



$$27) a) n = \frac{5.623 \text{g NaHCO}_3}{84.01 \text{g NaHCO}_3} \times 1 \frac{\text{mol NaHCO}_3}{\text{mol NaHCO}_3} = 0.06693 \text{ mol}$$

$$M = ?$$

$$L = 250.0 \text{ mL} \rightarrow 0.2500 \text{ L}$$

$$M = \frac{n}{L} = \frac{(0.06693 \text{ mol})}{(0.2500 \text{ L})} = \boxed{0.2677 \text{ M NaHCO}_3}$$

$$b) n = 184.6 \text{ mg} \rightarrow \frac{0.1846 \text{g K}_2\text{Cr}_2\text{O}_7}{294.20 \text{g K}_2\text{Cr}_2\text{O}_7} \times 1 \frac{\text{mol K}_2\text{Cr}_2\text{O}_7}{\text{mol K}_2\text{Cr}_2\text{O}_7} = 6.275 \times 10^{-4} \text{ mol}$$

$$L = 500.0 \text{ mL} \rightarrow 0.5000 \text{ L}$$

$$M = ?$$

$$M = \frac{n}{L} = \frac{(6.275 \times 10^{-4} \text{ mol})}{(0.5000 \text{ L})} = \boxed{1.255 \times 10^{-3} \text{ M K}_2\text{Cr}_2\text{O}_7}$$

$$30) a) M = \frac{(0.0200 \text{ mol})}{(0.0100 \text{ L})} = 2.00 \text{ M}$$



$$M_{\text{Na}^+} = 3(2.00) = \boxed{6.00 \text{ M}} \quad M_{\text{PO}_4^{3-}} = \boxed{2.00 \text{ M}}$$

$$b) M = \frac{(0.300 \text{ mol})}{(0.6000 \text{ L})} = 0.500 \text{ M}$$



$$M_{\text{Ba}^{2+}} = \boxed{0.500 \text{ M}} \quad M_{\text{NO}_3^{-}} = 2(0.500) = \boxed{1.00 \text{ M}}$$

33)

$$\cancel{M} = \frac{n}{L}$$

$$n = M \cdot L = (0.400 \frac{\text{mol}}{\text{L}}) (0.2500 \text{L}) = 0.100 \text{ mol NaOH}$$

$$M = 0.400 \text{ M}$$

$$n = ?$$

$$L = 250.0 \text{ mL} \rightarrow 0.2500 \text{ L}$$

$$\frac{0.100 \text{ mol NaOH}}{1 \text{ mol NaOH}} \times 40.00 \text{ g NaOH} = 4.00 \text{ g NaOH}$$

$$35) a) \frac{2.00 \text{ L} \times 0.250 \text{ mol NaOH}}{1 \text{ mol NaOH}} = 40.00 \text{ g NaOH} = 20.0 \text{ g NaOH}$$

★ Sentence ★

$$b) \cancel{M_1 V_1 = M_2 V_2}$$

$$M_1 V_1 = M_2 V_2$$

$$\cancel{V_2} = \frac{M_1 V_1}{M_2} = (1.00 \text{ M})$$

$$V_1 = \frac{M_2 V_2}{M_1} = \frac{(0.250 \text{ M})(2.00 \text{ L})}{(1.00 \text{ M})} = 0.500 \text{ L}$$

★ Add 500. mL of 1.00 M NaOH
to enough water to make 2L
of solution

$$c) \frac{2.00 \text{ L} \times 0.100 \text{ mol K}_2\text{CrO}_4}{1 \text{ mol K}_2\text{CrO}_4} = 194.20 \text{ g K}_2\text{CrO}_4 = 38.8 \text{ g K}_2\text{CrO}_4$$

★ Sentence ★

$$d) V_1 = \frac{M_2 V_2}{M_1} = \frac{(0.100 \text{ M})(2.00 \text{ L})}{(1.75 \text{ M})} = 0.114 \text{ L}$$

★ Add 114 mL of 1.75 M K₂CrO₄
to enough water to make
2L of solution

36) a)

$$M_1 V_1 = M_2 V_2$$

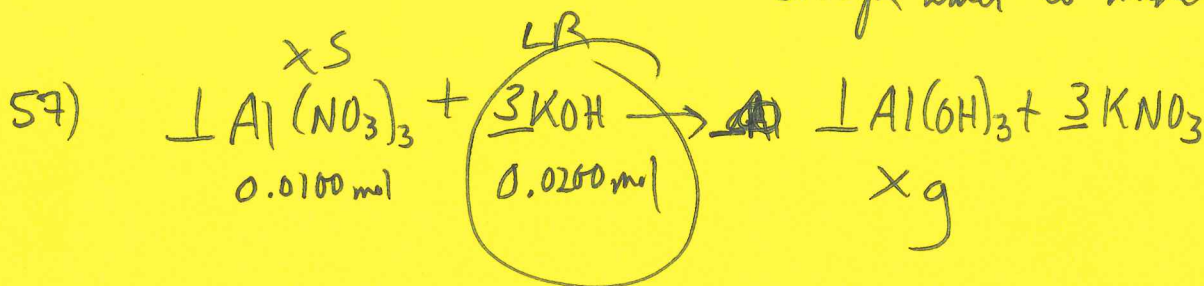
$$V_1 = \frac{M_2 V_2}{M_1} = \frac{(0.50 M)(1.00 L)}{(18 M)} = 0.028 L$$

Add 28 mL of 18 M H_2SO_4 to enough water to make 1 L of sol'n

b)

$$V_1 = \frac{M_2 V_2}{M_1} = \frac{(0.50 M)(1.00 L)}{(12 M)} = 0.042 L$$

Add 42 mL of 12 M HCl to enough water to make 1 L of sol'n



$$L = 50.0 \text{ mL} \rightarrow 0.0500 L$$

n = ?

$$M = 0.200 M$$

$$M = \frac{n}{L}$$

$$V = M \cdot L = (0.200 \frac{\text{mol}}{L})(0.0500 L) = 0.0100 \text{ mol}$$

$$V = M \cdot L = (0.100 \frac{\text{mol}}{L})(0.2000 L) = 0.0200 \text{ mol}$$

