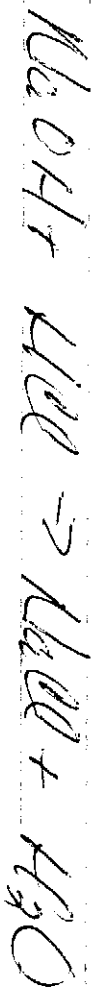


L/W # 2

1. $86.2 \text{ mol} = 86.2 \text{ mol}$. 765 M NaOH
 $30 \text{ mol} = 30 \text{ mol HCl}$, $\text{H}_2\text{O} = ?$



$$(.05835) \times (765 \text{ mol}) = .046 \text{ mol NaOH}$$

$$\frac{(.046 \text{ mol H}_2\text{O}) \times (1 \text{ mol H}_2\text{O})}{(1 \text{ mol H}_2\text{O})} = .046 \text{ mol H}_2\text{O}$$

$$\frac{(.046 \text{ mol H}_2\text{O})}{.03 \text{ L}} = 1.53 \text{ mol/L} = \underline{1.53 \text{ M H}_2\text{O}}$$

2. $.045 \text{ L} \cdot 106 \text{ M H}_2\text{SO}_4$. $.085 \text{ L NaOH}$
 $\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow 2\text{H}_2\text{O} + \text{Na}_2\text{SO}_4$
 $\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow 2\text{H}_2\text{O} + \text{Na}_2\text{SO}_4$

$$\left(\frac{.045 \text{ mol}}{\text{L}} \right) \times (.045 \text{ L}) = .004 \text{ mol H}_2\text{SO}_4$$

$$\left(\text{mol NaOH} \right) \times \left(\frac{1 \text{ mol NaOH}}{1 \text{ mol H}_2\text{SO}_4} \right) = .008 \text{ mol NaOH}$$

$$\frac{.008 \text{ mol NaOH}}{.065 \text{ L NaOH}} = \underline{1.23 \text{ M NaOH}}$$

3. 0957L 8823 M K10000 0957L Be(Ca)2
M1 = 2 gr

2 K10000 + Be(Ca)2 → Be(Ca)2 + 2 K10000

(0070X Y. 023 me) = 062 me K10000

(.062 me K10000) (1 me Be(Ca)2) = 031 me Be(Ca)2

$$\frac{.031 \text{ me}}{.0957 \text{ L}} = \boxed{.324 \text{ M Be(Ca)}_2}$$

4. 0957L Be(Ca)2 0963 L 1925 M K10000
M1 gr = ?

2 K10000 + Be(Ca)2 → Be(Ca)2 + 2 K10000

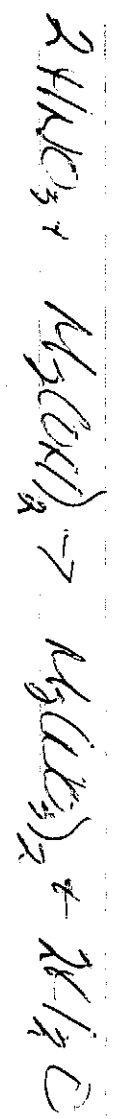
(.00363X) (.1925 me) = .0033 me K10000

(.0033 me K10000) (1 me Be(Ca)2) = .0017 me Be(Ca)2

$$\frac{(.0017 \text{ me Be(Ca)}_2)}{.0957 \text{ L}} = \boxed{.0175 \text{ M Be(Ca)}_2}$$

5. 9 g $MgCO_3$ in 0.50 L soln. \rightarrow 361 $MgCO_3$
 $34.31 + 32 + 2 \cdot 02 = 58.33$ g/mol

$$\frac{9 \text{ g } MgCO_3}{58.33 \text{ g/mol}} = 0.154 \text{ mol } MgCO_3 \text{ in } 0.5 \text{ L}$$



(0.15 mol $MgCO_3$) \rightarrow 2 mol $Mg(NO_3)_2$. 0.3 mol HNO_3
 need $Mg(NO_3)_2$

