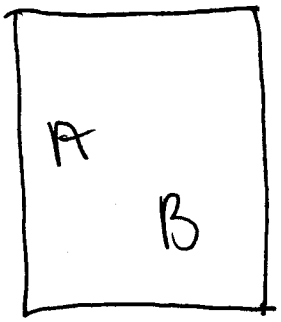
MIXTURE OF GASES



T & V CONST

DALTON'S LAW (Low PRESSURE)

$$P_{total} = P_A + P_B$$

Intermolecular forces $\boxed{f_{AA} = f_{AB} = f_{BB}}$

$$P_{TOTAL} = P_A + P_B \quad \text{AT HIGHER PRESSURE}$$

FIXED V, SO

$$P_A = n_A \frac{RT}{V}$$

$$P_B = n_B \frac{RT}{V}$$

EXAMPLE 4.6 DO IT

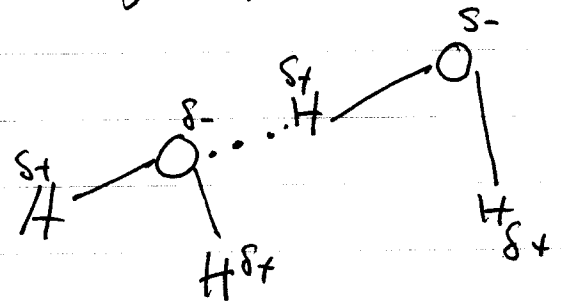
$$P_t = (n_A + n_B)\frac{RT}{V} = n_t \frac{RT}{V}$$

$$P_A = \frac{n_A}{n_t} P_t = X_A P_t$$

$X_A \equiv$ MOLE FRACTION

Hydrogen Bonds

Bonds formed between H and O, N, or F.



Water forms Hydrogen bonds

Max density at 4°C !

CH 6

Composition of Solutions

Concentration

$$\text{Molarity} = \frac{\text{Moles of Solute}}{\text{Liters of Solution}}$$

$$= \text{mol } L^{-1}$$

$$\text{Molality} = \frac{\text{Moles of solute}}{\text{Kilograms of solvent}}$$

$$= \text{mol } kg^{-1}$$

Mole Fraction X

$$X_1 = \frac{n_1}{n_1 + n_2} = \frac{n_1}{n_{total}}$$

$$X_2 = \frac{n_2}{n_1 + n_2} = \frac{n_2}{n_{total}}$$

$$X_1 + X_2 = 1$$

IONIC SOLUTIONS

COMPOUNDS WHEN DISSOLVED SEPARATE INTO CHARGED IONS

$$NaCl(s) \xrightarrow{H_2O(l)} Na^+(aq) + Cl^-(aq)$$

Aq → FORMATION OF SOLVATION SHELLS OR HYDRATION SHELLS.

IN H_2O A MAX OF 0.0025 g OF $BaSO_4(s)$ DISSOLVED ⇒ <u>PRECIPITATION RXN</u>

$$Ba^{2+}(aq) + SO_4^{2-}(aq) \longrightarrow BaSO_4(s)$$

FROM

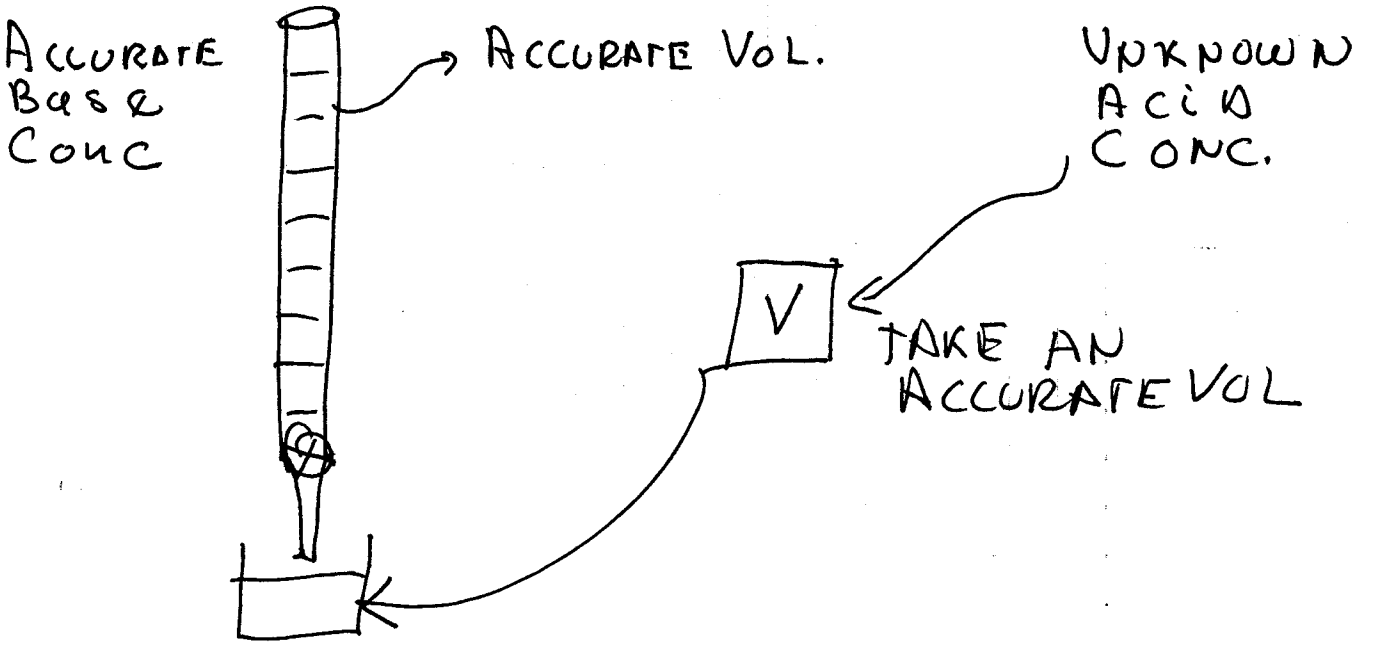
$$2H_2O(l) \rightleftharpoons H_3O^+(aq) + OH^-(aq)$$

10^{-7} M $\quad$ 10^{-7} M

⇒ <u>NEUTRALIZATION REACTION</u>

$$HCl + NaOH \longrightarrow H_2O + NaCl$$

TITRATION



$\Rightarrow$ # MOLES OF BASE = # MOLES OF ACID $\longrightarrow$ CONC OF THE UNKNOWN.

NEUTRALIZATION RXN

$\Downarrow$

a) INDICATORS

b) pH Meter.

OXIDATION NUMBER

VERY HELPFUL CONCEPT WHE WE WANT TO KEEP TRACK OF THE ELECTRON TRANSFER IN REDOX RXN.