

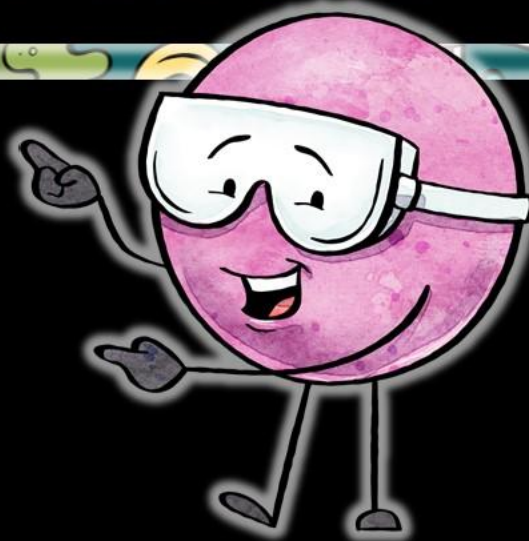


RATES OF REACTION



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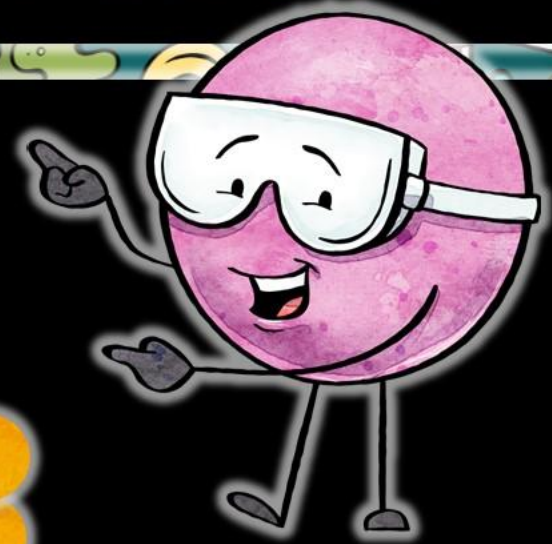
COLLISION THEORY:



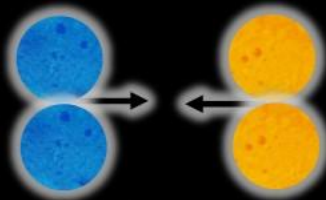
Collision theory states that, for a reaction to occur, particles must collide with the correct orientation and with sufficient energy.

RATES OF REACTION

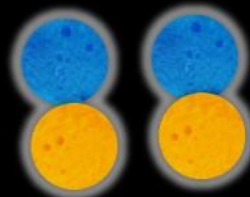
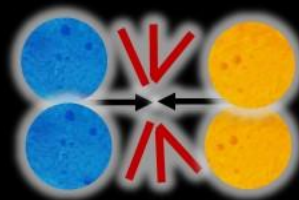
COLLISION THEORY:



