CONCENTRATIONS
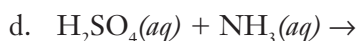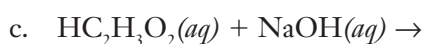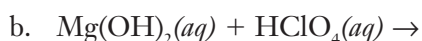
NAME

1. Write the chemical formula(s) of the product(s) and balance the following reactions. Identify all products phases as either (g)as, (l)iquid, (s)olid, or (aq)ueous.

    a. $Na_3PO_4(aq) + Pb(NO_3)_2(aq) \rightarrow$

    b. $Mg(OH)_2(aq) + HClO_4(aq) \rightarrow$

    c. $HC_2H_3O_2(aq) + NaOH(aq) \rightarrow$

    d. $H_2SO_4(aq) + NH_3(aq) \rightarrow$

2. Write the ionic and net ionic chemical equations for 1a and 1b.

    Ionic equation:

    Net ionic equation:

    Ionic equation:

    Net ionic equation:

3.

| A | B | C | D | E | F |
| 200 mL | 200 mL | 100 mL | 100 mL | 50 mL | 50 mL |
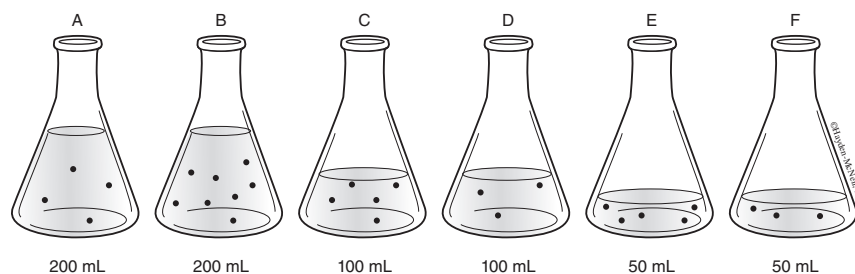
    a. Which container has the highest concentration? _____

    b. Which container has the lowest concentration? _____

    c. If you pour ½ of A out the concentration will... double? halve? stay the same? Not enough info?

    d. The contents of container A are distributed in the following way into two new empty containers: 50 mL in one container and 150 mL in the other. Draw a picture of the two containers.

    e. If you double the amount of water in E the concentration will be the same as container _____.

4. a. How many grams of magnesium sulfate are required to prepare 250.0 mL of 0.0250 M $MgSO_4$?

   b. Describe how you would prepare this solution.

5. Calculate the molarity of a solution prepared by mixing 9.98 g of NaCl in enough water to make 200.0 mL of solution.

6. What is the concentration of sulfate in a 50.0 mL sample of sodium sulfate if 6.55 mL of 0.0100 M $BaCl_2$ is needed to react with all of the sulfate ion?

Solubility Table

Ion	Solubility	Exceptions
NO_3^-	soluble	none
ClO_4^-	soluble	none
Cl^-	soluble	except Ag^+, Hg_2^{2+}, Pb^{2+}*
I^-	soluble	except Ag^+, Hg_2^{2+}, Pb^{2+}
SO_4^{2-}	soluble	except Ca^{2+}, Ba^{2+}, Sr^{2+}, Hg^{2+}, Pb^{2+}, Ag^+
CO_3^{2-}	insoluble	except Group IA and NH_4^+
PO_4^{3-}	insoluble	except Group IA and NH_4^+
OH^-	insoluble	except Group IA, Ca^{2+}*, Ba^{2+}, Sr^{2+}
S^{2-}	insoluble	except Group IA, IIA and NH_4^+
Na^+	soluble	none
NH_4^+	soluble	none
K^+	soluble	none

slightly soluble