

## Molarity and Dilution Worksheet (a) (KEY)

1.  $\text{mol} = (0.50 \text{ M})(0.200 \text{ L}) = \boxed{0.10 \text{ mol FeSO}_4}$

2.  $\text{mol} = (0.200 \text{ M})(0.500 \text{ L}) = \frac{0.100 \text{ mol KCl} \left| \frac{74.6 \text{ g KCl}}{1 \text{ mol}} \right.}{1 \text{ mol}} = \boxed{7.46 \text{ g KCl}}$

3.  $\frac{30.0 \text{ g NaOH} \left| \frac{1 \text{ mol NaOH}}{40.0 \text{ g NaOH}} \right.}{40.0 \text{ g NaOH}} = 0.75 \text{ mol NaOH} \quad M = \frac{0.75 \text{ mol}}{1.0 \text{ L}} = \boxed{0.75 \text{ M}}$

4.  $\text{mol} = (0.0350 \text{ M})(0.225 \text{ L}) = \frac{0.007875 \text{ mol CaCl}_2 \left| \frac{111.1 \text{ g CaCl}_2}{1 \text{ mol}} \right.}{1 \text{ mol}} = \boxed{0.875 \text{ g CaCl}_2}$

5.  $M_i V_i = M_f V_f \quad V_f = \frac{(0.40 \text{ M})(0.100 \text{ L})}{0.30 \text{ M}} = 0.13 \text{ L total}$

$0.13 \text{ L} - 0.100 \text{ L (start)} = \boxed{0.03 \text{ L water added}}$

6.  $M_i V_i = M_f V_f \quad M_f = \frac{(0.40 \text{ M})(0.100 \text{ L})}{0.350 \text{ L}} = \boxed{0.11 \text{ M HCl}}$

7.  $M_i V_i = M_f V_f \quad V_f = \frac{(0.600 \text{ M})(0.250 \text{ L})}{0.100 \text{ M}} = 1.5 \text{ L total}$

$1.5 \text{ L} - 0.250 \text{ L (start)} = \boxed{1.3 \text{ L water added}}$

8.  $M_i V_i = M_f V_f \quad M_f = \frac{(0.75 \text{ M})(0.0200 \text{ L})}{0.0900 \text{ L}} = \boxed{0.17 \text{ M HBr}}$