8. You dissolve $Cu(OH)_2$ in each of the following aqueous solutions. What is the molar solubility in each? $(K_{sp} = 6 \times 10^{-6})$
   a. Solution buffered at pH 13
   b. 0.2M copper (II) chloride
9. Cadmium is a highly toxic environmental pollutant that enters wastewaters associated with zinc smelting (Cd and Zn commonly occur together in ZnS ores) and in some electroplating processes. One way of controlling cadmium in effluent streams is to add sodium hydroxide, which precipitates insoluble $Cd(OH)_2$. If 1000 L of a certain wastewater contains Cd^{2+} at a concentration of 1.6×10^{-5} M, what concentration of Cd^{2+} would remain after addition of 10 L of 4 *M* NaOH solution?
10. The molar solubility of calcium chloride at 35°C is 1.24×10^{-3} M. What is the K_{sp} at this temperature? What is the solubility (in g/L) in a 0.3M solution of magnesium chloride?
11. What is the pH of a 0.5 L solution made by mixing 1.0 moles of potassium acetate and 1.5 moles acetic acid? What is the pH of this solution if you add 5.0 mL 4.0 M HCl?
12. Consider the titration of 50.0 mL of 0.200 M K_2SO_4 with 0.40 M HCl (aq)
   a. What are the major species present before the addition of titrant?
   b. Calculate the pH at the equivalence point and identify the major species at this point?
   c. Calculate the pH at the halfway point and identify the major species at this point in the titration.
   d. Calculate the pH 20.0 mL after the equivalence point and identify the major species at this point in the titration.
   e. Which of the above point/points in the titration are buffered? Explain your answer.

Week 9 Problems
Section 63
TA: Amy Carlson

1. Determine the molar solubility of copper (I) bromide in a 0.050 M solution of NaBr.
2. Calculate the molar solubility of strontium sulfate in *(a)* pure water and *(b)* in a 0.10 M solution of Na_2SO_4.
3. The molar solubility of $Ba(NO_3)_2$ in water is 0.105 mol/L. Determine the K_{sp}.
4. Write the dissociation reaction and K_{sp} expression for the following: $AlPO_4$, $BaSO_4$, CdS, and $Cu_3(PO_4)_2$

Conceptual Problems:
5. Is a compound more or less soluble in a solution that contains a common ion?
6. How does temperature affect solubility?
7. How would the addition of KOH affect the solubility of ammonium sulfate? How about the addition of HCl?

Acid	K_a	Solid	K_{sp}
H_2SO_4	K_{a1} = BIG, K_{a2} = 1.2 x 10^{-2}	$Cd(OH)_2$	2.5 x 10^{-14}
HCH_3COO (acetic)	1.8 x 10^{-5}	$Cu(OH)_2$	2.2 x 10^{-20}
		CuBr	4.2 x 10^{-8}
		$SrSO_4$	2.8 x 10^{-7}