Ionic Concentration

1) In a solution contain 15.6 g of $MgCl_2$ in 1.25 L of solutions, what are the concentrations of the Mg^{2+} and Cl^-?

2) What is the concentration of each of the ions present in the following solutions?
a) 1.5 M KCL
b) 0.45 M $CaBr_2$
c) 0.145 M $Mg_3(PO_4)_2$

3) Calculate the concentration of chloride ions Cl^- when each of the following solution are prepared.

a) 2.0 g of NaCl is dissolved in 250.0 mL of H_2O.
b) 2.5 g of $CaCl_2$ is dissolved in 350.0 mL of H_2O.
c) 12.3 g of $AlCl_3$ is dissolved in 550 mL of H_2O.

4) If 25.0 mL of $NaNO_3$ solution (0.100 M) is added to 10.0 mL of Na_2CO_3 (0.150 M) what is the concentration of Na^+ ions in solution?

5) If 525 mL of a solution containing 678 g $CaBr_2$ is mixed with 325 mL of a solution containing 11.4 g KBr what is the Br^- ion concentration of the resulting solution?

6) Which of the following contains the greatest amount of Cl^- ions? Explain.
a) 200 mL of 0.25 M HCL
b) 500 mL of 0.50 M $MgCl_2$

7) A solution is prepared by dissolving 0.584 g of oxalic acid, $H_2C_2O_4$, in enough water to make 100.0 mL of solution. A 10.0 mL aliquot (portion) of this solution is then diluted to a final volume of 250.0 mL. What is the morality of the final oxalic acid solution?

8) Calculate the concentration of all ions present in each of the following solutions …
a) 0.10 g of $MgCl_2$ in 100.0 mL of solution
b) 55.1 g NH_4Br in 500.0 mL of solution
c) 0.610 g $AlCl_3$ in 250.0 mL of solution

9) The units of parts per million (ppm) and parts per billion (ppb) are commonly used by environmental chemists. In general, 1 ppm means 1 part of solute for every 10^6 parts of solution. In the case of aqueous solutions, a concentration of 1.0 ppm is equal to 1.0 μg of solute per 1.0 mL of solution. Parts per billion is defined in a similar fashion. Calculate the morality of each of the following aqueous solutions …
a) 5.0 ppb Hg in H_2O
b) 10.0 ppm As in H_2O
c) 0.10 ppm DDT ($C_{14}H_9Cl_5$) in H_2O