Chemistry Revision
Rates of Reaction

Collision theory…

- particles can only react if they **collide** with enough **energy**
- The energy requirement is called the **activation energy**
- If you increase the **frequency** of **successful collisions**, you increase the **rate**

If you increase the temperature…

always include

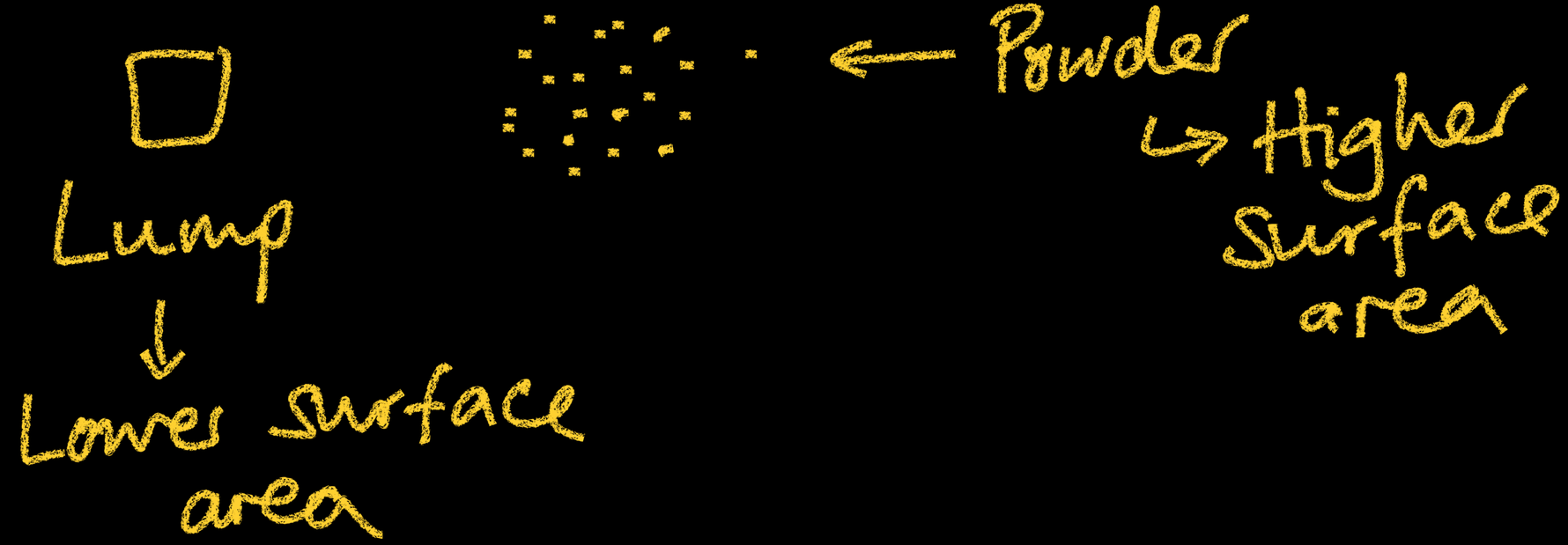
- At higher temperatures, particles have more **kinetic energy** and **move faster**
- **AND** more particles have **activation energy**
- There are more frequent successful collisions
- Therefore rate increases

If you increase the concentration…

- There are **more particles** in the **same volume** OR particles are **closer together**
- The frequency of **successful collisions** increases
- Therefore **rate** of reaction also **increases**

If you increase the surface area…

- The frequency of **successful collisions** increases
- Therefore **rate** of reaction also **increases**



