

Ksp worksheet: Finish for homework, hand-in when done. Name: _____



$$\begin{aligned} K_{\text{sp}} &= [\text{Pb}^{2+}][\text{SO}_4^{2-}] \\ &= (2.0 \times 10^{-5})(2.0 \times 10^{-5}) \\ K_{\text{sp}} &= 4.0 \times 10^{-10} \end{aligned}$$

$$4.0 \times 10^{-10}$$



Given that $[\text{OH}^-] = 1.5 \times 10^{-5} \text{ M}$, find the value of Ksp.

$$\begin{aligned} K_{\text{sp}} &= [\text{Al}^{3+}][\text{OH}^-]^3 \\ &= (5.0 \times 10^{-6})(1.5 \times 10^{-5})^3 \end{aligned}$$

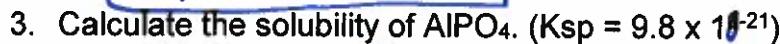
$$K_{\text{sp}} = 1.7 \times 10^{-20}$$



$$[\text{Al}^{3+}] = x$$

$$[\text{OH}^-] = 3x = 1.5 \times 10^{-5}$$

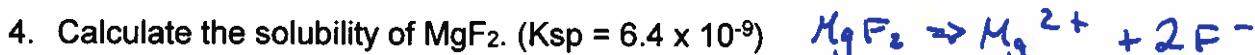
$$x = 5.0 \times 10^{-6}$$



$$\begin{aligned} K_{\text{sp}} &= [\text{Al}^{3+}][\text{PO}_4^{3-}] \\ 9.8 \times 10^{-21} &= x^2 \end{aligned}$$

$$9.9 \times 10^{-11} = x$$

$$9.9 \times 10^{-11} \text{ M}$$



$$\begin{aligned} K_{\text{sp}} &= [\text{Mg}^{2+}][\text{F}^-]^2 \\ 6.4 \times 10^{-9} &= (x)(2x)^2 \\ 6.4 \times 10^{-9} &= 4x^3 \\ \frac{6.4 \times 10^{-9}}{4} &= \frac{4x^3}{4} \\ 1.6 \times 10^{-9} &= x^3 \\ 1.2 \times 10^{-3} &= x \end{aligned}$$

$$1.2 \times 10^{-3} \text{ M}$$



Calculate the solubility of AgI (K_{sp} of AgI = 1.5×10^{-16})

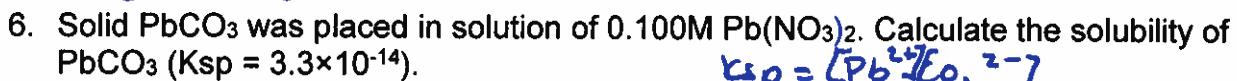


$$K_{\text{sp}} = [\text{Ag}^+][\text{I}^-]$$

$$\begin{aligned} 1.5 \times 10^{-16} &= (x)(x + 0.200) \\ &= (x)(0.200) \end{aligned}$$

$$\frac{1.5 \times 10^{-16}}{0.200} = \frac{0.200x}{0.200}$$

$$x = 7.5 \times 10^{-16} \text{ M}$$



$$K_{\text{sp}} = [\text{Pb}^{2+}][\text{CO}_3^{2-}]$$

$$3.3 \times 10^{-14} = (x + 0.100)(x)$$

$$= (0.100)(x)$$

$$\frac{3.3 \times 10^{-14}}{0.100} = \frac{0.100x}{0.100}$$

$$3.3 \times 10^{-13} = x$$

$$3.3 \times 10^{-13} \text{ M}$$