



Dec 12-9:35 AM

$$PV = nRT$$

$$PV = \frac{gRT}{mw}$$

$$\left(\frac{g}{V}\right) = \frac{P(mw)}{RT}$$

$$\left(\frac{d}{V}\right) = \frac{P(mw)}{RT}$$

$$mw = \frac{dRT}{P}$$

$$mw = \frac{3.48(0.08206)(273)}{1}$$

Handwritten notes showing the derivation of molecular weight (mw) from the ideal gas law. The equations are:  $PV = nRT$ ,  $PV = \frac{gRT}{mw}$ ,  $\left(\frac{g}{V}\right) = \frac{P(mw)}{RT}$ ,  $\left(\frac{d}{V}\right) = \frac{P(mw)}{RT}$ ,  $mw = \frac{dRT}{P}$ , and a calculation:  $mw = \frac{3.48(0.08206)(273)}{1}$ .

Dec 12-10:01 AM

(22) 
$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{303}{3} \cdot \frac{(550)(4)}{333} = \frac{P_2 (3)}{303}$$

Dec 12-10:03 AM

(23) 
$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{303}{1} \cdot \frac{1(20)}{296} = \frac{1(V)}{303} \cdot \frac{303}{1}$$

Dec 12-10:08 AM

(24)  $20\text{ L CO}_2 = V$ ,  $T = 23^\circ\text{C} \Rightarrow 296\text{ K}$

$P = 1\text{ atm}$

$0.5\text{ atm} \rightarrow$  # mols in tank.

$$PV = nRT$$

$$0.5(20) = n (0.08206)(296)$$

Dec 12-10:10 AM

(27)  $\frac{PV}{T} = \frac{PV}{T}$

$$\frac{(100)(900)}{1} = \frac{P(300)}{2}$$

$P = 600$

$$\frac{2}{300} \frac{100(900)}{1} = \frac{P(300)}{2}$$

Dec 12-10:20 AM

$$1 \text{ NH}_4\text{NO}_2(s) \rightarrow 1 \text{ N}_2(g) + 2 \text{ H}_2\text{O}(g)$$

$$\text{35g} \quad \quad \quad \text{3 moles gas}$$

$$525^\circ\text{K} \quad (s) : (1+2) \quad \text{3 moles gas}$$

$$1.5 \text{ atm}$$

35g NH <sub>4</sub> NO <sub>2</sub>	1 mole NH <sub>4</sub> NO <sub>2</sub>
69g NH <sub>4</sub> NO <sub>2</sub>	0.571 mole NH <sub>4</sub> NO <sub>2</sub>

$$PV = nRT$$

$$(1.5)(V) = (1.641)(0.08206)(798)$$

$$V = 71.64 \text{ L}$$

1.641 mole g

Dec 12-10:25 AM

PS 10-2

$$P_{\text{He}} > P_{\text{Ne}}$$

$$683 + 9.92 = 782.2$$

$$9.92 \text{ cm} = 99.2 \text{ mm}$$

Dec 12-10:31 AM

$$\textcircled{2} \quad \frac{30.51 \text{ mL Hg} \quad | \quad 25 \text{ cm} \quad | \quad 101.35 \text{ kPa}}{\quad | \quad \text{Lx} \quad | \quad 76 \text{ cm}} =$$

$$101.35 \text{ kPa} = 760 \text{ mmHg}$$

$$76 \text{ cm Hg}$$

Dec 12-10:37 AM

$$\textcircled{4} \quad \frac{0.791 \text{ g}}{\text{mL}}$$

$$d_{\text{Hg}} = \frac{13.6 \text{ g}}{\text{mL}}$$

height  $\Delta$  43.4 cm

$$P_{\text{atm}} = 755 \text{ mmHg}$$

$$\begin{array}{r} 755 \\ - 25.2 \\ \hline 729.8 \text{ mmHg} \end{array}$$

$$\textcircled{0.96 \text{ atm}}$$

$$\frac{\text{liquid}}{\text{Hg}} = \frac{0.791}{13.6} \times 43.4 \text{ cm} = 2.52 \text{ cm} = \textcircled{25.2 \text{ mm}}$$

$\textcircled{\text{conversion factor}}$

Dec 12-10:40 AM

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

Dec 12-10:45 AM