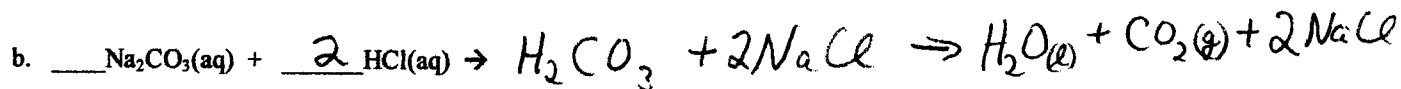
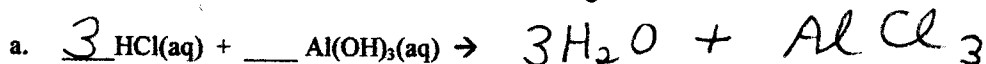


**Show work to receive credit!**

(Atomic masses: H = 1.008, O = 16.00, S = 32.07, P = 30.97, Ca = 40.08)

1. (6 Pts) Complete and balance each of the following:



2. (3 Pts) What volume of 12.6 M HCl must be added to enough water to prepare 5.00 liters of 3.00 M HCl?

$$(12.6 \text{ M})(V_1) = (3.00 \text{ M})(5.00 \text{ L})$$

$$V_1 = 1.19 \text{ L}$$

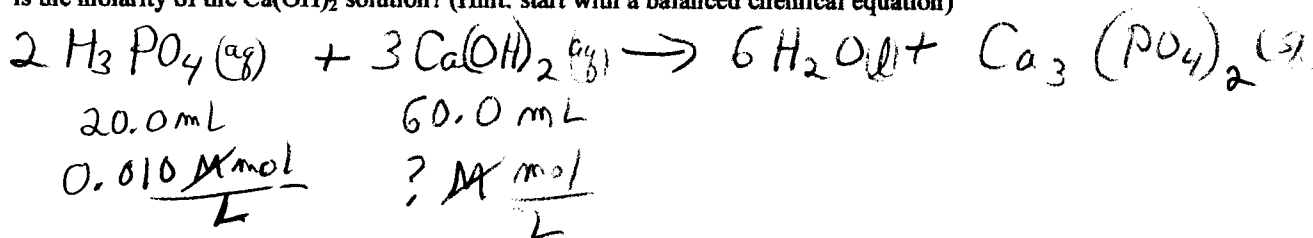
3. (4 Pts) How many grams of Ca(OH)<sub>2</sub> are contained in 1500 mL of 0.0250 M Ca(OH)<sub>2</sub> solution?

$$\frac{1500 \text{ mL}}{1000 \text{ mL}} \times \frac{0.0250 \text{ mol Ca(OH)}_2}{1 \text{ mol}} \times 74.096 \text{ g} = 2.78 \text{ g Ca(OH)}_2$$

4. (4 Pts) What is the molarity of 600 mL of solution containing 6.72 grams of sulfuric acid? (H<sub>2</sub>SO<sub>4</sub>)

$$\frac{6.72 \text{ g}}{98.086 \text{ g/mol}} \div \frac{600 \times 10^{-3} \text{ L}}{1 \text{ L}} = 0.114 \frac{\text{mol H}_2\text{SO}_4}{\text{L}}$$

5. (8 Pts) If 20.0 mL of 0.010 M H<sub>3</sub>PO<sub>4</sub> solution is completely neutralized by 60.0 mL of Ca(OH)<sub>2</sub> solution, what is the molarity of the Ca(OH)<sub>2</sub> solution? (Hint: start with a balanced chemical equation)

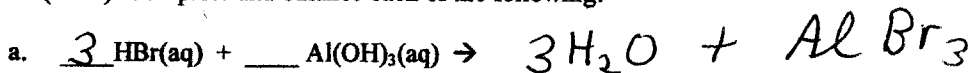


☺	$\frac{20.0 \text{ mL}}{0.010 \text{ mol/L}}$	$\frac{60.0 \text{ mL}}{? \text{ mol/L}}$	$\frac{3 \text{ mol Ca(OH)}_2}{2 \text{ mol H}_3\text{PO}_4} = 0.0050 \text{ mol Ca(OH)}_2$
$\frac{60.0 \times 10^{-3} \text{ L}}{\text{Ca(OH)}_2}$	☺	$\frac{1000 \text{ mL}}{\text{H}_3\text{PO}_4}$	$\frac{2 \text{ mol H}_3\text{PO}_4}{1 \text{ mol Ca(OH)}_2}$

**Show work to receive credit!**

(Atomic masses: H = 1.008, O = 16.00, S = 32.07, P = 30.97, Ca = 40.08)

1. (6 Pts) Complete and balance each of the following:



2. (3 Pts) What volume of 11.6 M HCl must be added to enough water to prepare 6.00 liters of 5.00 M HCl?

$$M_1 V_1 = M_2 V_2$$

$$(11.6 \text{ M}) V_1 = (5.00 \text{ M})(6.00 \text{ L})$$

$$V_1 = 2.58 \text{ L}$$

3. (4 Pts) How many grams of Ca(OH)<sub>2</sub> are contained in 1800 mL of 0.0350 M Ca(OH)<sub>2</sub> solution?

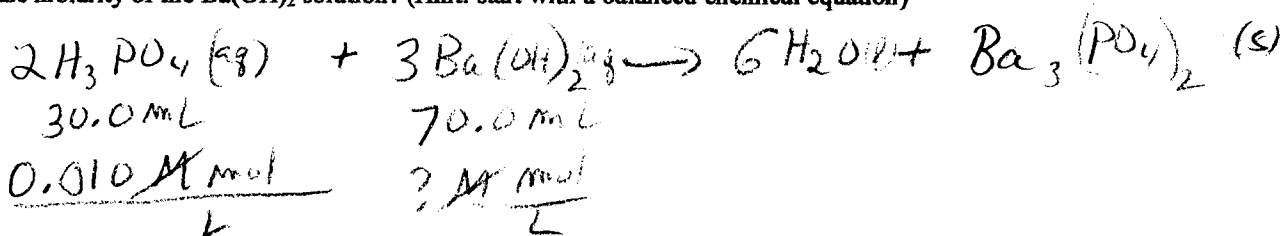
1800 mL	0.0350 mol Ca(OH) <sub>2</sub>	74.096 g	= 4.668 g Ca(OH) <sub>2</sub>
1000 mL		mol	

4. (4 Pts) What is the molarity of 700 mL of solution containing 9.72 grams of sulfuric acid? (H<sub>2</sub>SO<sub>4</sub>)

$$\frac{9.72 \text{ g}}{198.08 \text{ g/mol}} = 0.0491 \text{ mol}$$

$$\frac{0.0491 \text{ mol}}{0.700 \text{ L}} = 0.0701 \text{ M}$$

5. (8 Pts) If 30.0 mL of 0.010 M H<sub>3</sub>PO<sub>4</sub> solution is completely neutralized by 70.0 mL of Ba(OH)<sub>2</sub> solution, what is the molarity of the Ba(OH)<sub>2</sub> solution? (Hint: start with a balanced chemical equation)



30.0 mL H <sub>3</sub> PO <sub>4</sub>	0.010 mol/L H <sub>3</sub> PO <sub>4</sub>	3 mol Ba(OH) <sub>2</sub>	= 0.00643 mol Ba(OH) <sub>2</sub>
70.0 x 10 <sup>-3</sup> L Ba(OH) <sub>2</sub>	1000 mL H <sub>3</sub> PO <sub>4</sub>	2 mol H <sub>3</sub> PO <sub>4</sub>	