STUDENT WORKSHEET | Solubility Equilibria - Ksp and Common-Ion

Name _____ Date _____ Class _____

Instructions: Answer 1-6. Show clear structures and calculations for 7-8. Consult the worked key after completing the worksheet.

PART A: Multiple choice and application

1. For CaF2(s) Ca+ + 2 F-, Ksp is

(A) [Ca+][F-]
(B) [Ca+][F-]
(C) [CaF2]

2. If CaF2 molar solubility is s in pure water, [F-] is

(A) s
(B) 2s
(C) s

3. Which concentration expression follows from idealized CaF2 dissolution?

(A) Ksp = 4s
(B) Ksp = 2s
(C) Ksp = s

4. Adding a soluble source of chloride usually does what to AgCl solubility?

(A) Increases it
(B) Decreases it
(C) Has no effect

5. Qsp > Ksp for a mixed ion solution predicts

(A) Precipitation is thermodynamically favored
(B) A guaranteed instantaneous reaction
(C) No precipitation tendency

6. When two ionic solutions are mixed, Qsp uses

(A) Original stock concentrations only
(B) Concentrations after mixing, before precipitation
(C) The concentration of the solid

PART B: Drawing and reasoning

7. Ksp(CaF2) = 4.0 x 10^-11. Find approximate molar solubility s in pure water. Ignore other ionic equilibria.

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8. Immediately after mixing, [Ag+] = 0.0020 M and [Cl-] = 0.0030 M. Ksp(AgCl) = 1.8 x 10^-10. Predict the result.

Check chemical formulas, atom counts, charges, units, and naming before reviewing the key.