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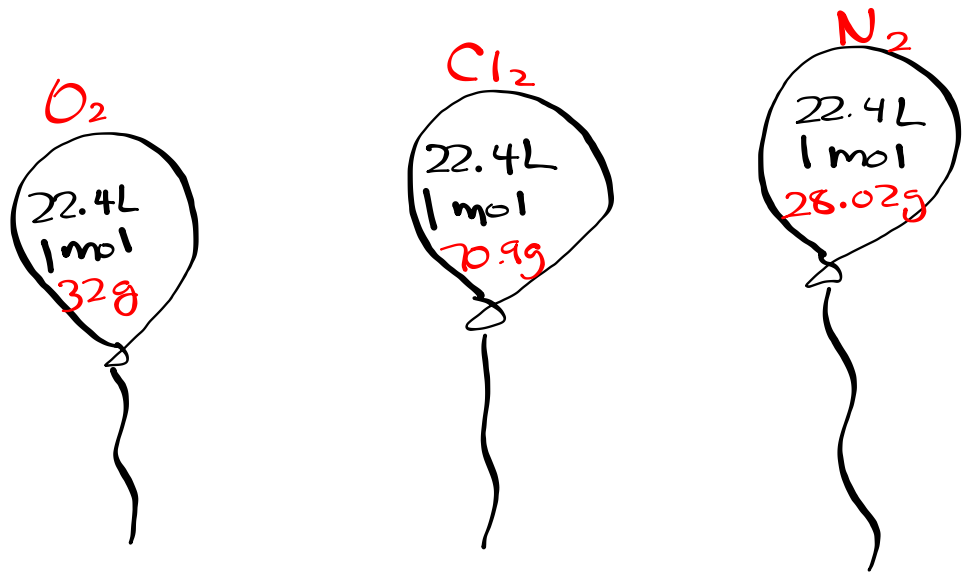
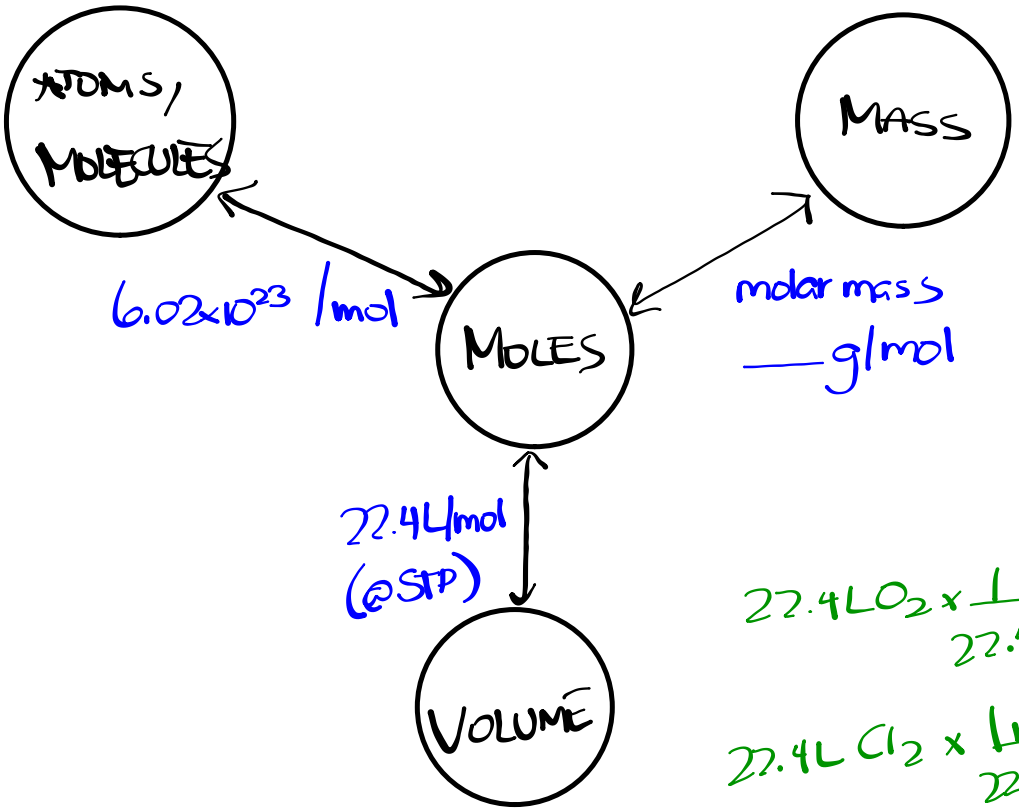
(27) $508\ g\ C_2H_5OH \times \frac{1\ mol\ C_2H_5OH}{46.08\ g\ C_2H_5OH} = 11.0\ mol\ C_2H_5OH$

$C_2H_5OH \rightarrow (2 \times 12.01) + (6 \times 1.01) + (1 \times 16.00) = 46.08\ g/mol$

C H O

(31)




ATOMS / MOLECULES
MASS
MOLES
VOLUME
6.02x10^23 /mol
molar mass
__g/mol
22.4L/mol
(@STP)
22.4L O2 x 1 mol O2 / 22.4 L O2
22.4L Cl2 x 1 mol Cl2 / 22.4L Cl2

In-Class Assignment

Percent Composition

The relative amounts of element in a compound are expressed as the percent composition (by mass) for each element within the compound.

Ex. K_2CrO_4

K - 40.3%
Cr - 26.8%
O - 32.9%

Percent Composition from Mass Data

When a 13.60 g sample containing only magnesium and oxygen is decomposed, 5.40 g of oxygen is obtained. What is the percent composition of this compound?

$$MgO \longrightarrow Mg + O_2$$

13.60g 8.20g 5.40g

$$\%Mg = \frac{\text{mass Mg}}{\text{mass MgO}} \times 100\%$$

$$\%Mg = \frac{8.20g}{13.60g} \times 100\%$$

$\%Mg = 60.3\%$

$$\%O = \frac{\text{mass O}}{\text{mass MgO}} \times 100\%$$

$$\%O = \frac{5.40g}{13.60g} \times 100\%$$

$\%O = 39.7\%$

Percent Composition from the Chemical Formula

Ex. Na_2CO_3

$\hookrightarrow (2 \times 22.99)_{Na} + (1 \times 12.01)_{C} + (3 \times 16.00)_{O}$

$= 105.99\ g/mol$

$\%Na = \frac{(2 \times 22.99)\ g/mol}{105.99\ g/mol} \times 100\%$

$\%Na = 43.4\%$

$\%C = \frac{(1 \times 12.01)\ g/mol}{105.99\ g/mol} \times 100\%$

$\%C = 11.3\%$

$\%O = \frac{(3 \times 16.00)\ g/mol}{105.99\ g/mol} \times 100\%$

$\%O = 45.3\%$

Homework

p. 306 #32, 33
p. 307 #34, 35