Today, Sept 17: finish ch. 3

Tuesday, Sept 18: Expt 4, problem club with Ali

Wed / Fri: first parts of ch 4

Monday 9/24: nomenclature quiz #2

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2. MM 46.01

$$3NO_2 + H_2O \rightarrow 2HNO_3 + NO$$

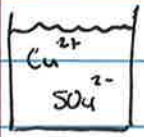
65.0g

1.41 mols

$$TY = \frac{1.41 \text{ mols}}{3 \text{ mols } NO_2} \left| \frac{2 \text{ mols } HNO_3}{} \right. = \frac{0.942 \text{ mol } HNO_3}{1 \text{ mol } HNO_3} \left| \frac{63.02 \text{ g } HNO_3}{} \right. = 59.35 \text{ g}$$

$$60\% = 100\% \ \frac{\text{actual}}{59.35 \text{ g}} : \text{actual} = \boxed{35.61 \text{ g } HNO_3}$$

naming hydrates:



$CuSO_4 \cdot 5H_2O$ (s) copper (II) sulfate penta hydrate

MM: 1 Cu, 1 S, 9 O, 10 H } add these up to get molar mass

Ibuprofen contains C, H, and O. 78.68% C, 8.80% H, 12.52% O

	assume 100g sample		go moles	divide by smallest #
C	78.68 g	÷ 12.01 g/mol	6.5512 mol	8.372
H	8.80 g	÷ 1.008 g/mol	8.7302 mol	11.1567
O	12.52 g	÷ 16.00 g/mol	0.7825 mol	1

3.85

		assume 100g	go moles	divide by smallest	if necessary multiply by integer
C	34.31%	34.31g	2.857 mol	6.001	
H	5.28%	5.28g	5.238 mol	11.003	
I	60.41%	60.41g	0.4760 mol	1	

gets rid of fractions

$C_6H_{11}I$

example of getting rid of fraction:

divide by smallest	x 2
2.499	5
1	2
3.501	7

$A_5B_2C_7$

C, H, O

0.4440 mg sample → 1.204 mg CO_2 and 0.2076 mg H_2O

0.4440g sample → 1.204g CO_2 and 0.2076g H_2O

−0.3286 g C

−0.02323 g H

0.0923 g O

÷ 16.00 g/mol O

0.00576 mol O

÷ 44.01 g/mol

0.02736 mol CO_2

0.02736 mol C

x 12.01 g/mol C

0.3286 g C

÷ 18.016 g/mol

0.01152 mol H_2O

0.02305 mol H

x 1.008 g/mol H

0.02323

		divide by smallest		multiply by integer
C	0.02736 mol	4.75	x 4	19
H	0.02305 mol	4.00	x 4	16
O	0.00576 mol	1	x 4	4

$C_{19}H_{16}O_4$

simplest formula : CH_2F formula mass = 33.026 g/mol

if we knew MM ~ 66 MM : $C_2H_4F_2$ $MM \approx 66$ g/mol

$C_3H_6F_3$ $MM \approx 99$ g/mol

Solubility in water of ionic compounds (solubility rules)

· Those that do dissolve in water

- All group I salts dissolve in water
- All ammonium salts are soluble
- All nitrates are soluble

· those that don't

- Carbonates are generally insoluble (except for group I and ammonium)
- Sulfides are generally insoluble
- phosphates are generally insoluble
- hydroxides are generally insoluble

} except for group I and NH_4