$$\frac{0.3 \text{ mol } HNO_3}{3 \text{ mol}} = 0.1 \text{ L } 3M HNO_3$$

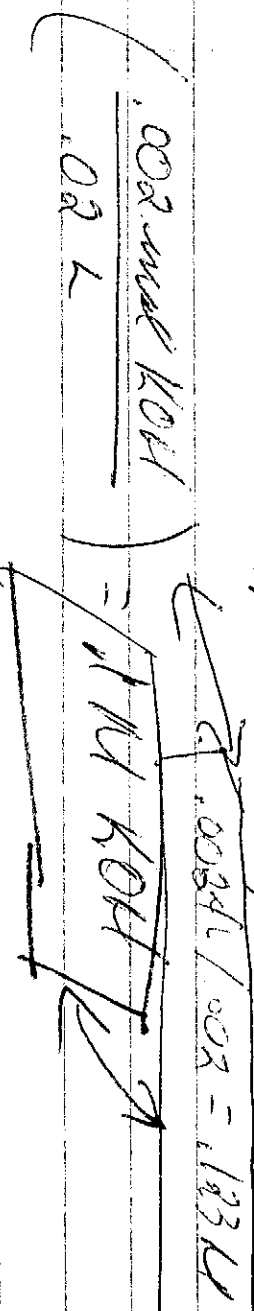
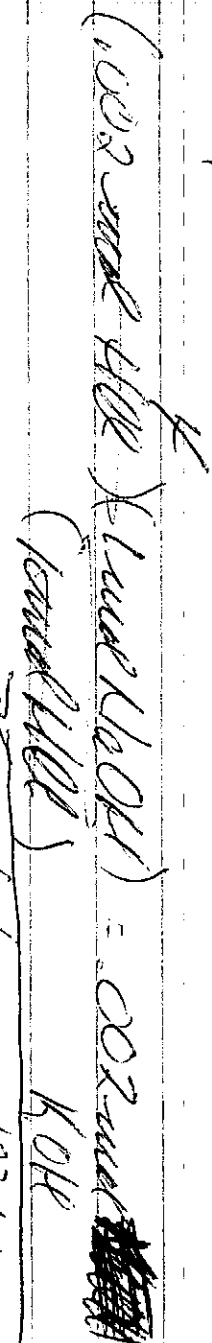
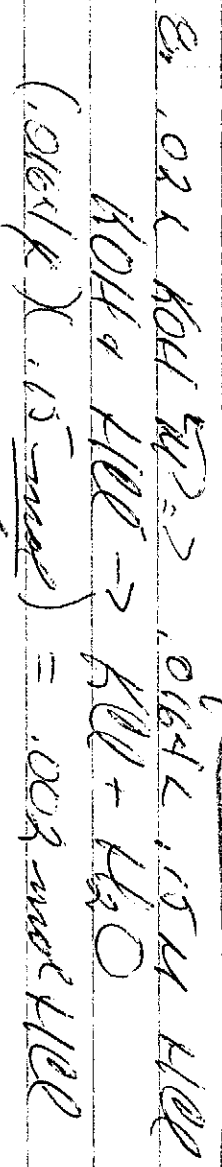
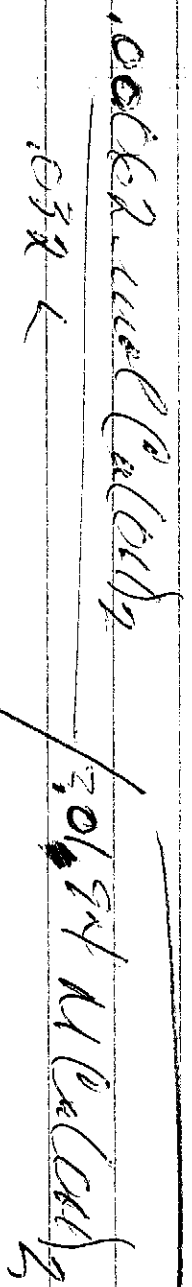
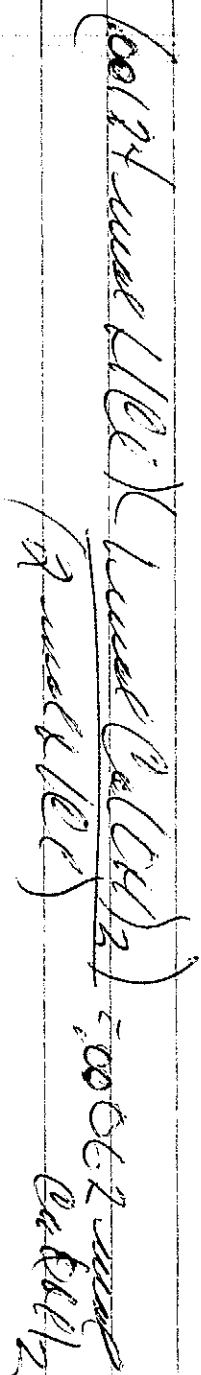
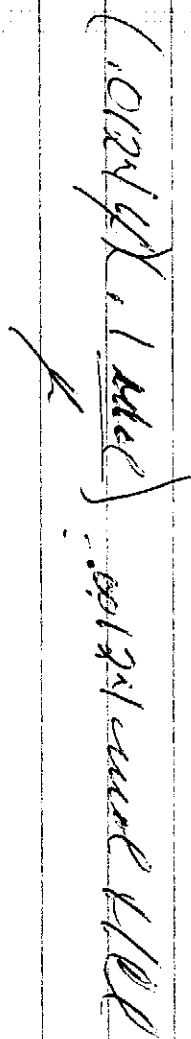
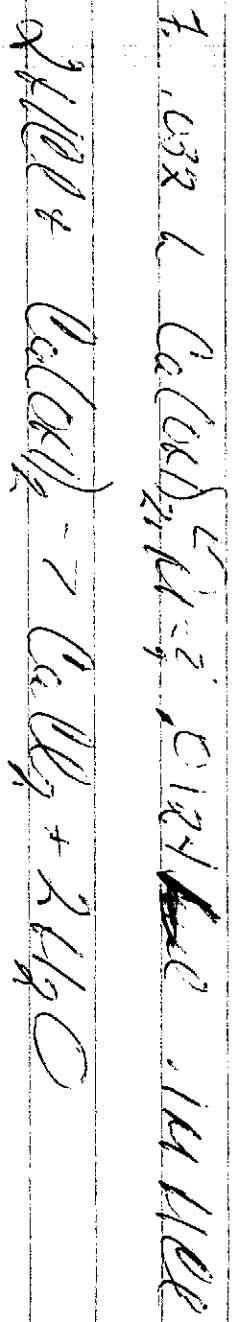
6. 0.25 L 1 M KCl . 0.55 L $MgCl_2$, Sn^{2+}
~~0.25 L~~ $MgCl_2$ \rightarrow $MgCl_2 \cdot 6H_2O$

