

PS 10-1

①

$V = 250 \text{ mL}$   
 $T = 25^\circ\text{C}$   
 $P = 2 \text{ atm}$

$n = \frac{PV}{RT}$   
 $n = 0.0204 \text{ mole } \text{N}_2$

$V = 1000 \text{ mL}$   
 $T = 25^\circ\text{C}$   
 $P = 4.5 \text{ atm}$

$n = \frac{PV}{RT}$   
 $n = 0.184 \text{ mole } \text{O}_2$

$n_T = 0.2044 \text{ moles}$

$n_T = \frac{P_T V_T}{RT}$   
 $0.2044 = \frac{P_T (1.25 \text{ L})}{RT}$   
 $P_T = 4 \text{ ATM}$

new  $V = 1250 \text{ mL}$   
 moles will NOT change

Dec 11-7:28 AM

①

$P_{\text{dry gas}} = P_{\text{total}} - P_{\text{H}_2\text{O vapor}}$   
 $735 = P_{\text{total}} - 21 \text{ torr}$

$P_i = 756 \text{ torr}$

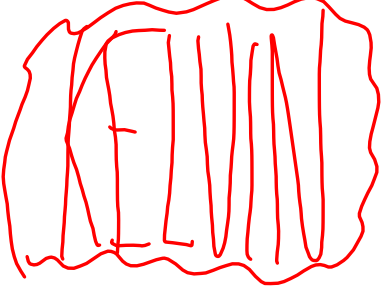
$T = 23^\circ\text{C}$   
 $P = 735 \text{ torr}$   
 $V = 568 \text{ mL}$

Find  $V_{\text{dry H}_2}$

$P_1 V_1 = P_2 V_2$   
 $(756)(568) = 735 (V)$   
 $V = 584 \text{ mL}$

Dec 11-8:15 AM

(17) ~~3l~~, 25°C, 76 mmHg  
~~3l~~, 300°C, — mmHg



Dec 11-8:27 AM

(18)  $d = \frac{2.104 \text{ g}}{l}$ , 303K, 1.3 atm.  
 Find MW  $\rightarrow$  Find which gas.

$PV = nRT$   
 $PV = \frac{gRT}{MW}$

$\frac{g}{V} = \frac{P(MW)}{RT}$

Density

$$\frac{2.104}{l} = \frac{(1.3) MW}{(0.08206)(303)}$$

Dec 11-8:38 AM

②  $P_T = P_{He} + P_{Ne} + P_{Ar}$   
 $8.4 \text{ atm} = 1.5 + 2.0 + 4.9$

Find  $X_{Ar}$   
 mole fraction  
 $\frac{n_{Ar}}{n_T} = 0.583$

$P_{Ar} = X_{Ar} P_T$

$4.9 = X_{Ar} (8.4)$

$X_{Ar} = 0.583$

Dec 11-8:43 AM

②  $P_T = P_x + P_z$   
 $4 = 1.25 + 2.75$

$n_T = 16 \text{ moles}$   
 Find  $n_x$

$P_x = X_x P_T$

$1.25 = X_x \cdot 4$

$X_x = 0.3125$

$X_x = \frac{\text{Moles } x}{\text{Total Moles}}$

$\frac{0.3125}{1} = \frac{\text{Moles } x}{16}$

5 Moles x

Dec 11-8:49 AM

(22) He  $3\text{L}, 5.6\text{atm}$   $25^\circ\text{C}$  + Ne  $4.5\text{L}, 3.6\text{atm}$   $25^\circ\text{C}$   $\rightarrow 9\text{L}$

$P_1V_1 = P_2V_2$   
 $(5.6)(3) = P(9)$

$P_{\text{He}} = 1.86\text{atm}$   
 in 9L flask

$P_1V_1 = P_2V_2$   
 $(3.6)(4.5) = P(9)$

$P_{\text{Ne}} = 1.8\text{atm}$   
 in 9L flask

$3.66\text{atm}$

Dec 11-8:55 AM

(24)  $2\text{NaN}_3(\text{s}) \rightarrow 2\text{Na}(\text{s}) + 3\text{N}_2(\text{g})$

