**Equilibrium Kc**

Kc is the equilibrium constant used when working with concentration values

A + 2B ⇌ 2C + 3D

Kc =

E.g. CH3COOH + C2H5OH ⇌ CH3COOC2H5 + H2O

Solids have constant concentrations so are not included in Kc expressions

E.g. Ag+(aq) + Fe2+(aq) ⇌ Ag(s) + Fe3+(aq)

E.g. 2NOCl(g) ⇌ 2NO(g) + Cl2(g)

**Calculating Kc**

We can substitute concentration values (moldm-3) into the expression.

1. 1.0 mol of ethanol and 1.0 mol of ethanoic acid were mixed together and allowed to come to equilibrium. The mixture was found to contain 0.667 mol of ethyl ethanoate. The volume of the mixture was 0.1 dm3. Calculate Kc

CH3COOH + C2H5OH ⇌ CH3COOC2H5 + H2O

1. 0.5 mol of carbon dioxide and 0.8 mol of hydrogen were mixed together in a 10 dm3 flask and allowed to reach equilibrium. The equilibrium mixture contained 0.4 mol of carbon monoxide. Calculate Kc

CO2 + H2 ⇌ CO + H2O



1. For the following reaction, the value of Kc was found to be 8 x 10-3 moldm-3.

PCl5 ⇌ PCl3 + Cl2

A sample of PCl5  was heated in a sealed container. The equilibrium concentration of PCl5 was found to be 5 x 10-2 moldm-3. Calculate the equilibrium concentration of PCl3.

