K_{sp} equation is independent of source of ions

$Ba_3(PO_4)_2$

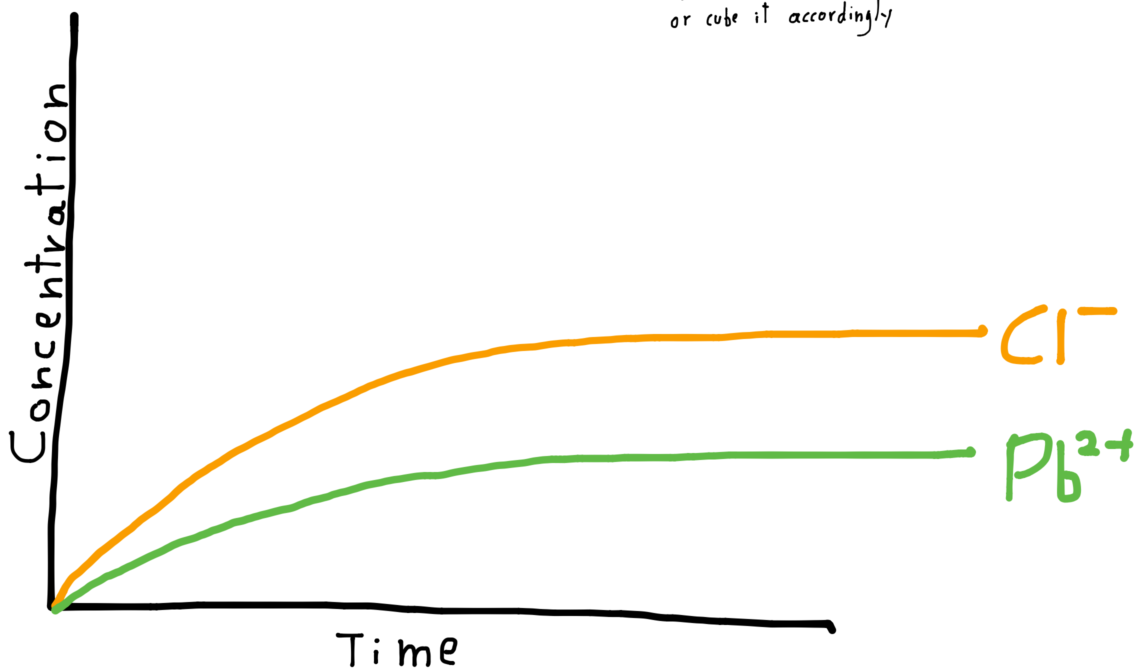
$K_{sp} = [Ba^{2+}]^3 [PO_4^{3-}]^2$

[Ba] indicates concentration of Barium in $\frac{mol}{L} = M$

If you know that you put in 1 mol of $Ba_3(PO_4)_2$, it is actually 3 moles of Ba^{2+} and 2 moles of PO_4^{3-}

If you're given a concentration, then it directly goes into $[Ba^{2+}]$ or $[PO_4^{3-}]$

Don't forget to square or cube it accordingly



Why is the graph so big?

$3H_2 + N_2 \leftrightarrow 2NH_3$

$CO + H_2O \leftrightarrow CO_2 + H_2O$

See slides for drawings

For equilibrium, just ensure that the total amount of molecules is = what you put in.

See slides for RICE table

To find the "x" in RICE tables, look at the given concentration or amount at equilibrium

$\frac{\text{Products}}{\text{Reactants}}$ For K

$jA + kB \leftrightarrow lC + mD$

$$K = \frac{[C]^l \times [D]^m}{[A]^j \times [B]^k}$$

The "activity" is the concentration: Solutions: $\frac{[\ ]}{1M}$ Gases: $\frac{P_{gas}}{1atm}$ Solid: 1

$PbCl_2(s) \longleftrightarrow Pb^{2+}(aq) + 2Cl^-(aq)$

Activity of solid or pure water (l) is 1.

$K = [Pb^{2+}]\,[Cl^-]^2$

You must use a balanced equation.

Gas problems are either $K_{concentration}$ or $K_{pressure}$

Homogeneous equilibria: Same phase

Heterogeneous equilibria: Different phase

$K > 1$: Favors products

$K < 1$: Favors reactants

K is always the same, but the [ ] itself can have any value.

$3H_2 + N_2 \longleftrightarrow 2NH_3$ $K = 200$

At eq $[H_2] = 0.2M$, $[N_2] = 0.4M$

Initial $C_{NH_3} = 0.1\ M$

R	$3H_2$	N_2	$2NH_3$
I	1.25	.75	0.1
C	$-3x$	$-x$	$+2x$
E	0.2	0.4	.8

$$200 = \frac{[NH_3]^2}{[.2]^3[.4]} \quad \therefore [NH_3] = .8$$

$.1 + .2x = 8$

$x = .35$