$\xrightarrow{\quad}$

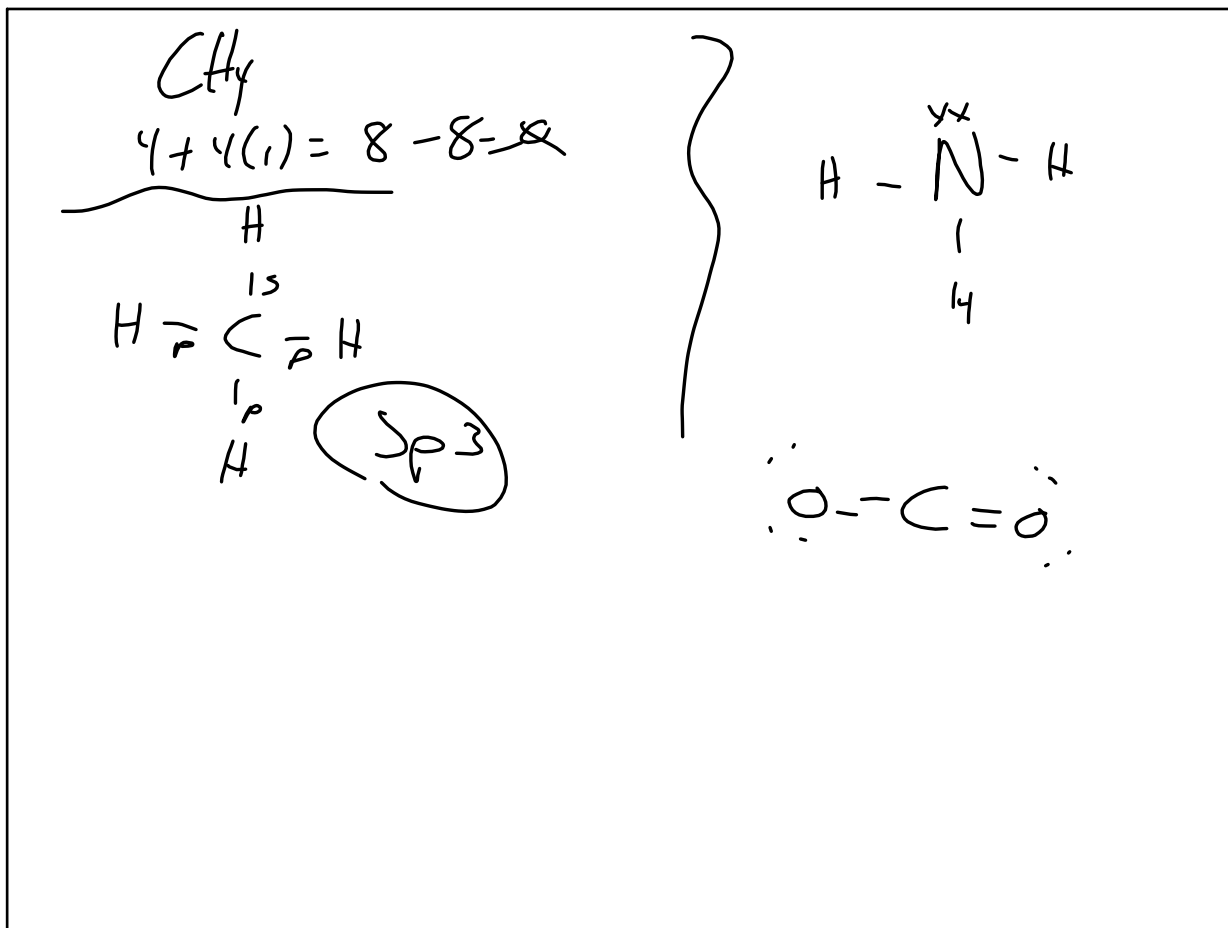
<del>1.64 mole <math>\text{N}_2</math></del>	<del>2 mole <math>\text{NaN}_3</math></del>	65g $\text{NaN}_3$
	3 mole $\text{N}_2$	1 mole $\text{NaN}_3$

