Key

Solubility #3 - Assume that all solutions are at 25°C unless told otherwise.

1. Which one of the following solutions will contain the greatest silver ion concentration?

   *saturated Ag_2CO_3 $[Ag^+] = 2.57 \times 10^{-4}$ M saturated AgCl $[Ag^+] = 1.34 \times 10^{-5}$ M

2. In which solution would you find the highest magnesium ion concentration: saturated $MgCO_3$ or ~~saturated MgF_2~~ saturated $Mg(OH)_2$?

   *$MgCO_3$ $[Mg^{2+}] = 2.61 \times 10^{-3}$ M $Mg(OH)_2$ $[Mg^{2+}] = 1.11 \times 10^{-4}$ M

3. The K_{sp} values for various silver salts are given below:

x^2	$AgBrO_3$	5.3×10^{-5}	$4x^3$	Ag_2CO_3	8.5×10^{-12}
$4x^3$	$Ag_2Cr_2O_7$ *	2.0×10^{-7}	x^2	AgSCN	1.2×10^{-12}
x^2	AgOH	1.5×10^{-10}	x^2	AgBr	5.4×10^{-13}
x^2	AgCl	1.8×10^{-10}	x^2	AgI	8.5×10^{-17}
$4x^3$	Ag_2CrO_4	1.1×10^{-12}	x^2	$AgIO_3$	3.2×10^{-8}

   Determine which one of these compounds gives the highest silver ion concentration in a saturated solution **and** calculate this concentration.

4. Calculate the solubility of $BaSO_4$. 1.0×10^{-5} M

5. Calculate the mass of solid $PbSO_4$ that can be dissolved in 5.0 L of solution at 25°C. 0.20 g

6. Calculate the solubility of PbI_2 at 25°C. 1.3×10^{-3} M

7. What is the solubility of calcium oxalate at 25°C in g/L? 6.1×10^{-3} g/L

8. How many milligrams of $CaCO_3$ would be dissolved in 1.0 L of saturated solution at 25°C. 7.1 mg/L

9. What mass of PbI_2 will dissolve in 250 mL of water? 0.15 g

10. a. What is the solubility of magnesium hydroxide? 1.11×10^{-4} M
    b. What is the $[OH^-]$ in a saturated solution of magnesium hydroxide? 2.22×10^{-4} M