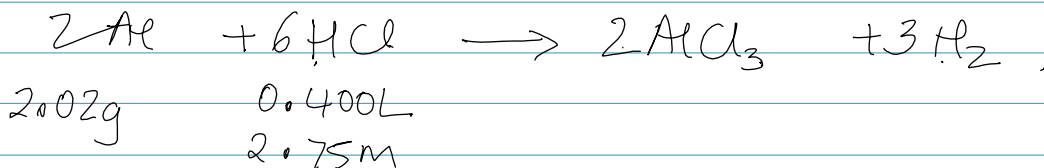


Solution Stoichiometry, -solid/liq & titration: (2)

- ① After 2.02g Al has reacted with 0.400L of
* 2.75M HCl, what is the molarity of the remaining HCl?



find moles of Al & HCl → subtract → divide by total vol.
molarity of remaining HCl?

$$2.02\text{g Al} \times \frac{1\text{mol}}{26.98\text{g}} = 0.0748\text{mol Al}$$

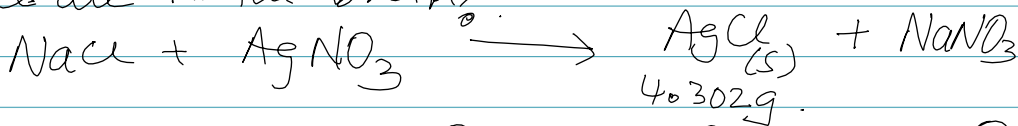
$$M = \frac{\text{mol}}{\text{L}}$$

$$0.400\text{L} \times 2.75\text{mol/L} = 1.1\text{mol HCl}$$

subtract 1.0252mol HCl

$$\frac{1.0252\text{mol}}{0.400\text{L}} = \boxed{2.56\text{M HCl}}$$

- ② One cup broth (≈ 240g) yields 4.302g AgCl when excess AgNO₃ is added. Assuming all Cl⁻ is from NaCl, how many grams of NaCl are in the broth?



Strategy

$$\text{g AgCl} \rightarrow \text{mol AgCl} \rightarrow \text{mol Cl}^- \rightarrow \text{mol Na}^+ \rightarrow \text{g Na}^+$$

$$4.302\text{g AgCl} \times \frac{1\text{mol AgCl}}{143.35\text{g AgCl}} \times \frac{1\text{mol Cl}^-}{1\text{mol AgCl}} \times \frac{1\text{mol NaCl}}{1\text{mol Cl}^-} \times \frac{1\text{mol Na}^+}{1\text{mol NaCl}} \times \frac{22.98\text{g}}{1\text{mol Na}^+}$$

$$= \boxed{0.6898\text{g Na}^+}$$