$71.06\text{g NaN}_3$

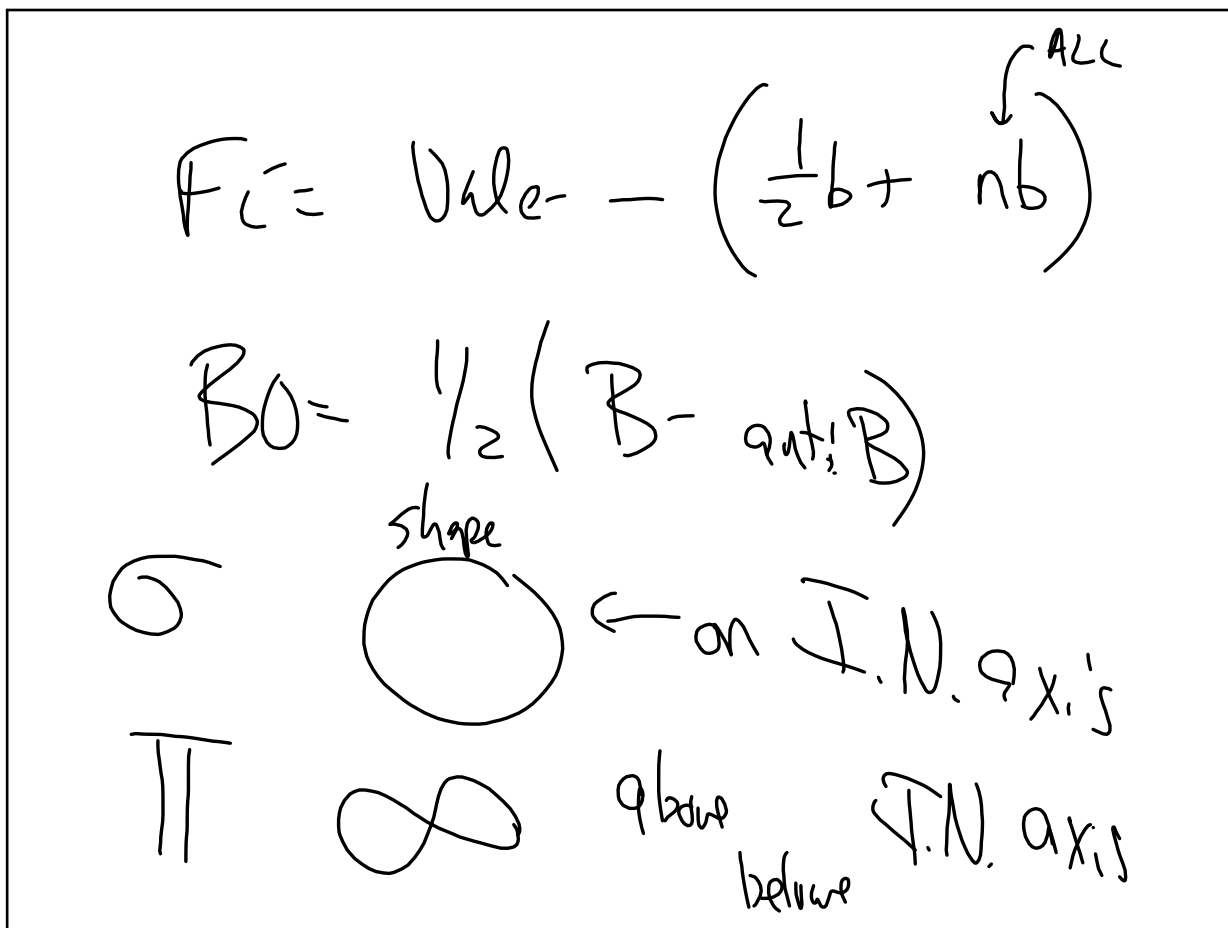
$V = 40\text{L}$   
 $T = 25^\circ\text{C} = 298$   
 $P = 763\text{mmHg} = 1.014\text{atm}$

$n = \frac{PV}{RT} = 1.64\text{mole N}_2$

Dec 11-9:02 AM



Dec 11-9:10 AM



Dec 11-9:13 AM