

Write out the **equation** for the equilibrium and the **equilibrium expression** as well as the necessary mathematical steps used in solving the following problems. You may have to consult your K_{sp} chart.

1. Determine the K_{sp} for $AgOH$ if its molar solubility is known to be $1.4 \times 10^{-4}M$.
2. Find the K_{sp} for BaF_2 if its solubility is $7.5 \times 10^{-3}M$.
3. The solubility of $CaSO_4$ is $1.15g/L$. Determine the K_{sp} of $CaSO_4$.
4. A sample of $Cd(OH)_2$ is added to water and stirred until no more will dissolve. Subsequent analysis shows the $[Cd^{2+}]$ to be $1.7 \times 10^{-5}M$. What is the K_{sp} for $Cd(OH)_2$?
5. A saturated solution of $PbBr_2$ is found to have a $[Br^-]$ of $2.4 \times 10^{-2}M$. Determine the K_{sp} for $PbBr_2$.
6. What is the molar solubility of CuI if its K_{sp} is known to be 1.3×10^{-12} ?

7. What is the solubility of AgI in g/L?

8. What mass of FeS will 2.5L of its saturated solution contain at 25 degrees Celsius?

9. Calculate the molar solubility of $\text{Cu}(\text{IO}_3)_2$.

10. What are the equilibrium concentrations of Ca^{2+} and F^- in a saturated solution of CaF_2 ?
The K_{sp} for CaF_2 is 3.9×10^{-11} .

11. How many moles of calcium oxalate must dissolve to produce 750mL of a saturated solution?

12. Calculate the mass of SrF_2 that must dissolve to make 3.50L of saturated solution.

13. Determine the maximum $[\text{Cu}^{2+}]$ that can exist in a solution containing 0.015M S^{2-} .

14. Calculate the highest concentration of Ag^+ ion that can be found in a solution that also contains $7.6 \times 10^{-3}\text{M CO}_3^{2-}$.

15. Find the maximum $[\text{Ca}^{2+}]$ that can exist in a $0.14\text{M Na}_2\text{SO}_4$ solution.

16. What is the maximum $[\text{Ag}^+]$ that can be found in $2.4 \times 10^{-3}\text{M BaCl}_2(\text{aq})$?

17. Calculate the maximum mass of CuSO_4 that could be dissolved in 3.4L of a solution that contains $7.8 \times 10^{-5}\text{M Pb}^{2+}$ ion. Assume that any increase in volume is negligible.

18. Calculate the maximum mass of MgCl_2 that could be dissolved in 1.2L of a 0.010M NaOH solution. Assume that there is no noticeable change in volume.

19. Will a precipitate form if 25mL of 0.0050M $\text{Ba}(\text{NO}_3)_2$ solution are mixed with 85mL of $5.6 \times 10^{-6}\text{M}$ Na_2CrO_4 solution?

20. Determine whether a precipitate will form when 2.5L of $3.5 \times 10^{-3}\text{M}$ $\text{SrCl}_2(\text{aq})$ are mixed with 4.2L of $2.7 \times 10^{-3}\text{M}$ $\text{KF}(\text{aq})$.

21. Determine whether a precipitate will form when 60.0mL of $4.4 \times 10^{-5}\text{M}$ MgCl_2 solution are mixed with 30.0mL of $9.8 \times 10^{-6}\text{M}$ AgNO_3 solution.

22. Will a precipitate form when equal volumes of $3.2 \times 10^{-4}\text{M}$ $\text{Cu}(\text{NO}_3)_2(\text{aq})$ and $2.6 \times 10^{-4}\text{M}$ $\text{NaIO}_3(\text{aq})$ are mixed?