A catalyst…

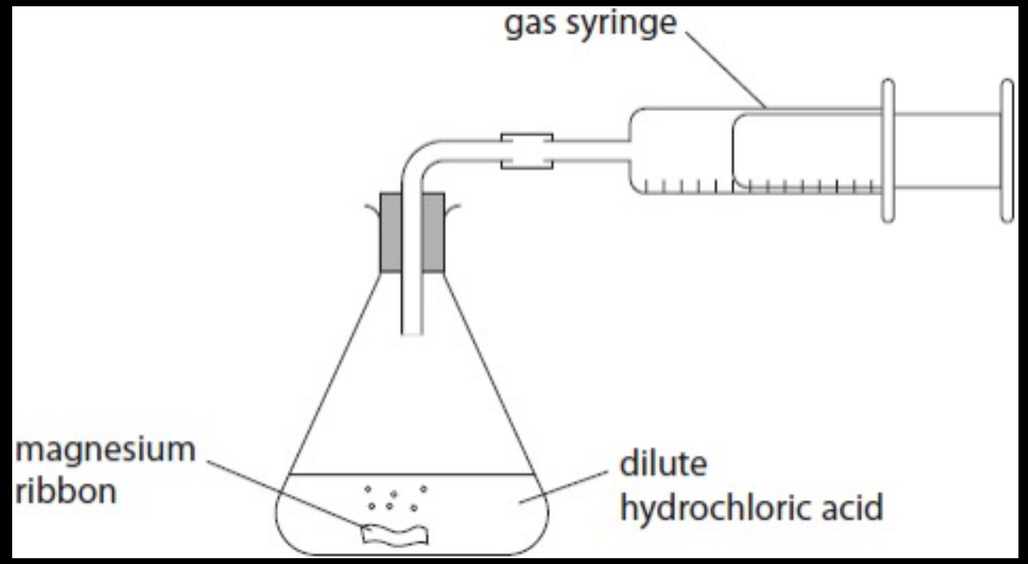
→ What is a catalyst OR define the term catalyst

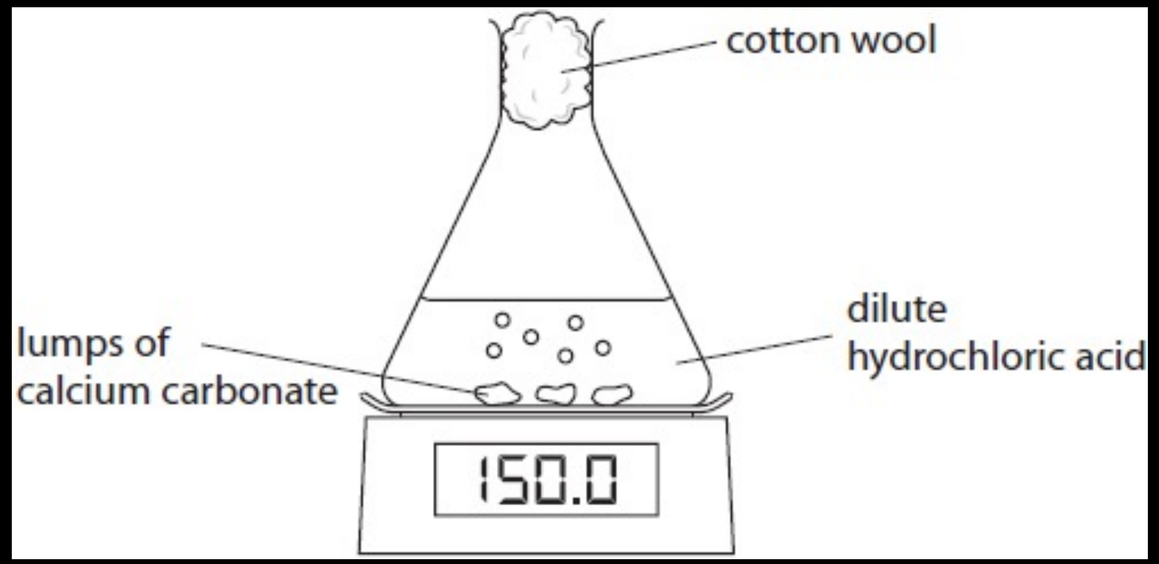
- Increases the rate of reaction (1) without being used up itself (1) OR while remaining chemically unchanged (1)
- Works by providing an alternative route (1) with a lower activation energy (1)

↳ Explain how a catalyst works

Measuring rates

ONLY gas can escape (not liquid)





