

Year 9 Chemistry: Rates of Reaction Knowledge Organiser

End Point A:

Recall the equation and calculate rates of reaction

The rate of a chemical reaction can be found by measuring the quantity of a reactant used or the quantity of product formed over time:

$$\text{Mean rate of reaction} = \frac{\text{quantity of reactant used}}{\text{time taken}}$$

$$\text{Mean rate of reaction} = \frac{\text{quantity of product formed}}{\text{time taken}}$$

End Point C & E-H

Describe and explain the factors affecting reaction rates in terms of collision theory

Particles must collide with enough energy in order to react.

Collision theory explains how various factors affect rates of reactions.

Chemical reactions can occur only when

reacting particles collide with each other with sufficient energy.

The minimum amount of energy that particles must have to react is called the activation energy.

Increasing the concentration of reactants in solution, the pressure of reacting gases, and the surface area of solid reactants increases the frequency of collisions and so increases the rate of reaction.

Increasing the temperature increases the frequency of collisions and makes the collisions more energetic, and so increases the rate of reaction.

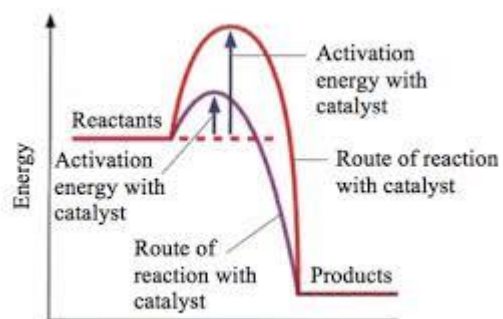
End Point H & L: Catalysts

Catalysts speed up a reaction, without being used up in the reaction.

They are not part of the overall equation.

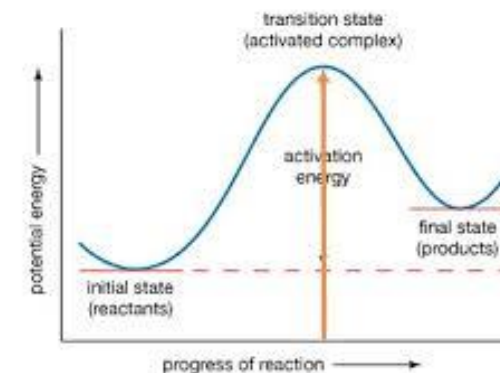
Different catalysts are needed for different reactions.

They all work by reducing the activation energy needed for a reaction to occur

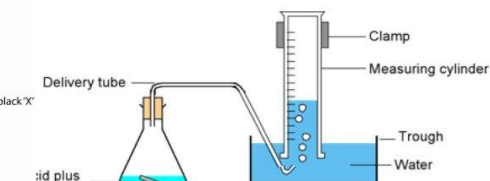
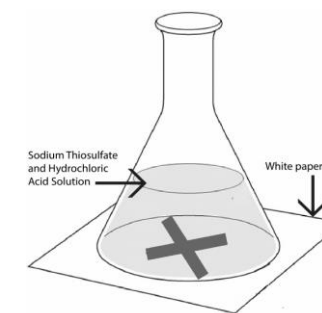
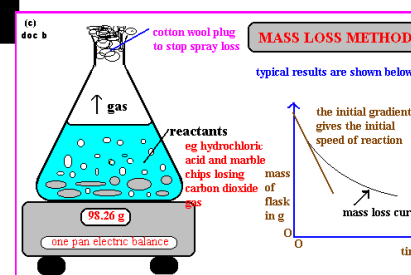


End Point B: Activation Energy

The activation energy is the energy required for a collision between 2 particles to result in a reaction.



End Point D: Methods to measure reaction rate



End Point I-K: Interpreting reaction rate graphs

