

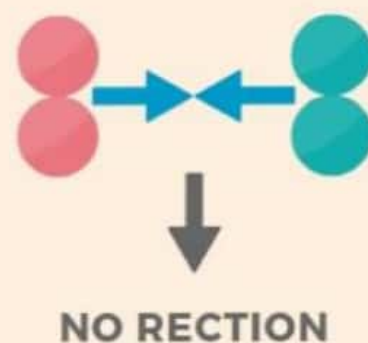
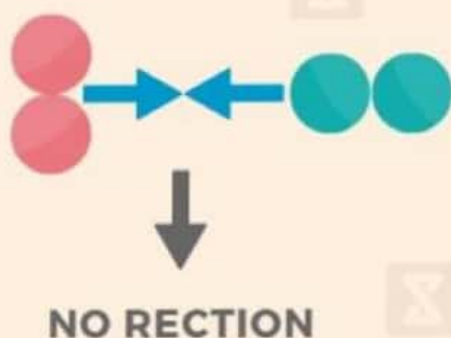
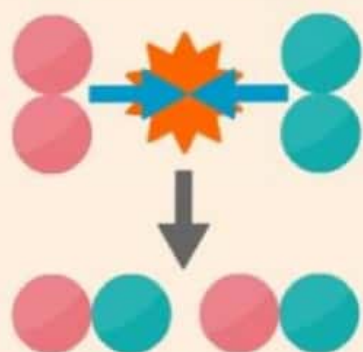
CHEMICAL KINETICS



MAKING CHEMICAL REACTION HAPPEN FASTER

There are a number of different things that we can change to make a chemical reaction faster. Here, we explain the concept of collision theory, and how it can be used to explain the effects of five different factors on the rate of a chemical reaction.

COLLISION THEORY

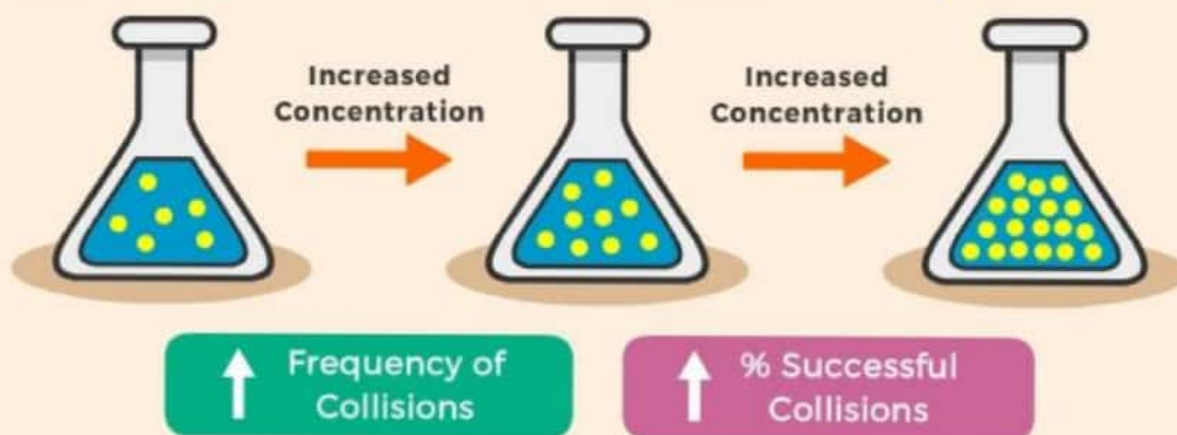


Wrong Orientation

Insufficient Energy

Collision theory states that for a reaction to occur, particles must collide with the **correct orientation** and with **sufficient energy** for a reaction to occur. Different factors affect the rate of the reaction by affecting the frequency of particle collisions, and the proportion of collisions that have enough energy to react.

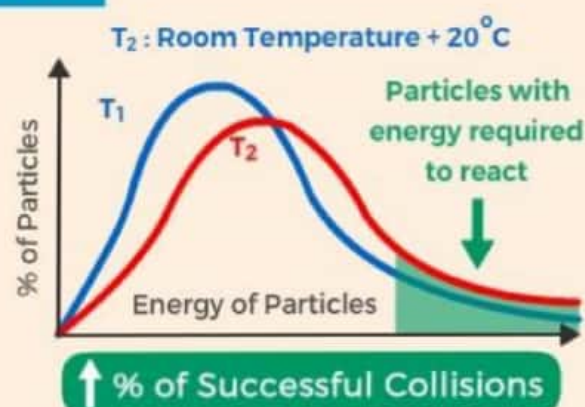
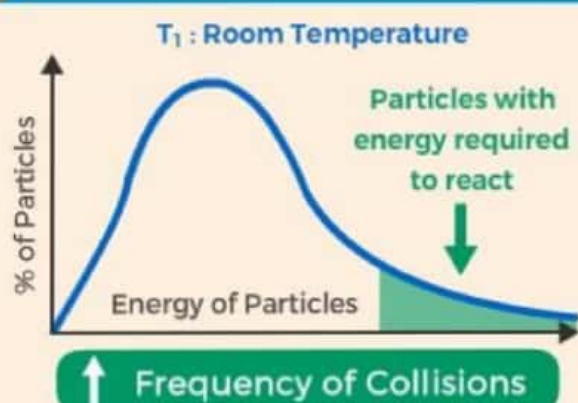
01 INCREASE CONCENTRATION OF REACTANTS



Increasing the concentration of reactants in solution increases the rate of reaction as there are a greater number of particles to react. This increases the frequency of collision between particles.



02 INCREASE TEMPERATURE OF REACTION



Increasing the temperature increases the kinetic energy of particles. This increases the frequency of particle collisions and a greater proportion of collisions will have the sufficient energy required to react.

03 INCREASE SURFACE AREA OF REACTANTS



Increasing the surface area of solid reactants increases the number of particles that are exposed and available to react and as a consequence this increases the frequency of particle collisions, thus increasing the rate.

04 INCREASES PRESSURE OF REACTION



Increasing the pressure of a reaction involving gases, forces the gas particles closer together. This will increase the frequency of particle collisions and therefore increases the rate of reaction.

05 USE A CATALYST IN A REACTION

A catalyst provides an alternative route for the reaction with a lower activation energy. This means that particle collisions need less energy in order for a reaction to occur, thus increasing the rate of the reaction.