wrong
orientation



not enough
energy



RATES OF REACTION

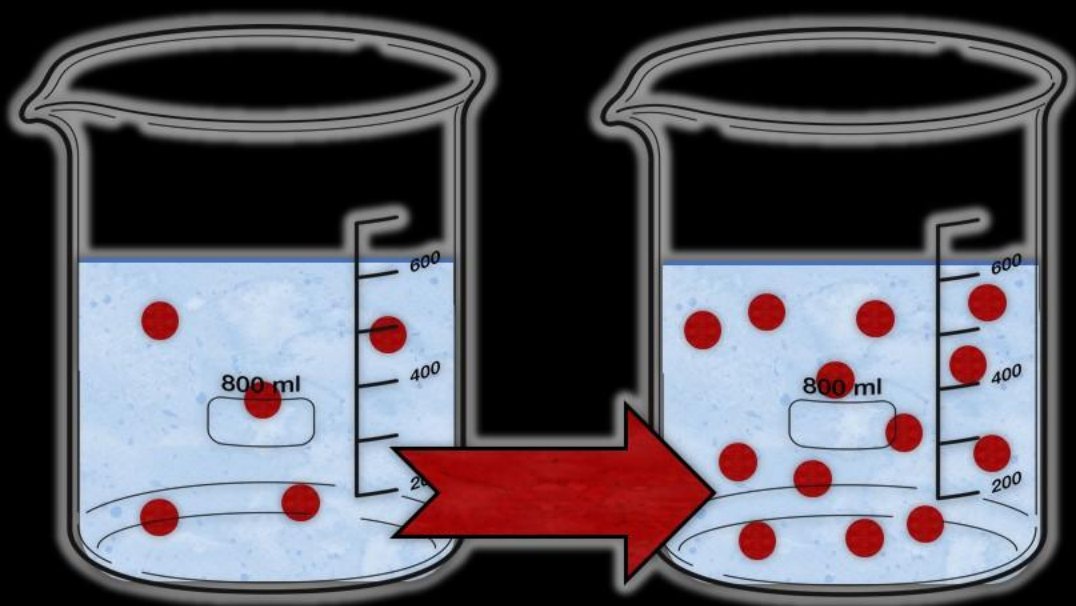
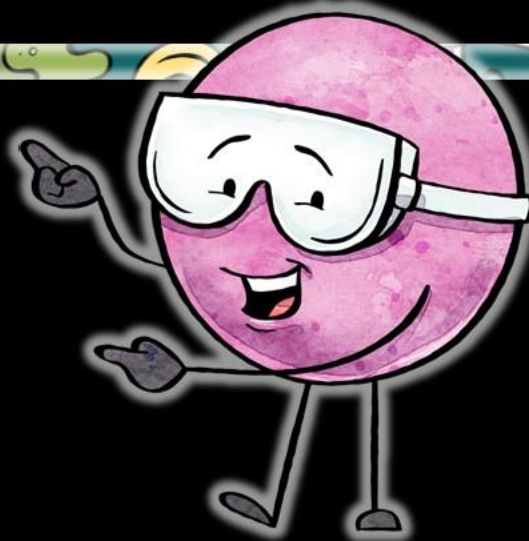
CONCENTRATION:



Increasing concentration provides a greater number of particles available to react. This increases the frequency of collisions.

RATES OF REACTION

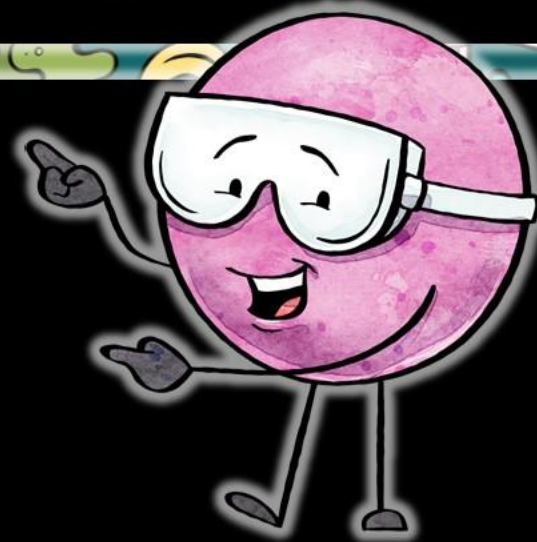
CONCENTRATION:



More
particles in
the same
space!

