

# 1.10 EQUILIBRIUM CONSTANT $K_p$ FOR HOMOGENOUS SYSTEMS

Homogeneous system

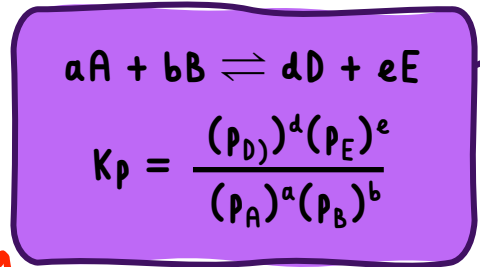
Reversible reactions in the gas phase

...changes in pressure

...addition of a catalyst

$K_p$  not affected by...

Units of  $K_c$  found by substituting the partial pressure units into the equation for  $K_p$  and cancelling down



$K_p$  is calculated from partial pressures

Partial pressure of a gas X is denoted by  $(p_X)$

Partial pressure of a gas = mole fraction of gas x total pressure of the mixture

Mole fraction of a gas =  $\frac{\text{Number of moles of gas}}{\text{Total number of moles of gas in the mixture}}$

Effect of temperature on  $K_p$

Explain using Le Chatelier's principle

E.g. If the forward reaction is endothermic and the temperature is increased, equilibrium will shift to the right, increasing the amount of product formed and thus increasing  $K_p$

The value of  $K_p$  is only valid for a certain temperature

**AQA**

