3 Types of Ksp Problems

1.   Determine the Ksp value of a salt in water from its solubility.

2.   Determine the solubility of a salt from its ion concentrations in water knowing the Ksp value.

3.   Determine whether a precipitate (i.e. an insoluble salt) will form when 2 solutions are mixed together.

Type 1:

The **solubility** of strontium sulfate is 5.83×10^{-4} mol/L.

a)   Write the equation for the dissociation of strontium sulfate.

_____

b)   Write the Ksp expression for dissociation of strontium of sulfate.

_____

c)   Calculate the solubility product constant for strontium sulfate. **(Ksp = 3.4×10^{-7})**

Type 2:

The Ksp of silver carbonate is 8.5×10^{-12}.

a)   Write the equation for the dissociation of silver carbonate in water.

_____

b)   Write the Ksp expression for the dissociation of silver carbonate in water.

_____

c)   Calculate the solubility of silver carbonate in i) moles/L and then ii) g/L. **(1.3×10^{-4} mol/L)**

Type 3: Mixing Problem

100.0 mL of 0.010 mol/L NaCl solution is mixed with 200.0 mL of a 0.050 mol/L $Pb(NO_3)_2$ solution.

Will a precipitate (ppt) form? Why or why not?**No ppt because Ktrial = 3.6 x 10^{-7} less than Ksp)**

Sketch of 2 beakers and final beaker: