

10.54 $\text{CaH}_2(\text{s}) + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + 2\text{H}_2(\text{g})$

$\underline{9}$

$V = 53.5 \text{ L}$
 $P = 814 \text{ torr} \times \frac{1}{760} = 1.07 \text{ atm}$
 $T = 21^\circ\text{C} \rightarrow 294 \text{ K}$

$PV = nRT$
 $n = \frac{PV}{RT} = \frac{(1.07)(53.5)}{(0.08206)(294)}$

2.33 mol H_2	1 mole CaH_2	42 g CaH_2
	2 mole H_2	1 mole CaH_2

19.82 g CaH_2

2.37 mole H_2

Dec 8-7:38 AM

10.58 $\text{CaC}_2(\text{s}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow \text{Ca}(\text{OH})_2(\text{s}) + \text{C}_2\text{H}_2(\text{g})$

0.752 g

0.752 g CaC_2	1 mole CaC_2	1 mole C_2H_2
64 g CaC_2	1 mole CaC_2	1 mole CaC_2

0.012 mole C_2H_2

$PV = nRT$
 $V = \frac{(0.012)(0.08206)(296)}{0.953}$

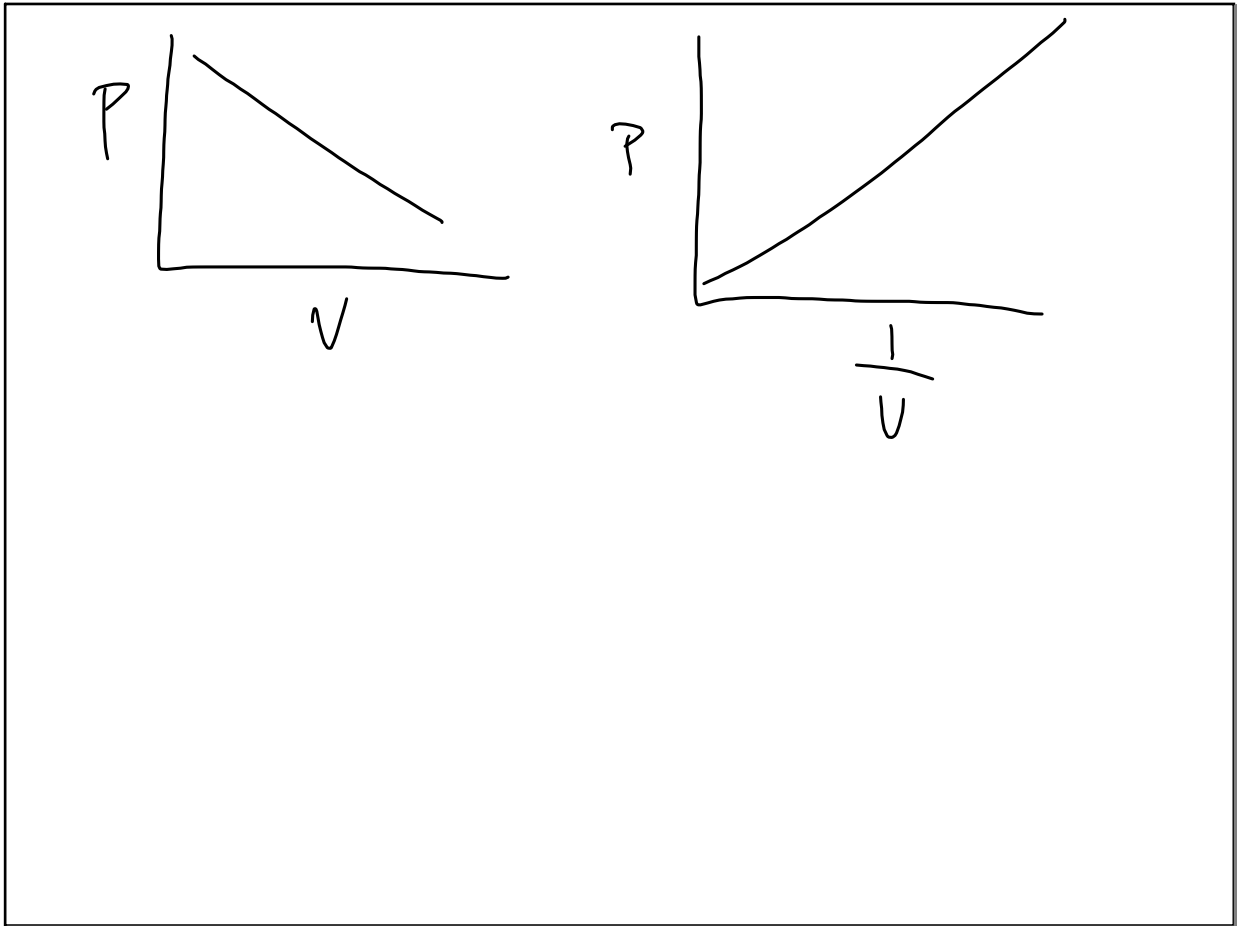
$V = 0.306 \text{ L } \text{C}_2\text{H}_2(\text{g})$

