳ 0.005763 mol O

44.01 g/mol

18.016 g/mol

$n_{\text{CO}_2} = 0.02736 \text{ mol}$       $n_{\text{H}_2\text{O}} = 0.01152 \text{ mol}$

$n_{\text{C}} = 0.02736 \text{ mol}$       $n_{\text{H}} = 0.02305 \text{ mol}$

÷ smallest

$0.02736 \text{ mol C} = 4.750 \rightarrow m_{\text{C}} = 0.3286 \text{ g C}$       $4^{3/4} * 4 = 19$

$0.02305 \text{ mol H} = 4.000 \rightarrow 4 * 4 = 16$

$0.00576 \text{ mol O} = 1.00 \rightarrow 1 * 4 = 4$

