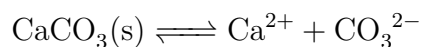# Find Ksp Given Solubility – Question 1

Find the Ksp for calcium carbonate given that the **solubility** of calcium carbonate is found to be 6.934 p.p.m.
(note p.p.m. = mg/L)

Must convert p.p.m. to mol/L first

$$\frac{6.934 \text{ mg CaCO}_3}{1 \text{ L}} \text{ x } \frac{1 \text{ g}}{1000 \text{ mg}} \text{ x } \frac{1 \text{ mol CaCO}_3}{100.09 \text{ g CaCO}_3} = \frac{6.93 \text{ x } 10^{-5} \text{ mol CaCO}_3}{1 \text{ L}}$$

$$CaCO_3(s) \rightleftharpoons Ca^{2+} + CO_3{}^{2-}$$

$$[Ca^{2+}] = 6.93 \text{ x } 10^{-5} \text{ M}$$

$$[CO_3{}^{2-}] = 6.93 \text{ x } 10^{-5} \text{ M}$$

$$K_{sp} = [Ca^{2+}][CO_3{}^{2-}]$$
$$= (6.93 \text{ x } 10^{-5})^2$$
$$= 4.8 \text{ x } 10^{-9}$$

Please note that solubility must be in mol/L in order to find ion concentrations that can be used to solve for a Ksp value.