RATES OF REACTION

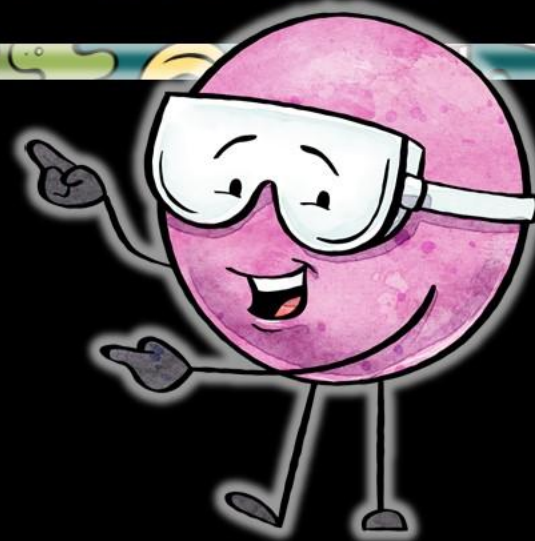
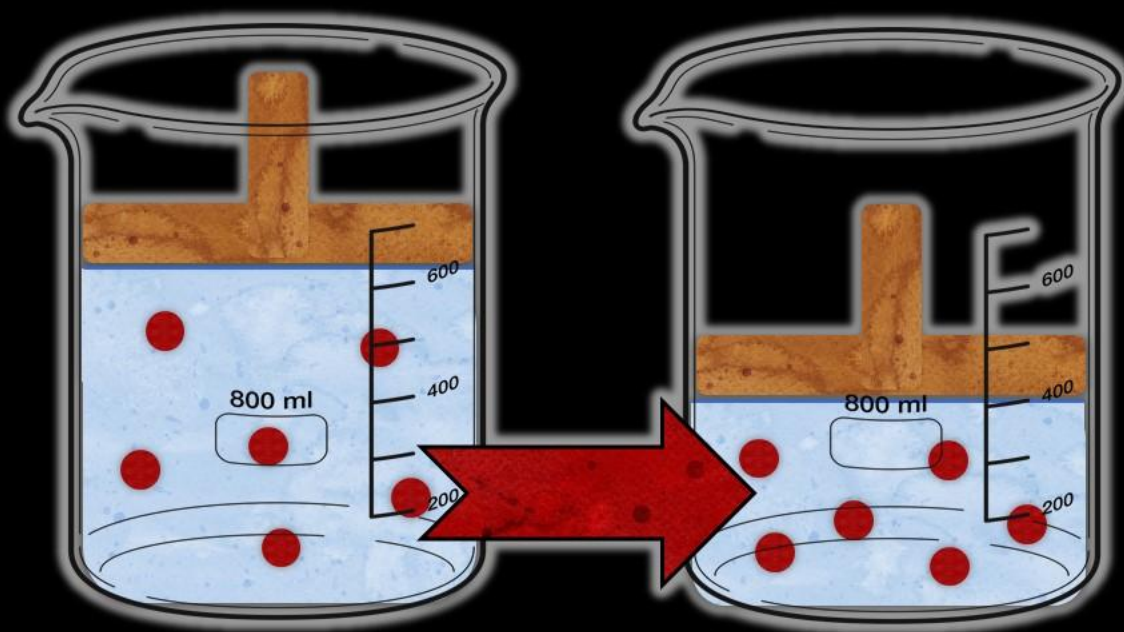
PRESSURE:



Increasing pressure of a reaction involving gases forces the gases closer together. This increases the frequency of collisions.

RATES OF REACTION

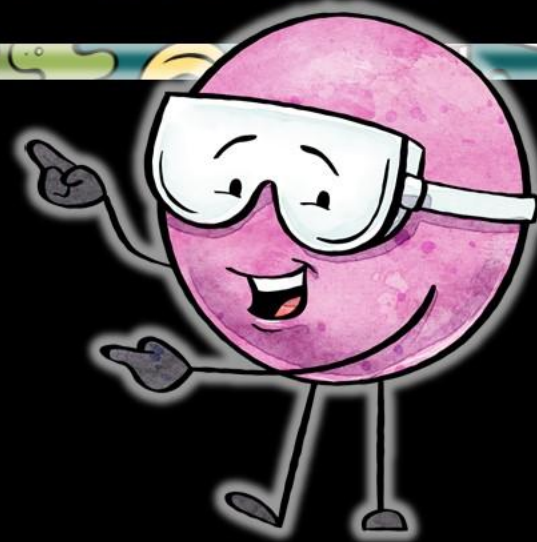
PRESSURE:



Higher
chance of
hitting
each other!