$\text{H}_2\text{O} @ 23^\circ\text{C}$
 296 K
 $P_T = 745 \text{ torr}$

$P_T = P_{\text{H}_2\text{O}} + P_{\text{gas}}$
 $745 = 21.07 + P_{\text{gas}}$
 $P_{\text{gas}} = 724 \text{ torr}$

$P_{\text{C}_2\text{H}_2} \rightarrow 0.953 \text{ atm} \times \frac{1}{760}$

Dec 8-8:02 AM



Dec 8-8:10 AM

PS10-1

$n = \frac{PV}{RT}$
 $n = \frac{2(0.25)}{(0.08206)(298)}$
 $n_{N_2} = 0.2 \text{ mol}$
 $n_T = 0.2 \text{ mol}$

$n = \frac{(4.5)(1)}{(0.08206)(298)}$
 $n_{O_2} = 0.18 \text{ mol}$

If open valve B
 $T = 25^\circ\text{C}$
 $V = 1.25 \text{ L}$
 $P_T = ?$
 $n_T = n_{N_2} + n_{O_2}$
 $P_T V_T = n_T R T$
 $P(1.25) = (0.2)(0.08206)(298)$
 $P_T = 4 \text{ atm}$

Dec 8-8:13 AM

PS 10-1

(1) $H_2(g)$ [H_2O] $23^\circ C$ ($P_{H_2O} = 21 \text{ torr}$)

$P_{atm, H_2} = 735 \text{ torr}$, $V_T = 568 \text{ ml}$

$P_T = P_{H_2} + P_{H_2O}$
 $= 735 + 21$
 $P_T = 756 \text{ torr}$
 $V_T = 568 \text{ ml}$
 ~~$T = 23^\circ C$~~

~~$P_{H_2} = 735 \text{ torr}$~~
 ~~V_{H_2}~~
 ~~$T = 23^\circ C$~~

$P_1 V_1 = P_2 V_2$
 $756(568) = 735(V_2)$
 $V_2 = 585 \text{ ml}$

Dec 8-8:39 AM

(2) $PV = nRT$

$n = \frac{PV}{RT} = \frac{\left(\frac{367}{760}\right) (60.82)}{(0.08206) (304)} = 1.18 \text{ mole}$

~~V~~

Dec 8-8:46 AM

⑱

$$\frac{d}{l} = \frac{P(\text{mw})}{RT}$$

$PV = nRT$
 $PV = \frac{gRT}{\text{mw}}$
 $\frac{g}{V} = \frac{P(\text{mw})}{RT}$

$$\text{mw} = \frac{dRT}{P} = \frac{(2.104)(0.08206)(303)}{1.31} = 39.93 \text{ g/mole}$$

Ar

Dec 8-8:52 AM

⑳ $P_T = 4 \text{ atm}$ $n_T = 16 \text{ moles}$ gas X and Z

$P_Z = 2.75 \text{ atm}$

$P_X = 1.25 \text{ atm}$

Find moles X

Mole fraction "X" = $\frac{\text{Moles X}}{\text{Total Moles}}$

$$P_X = X_X P_T$$

$$1.25 = X_X \cdot 4$$

$$X_X = 0.3125$$

$$0.3125 = \frac{\text{Moles X}}{16}$$

$P_Z = X_Z P_T$

$P_T V_T = n_T RT$

Dec 8-8:57 AM

Effusion

Diffusion →

FAT Guys Run Slow
 Except when food is out!

Dec 8-9:05 AM

②

He 25°C Ne
3L, 5.6 atm 4.5L, 3.6 atm
 n_{He} 9L n_{Ne}

$$P_T V_T = n_T R T$$

$$P_T (9) = (0.08206) (298)$$

Dec 8-9:06 AM

HW

Exam 3# 1-20

PS 10-1# 27-29

Dec 8-9:17 AM