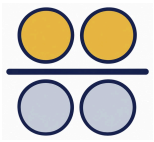
Equilibrium II Map

Edexcel A Level Chemistry · Topic 11 Equilibrium II

1 Writing Kc

10.4

- **Products** over **reactants**
- Powers = **balancing numbers**
- Solids and pure liquids left out
- Solvent water left out



2 Units and ICE

11.2

- Put in mol dm^{-3} and **cancel**
- Change row from the **ratio**
- Work in moles, then **÷ V**
- Equal powers: V cancels

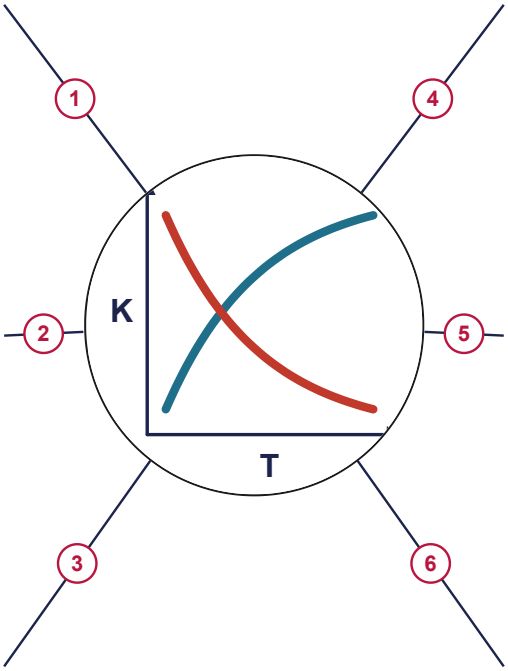


3 Kc from data

11.2

- **Quench**, then titrate
- Subtract the **acid catalyst**
- **Colorimeter** + calibration line
- Working back: rearrange, root





4 Partial pressures

11.1

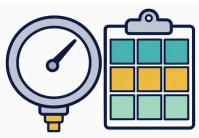
- x = **moles ÷ total moles**
- p = **x × P**
- Mole fractions add to 1
- Partial pressures add to P



5 Kp

11.1, 11.2

- **Gases only**, in atm
- Units: **cancel** atm
- % dissociated changes the total
- x, then p, then **Kp**



6 What changes K

11.3–11.5

- **Only temperature**
- Exothermic: K **falls** as T rises
- New K: **position moves**
- Catalyst: K the same, **sooner**



What changes K and the position

for an exothermic forward reaction with fewer gas molecules on the right

Change	Effect on K	Ratio just after	Position
Raise the temperature	falls	larger than K	left
Raise the pressure	none	smaller than K	right
Add a reactant	none	smaller than K	right
Remove a product	none	smaller than K	right
Add a catalyst	none	equal to K	no change

Worked examples

Kc with a volume

- PCl_3 0.30, Cl_2 0.20 mol dm^{-3}
- PCl_5 0.10 mol dm^{-3}
- **Kc = 1.7 dm^3 mol^{-1}**

Kp from a percentage

- PCl_5 50% dissociated
- total 1.50 mol at 1.5 atm
- **Kp = 0.50 atm**

Heating an exothermic

- K falls as T rises
- old ratio now too large
- **moves left**

Kc and Le Chatelier (Topic 10) come first; Ka and Kw (Topic 12) are equilibrium constants too.

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