Gas release per min

Vol of gas

* Through (0,0)
* Curve of best fit

Time

Mass lost over time ↳ gas release

Mass

* NOT (0,0)
* Curve of best fit

Time

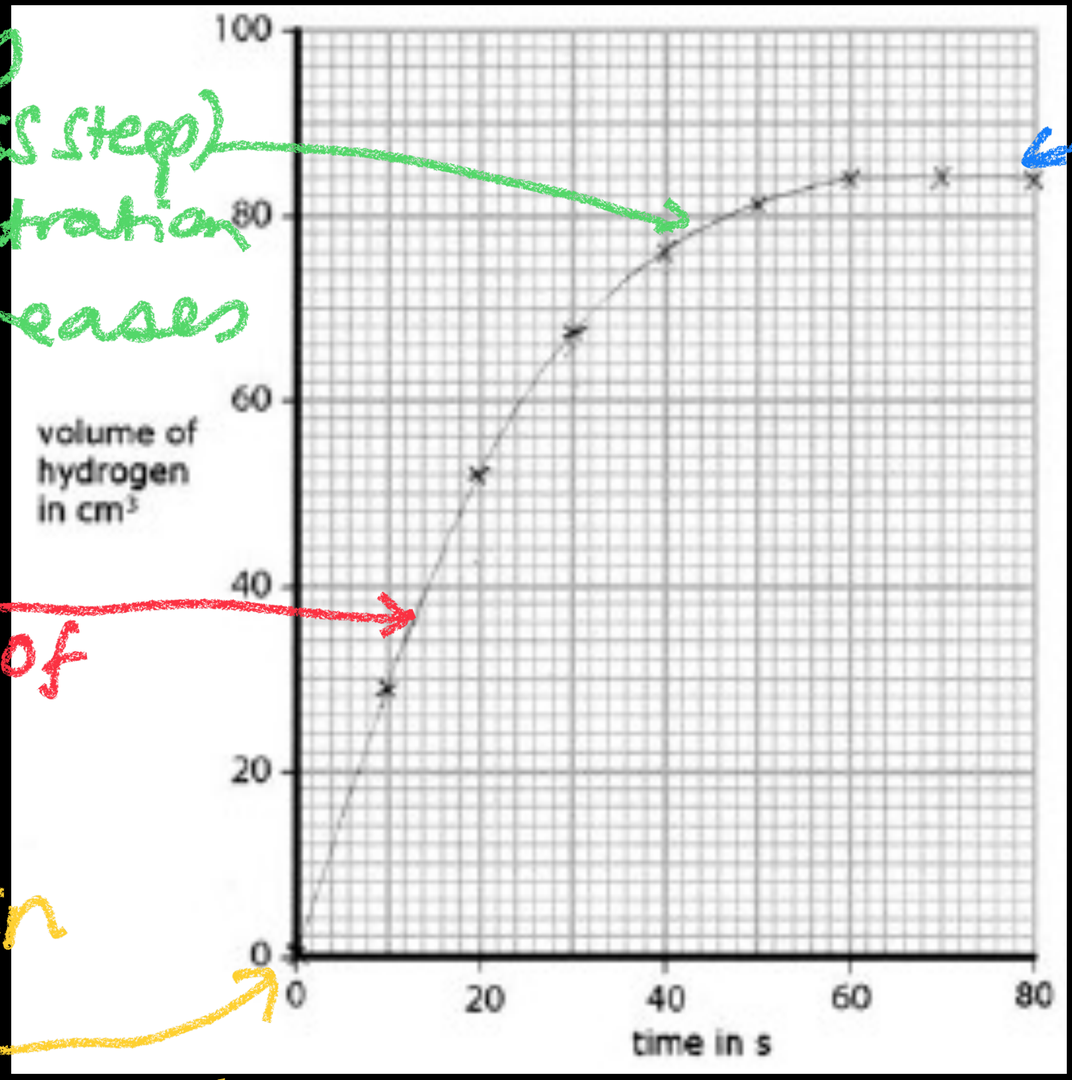
Rate Graphs

$Mg + 2HCl \rightarrow MgCl_2 + H_2$

Rate decreases (curve becomes less steep) because concentration of reactants decreases

Rate is highest (curve is steepest) highest amount of reactants

Goes through origin at time zero, zero gas has been made



Reaction has stopped (line is flat) One reactant has been used up (NOT excess reactant)