

# VIDEO SUMMARIES: REACTIVITY

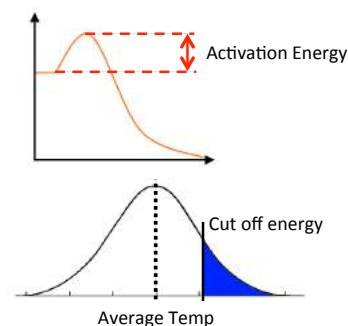
## RATE OF REACTION

### What you need to know:

- To have a reaction occurring you need the effective collision of particles
- This is called Collision Theory

It means:

1. Molecules have a high enough energy for an effective collision
  2. There is a high enough frequency of collisions
- Factors influencing rate of reaction:
    - Temperature
    - Surface Area
    - Concentration
    - Catalysts

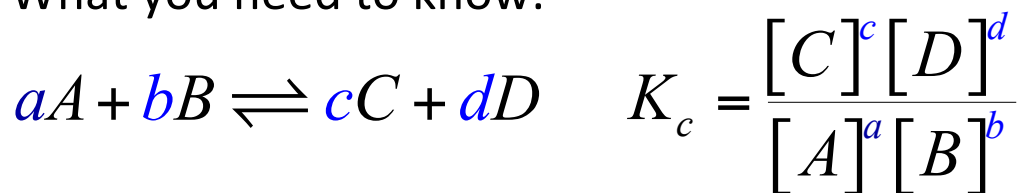


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## EQUILIBRIUM CONSTANT

### What you need to know:



- Forward reaction means that more product is produced and so  $K_c$  is above 1
- Backward reaction means that more reactants are produced and so  $K_c$  is less than 1
- Use  $K_c$  formula to calculate concentrations

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## RESTORING EQUILIBRIUM

What you need to know:

- **Le Chatelier's Principle** – Equilibrium moves in the direction that reduces change
- **Temperature** – can be thought of like a product or reactant and will affect  $K_c$
- **Pressure** – an increase will mean that the equilibrium will move in the direction with the least number of gas particles

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## ACIDS AND BASES

What you need to know:

- **Acid** – Proton donator ( $H^+$ )
- **Base** – Proton acceptor ( $H^+$ )
- **Conjugate** – Will gain or loose a proton ( $H^+$ ) to become an acid or base
- **Conductivity** – Acid  $H^+$  Small, good conductor  
– Base  $OH^-$  Big, poor conductor

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## WATER AND pH

What you need to know:

- $2\text{H}_2\text{O} \rightleftharpoons \text{OH}^- + \text{H}_3\text{O}^+$   
Hydroxide Hydronium
- $K_w = [\text{OH}^-][\text{H}_3\text{O}^+] = 1 \times 10^{-14} \text{ mol.L}^{-1}$
- $\text{pH} = -\log [\text{H}_3\text{O}^+]$
- $[\text{H}_3\text{O}^+] = 10^{-\text{pH}}$   
shift log

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