



More frequent successful collisions between reacting particles

Increasing the pressure, means the same number of particles are now in a smaller space

Pressure of reacting gases

Increasing the concentration, increases the number of particles in the same volume

Concentration of reactants

Increasing the temperature increases the speed of the particles and increases the energy of each collision

Temperature

Increasing the surface area, increases the number of exposed reactants

Surface area of reactants

Use a powdered reactant for a larger surface area

Lower activation energy

Factors affecting rate of reaction

Link explanations to collision theory

# 6.1 RATE OF REACTION

Catalysts

Increase the rate of reaction by providing an alternate reaction pathway

Enzymes are biological catalysts

Not used up

Changes reaction profile

Collision theory

Activation energy

Minimum energy required

A reaction will only take place if the particles collide with sufficient energy

Graphs

Calculations

Interpret graphs showing the amount of reactant used/product formed over time

Tangent to the slope on a graph as a measure of the rate of reaction

Calculate gradient at a specific time

$$\text{Rate of reaction} = \frac{\text{Amount of reactant used/product formed}}{\text{Time (s)}}$$

Units depend on the measurement of reactant/product

g/s or cm<sup>3</sup>/s

mol/s

AQA

**KEY**  
'Higher only' written in yellow

