1. What is the [Cl^-] in a solution made by dissolving 0.53 mol of $FeCl_3$ in enough water to make a 233 mL solution?

a.0.758 M

b.2.27 M

c. 6.82 M

d. 7.58 M

Hint: Stoichiometry is in effect. How many moles of Chloride are released per mole of $FeCl_3$

2. What does the molarity of ammonium sulfide need to be to obtain a 0.322 M solution of the ammonium ion?

a. 0.322 M

b. 0.161 M

c. 0.644 M

d. 6.21 M

Hint: Stoichiometry. The formula of ammonium sulfide is $(NH_4)_2S$

3. How would you make a 25 .0 mL solution that is [NaCl] = 0.500 M ?

a. Dissolve 29.2 g of NaCl in 25.0 mL of water

b. Dissolve 29.2 g of NaCl in enough water to make a 25 mL solution

c. Dissolve 0.730 g of NaCl in 25.0 mL of water

d. Dissolve 0.730 g of NaCl in enough water to make a 25 mL solution

Hint: Volumes change upon forming solutions. Review the definition of molarity

4. How many mL of a 0.45 M stock solution of NaCl would be require to make a 25.0 mL solution that is 1.33×10^{-2} M NaCl.

a. 0.74 mL of stock solution

b. 0.15 mL of stock solution

c. 1.2 mL of stock solution

d. 1.7 mL of stock solution

Hint: Dilution is the solution.

5. Two solutions are mixed, a 25.0 mL solution that is 0.750 M NaCl and a 35 mL solution that is 0.500 M $Pb(NO_3)_2$. How many grams of $PbCl_{2(s)}$ will precipitate from solution?

a. 4.87 g

b. 2.61 g

c. 5.21 g

d.10.1 g

Hint: This requires a balanced chemical reaction. It is also a limiting reagent problem.

6. How many mL of a 0.333 M NaCl solution are required to completely precipitate silver (I) chloride from a 25.0 mL solution that is 0.500 M $AgNO_3$?

a. 26.7 mL

b.18.8 mL

c. 37.5 mL

d. 16.7 mL

Hint: A volume and a molarity together tell us the number of moles of reagent. That, along with the fact that M = mol/L allow us to convert moles of compound into liters or mL.

7. Two solutions are mixed, a 25.0 mL solution that is 0.750 M NaCl and a 35 mL solution that is 0.500 M $Pb(NO_3)_2$. What is the molarity of Pb^{+2} in solution after precipitation?

a. 8.13×10^{-3} M

b.0.328 M

c. 9.38×10^{-3} M

d.0.135 M

Hint: NaCl is the limiting reagent. Requires a balanced chemical reaction. We need to know how many moles of Pb^{+2} are used before we can find out how many are left over.