$$(0.25 \text{ L}) \left(\frac{1 \text{ mol}}{L} \right) = 0.25 \text{ mol } KCl$$

(0.025 mol KCl) (1 mol $MgCl_2$) \rightarrow 0.025 mol $MgCl_2$
 (1 mol KCl) = 1 mol $MgCl_2$

$$0.025 \text{ mol } KCl \rightarrow 0.045 \text{ M } MgCl_2$$

$$\boxed{0.045 \text{ M } MgCl_2}$$





37.5 mL .5 M NaOH & 25 mL HCl \Rightarrow a) M HCl & b) % conc HCl

a) $(.0375 \text{ L} \cdot \frac{5 \text{ moles}}{\text{L}}) = .0188 \text{ moles NaOH}$

$\therefore (.0188 \text{ moles NaOH}) \frac{1 \text{ mole HCl}}{1 \text{ mole NaOH}} = .0188 \text{ moles HCl}$

$\frac{.0188 \text{ moles HCl}}{.025 \text{ L}} = \boxed{.752 \text{ M HCl}}$

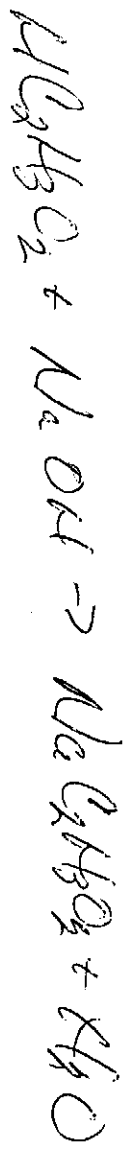
b) % conc by mass = $\frac{\text{g solute}}{\text{g solution}} \times 100$

$(.0188 \text{ moles HCl}) \left(\frac{36.46 \text{ g}}{\text{mole}} \right) = .6855 \text{ g HCl}$

$(.0135 \frac{\text{L}}{\text{mole}}) (25 \text{ mL}) = 25.325 \text{ g soln}$

$\frac{.6855 \text{ g}}{25.325 \text{ g}} \times 100 = 2.7\% \text{ HCl}$

10. 1.005 L $\text{HCl}_2\text{H}_3\text{O}_2 \leftarrow \text{M} = ?$ if 1.0377 L NaOH



$$(1.0377 \text{ L NaOH} \times 1.05 \frac{\text{mol}}{\text{L}}) = .004 \text{ mol NaOH}$$

$$1.004 \text{ mol HCl}_2\text{H}_3\text{O}_2 \left(1 \text{ mol HCl}_2\text{H}_3\text{O}_2 \right) = .004 \text{ mol HCl}_2\text{H}_3\text{O}_2$$

$$\frac{.004 \text{ mol HCl}_2\text{H}_3\text{O}_2}{.005 \text{ L}} = .8 \text{ M HCl}_2\text{H}_3\text{O}_2$$

$$(1.004 \text{ mol HCl}_2\text{H}_3\text{O}_2) \left(\frac{60.06 \text{ g}}{1 \text{ mol HCl}_2\text{H}_3\text{O}_2} \right) = .241 \text{ g HCl}_2\text{H}_3\text{O}_2$$

$$\underline{.241 \text{ g HCl}_2\text{H}_3\text{O}_2}$$

$$(1.007 \text{ g/mol} \times 5 \text{ mol}) = 5.035 \text{ g}$$

$$\frac{.241 \text{ g HCl}_2\text{H}_3\text{O}_2}{5.035 \text{ g total}} \times 100 = 4.77\% \text{ HCl}_2\text{H}_3\text{O}_2$$