Name _____ Date _____ Class _____

CHAPTER 18 REVIEW

Chemical Equilibrium

SECTION 18-4

SHORT ANSWER **Answer the following questions in the space provided.**

1. Match the solution type on the right to the corresponding relationship between the ion product and the K_{sp} for that solution listed on the left.

_____ the ion product exceeds the K_{sp} (a) The solution is saturated; no more solid dissolves.

_____ the ion product equals the K_{sp} (b) The solution is unsaturated; no solid is present.

_____ the ion product is less than the K_{sp} (c) The solution is supersaturated and will readily precipitate.

2. Silver carbonate, Ag_2CO_3, makes a saturated solution with $K_{sp} = 10^{-11}$.

a. Write the equilibrium expression for the dissolution of Ag_2CO_3.

_____ **b.** In this system, will the foward or reverse reaction be favored if extra Ag^+ is added?

PROBLEMS **Write the answer on the line to the left. Show all your work in the space provided.**

3. When the ionic solid XCl_2 dissolves in pure water to make a saturated solution, experiments show that 2×10^{-3} mol/L of X^{2+} ions go into solution.

a. Write the equation showing the dissolution of XCl_2 and the corresponding equilibrium expression.

_____ **b.** Calculate the value of K_{sp} for XCl_2.

SECTION 18-4 continued

Omit

c. Refer to Table 18-3 on page 579 of the text. Would XCl_2 be more soluble or less soluble than $PbCl_2$ at the same temperature?

4. The solubility of Ag_3PO_4 is 2.1×10^{-4} g/100. g.

a. Write the equation showing the dissolution of this ionic solid.

b. Calculate the molarity of this saturated solution.

c. What is the value of K_{sp} for this system?

5. As $PbCl_2$ dissolves, $[Pb^{2+}] = 2.0 \times 10^{-1}$ mol/L and $[Cl^-] = 1.5 \times 10^{-2}$ mol/L.

a. Write the equilibrium expression for the dissolution of $PbCl_2$.

b. Compute the ion product using the data given above.