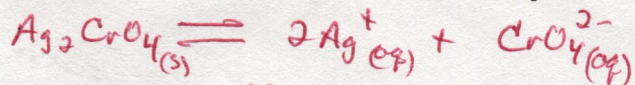


SHOW ALL WORK

1. At 25°C,  $7.8 \times 10^{-5}$  mole of silver chromate dissolves in 1.0 liter of water. What is the  $K_{sp}$  of  $Ag_2CrO_4$ ?

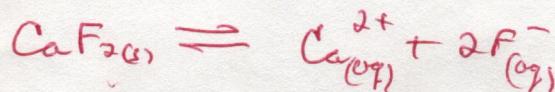


$$K_{sp} = [Ag^+]^2 [CrO_4^{2-}]$$

$$(1.56 \times 10^{-4})^2 (7.8 \times 10^{-5})$$

$$K_{sp} = 1.9 \times 10^{-12}$$

2. The  $K_{sp}$  of  $CaF_2$  is  $3.9 \times 10^{-11}$  at 25°C. What is the concentration of  $Ca^{2+}$  and  $F^-$  in the saturated solution?



$$K_{sp} = [Ca^{2+}] [F^-]^2$$

$$3.9 \times 10^{-11} = (x) (2x)^2$$

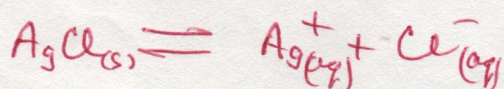
$$3.9 \times 10^{-11} = 4x^3$$

$$9.75 \times 10^{-12} = x^3$$

$$[Ca^{2+}] = 2.1 \times 10^{-4}$$

$$[F^-] = 4.2 \times 10^{-4}$$

3. Will a precipitate form if 10.0 mL of 0.010M  $AgNO_3$  and 10.0 mL of 0.00010M  $NaCl$  are mixed? Assume the final volume of the solution is 20.0 mL. For  $AgCl$ ,  $K_{sp} = 1.7 \times 10^{-10}$ .



$$K_{sp} = [Ag^+] [Cl^-]$$

$$(0.0005M) (0.00005M)$$

$$= 2.5 \times 10^{-7}$$

Since this # is greater than  $K_{sp}$  ( $1.7 \times 10^{-10}$ )

a ppt will form