RATES OF REACTION

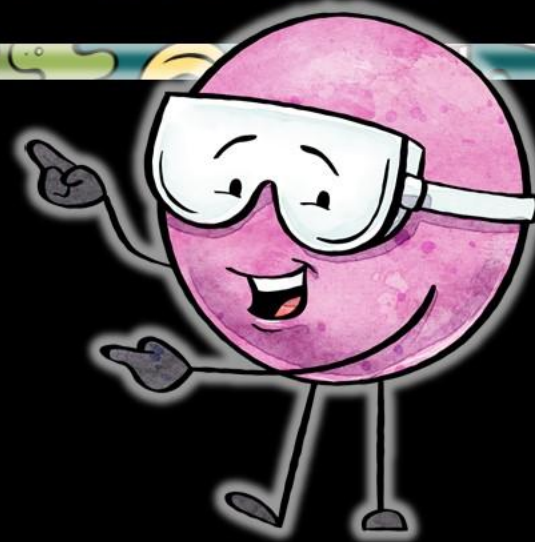
TEMPERATURE:



Increasing temperature increases the kinetic energy of particles.

RATES OF REACTION

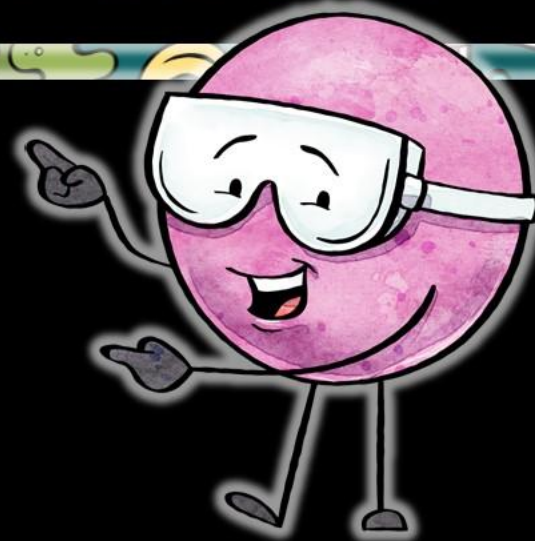
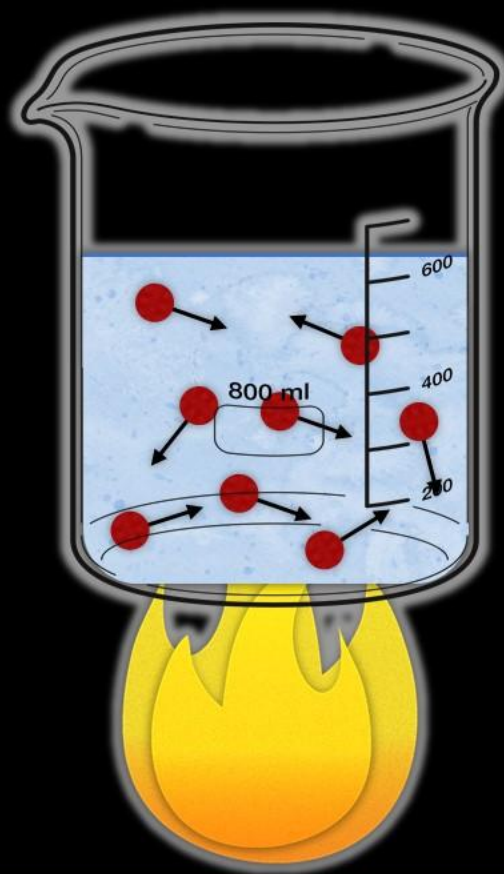
TEMPERATURE:



This increases the frequency of collisions and a greater proportion of those collisions have the energy required to react.

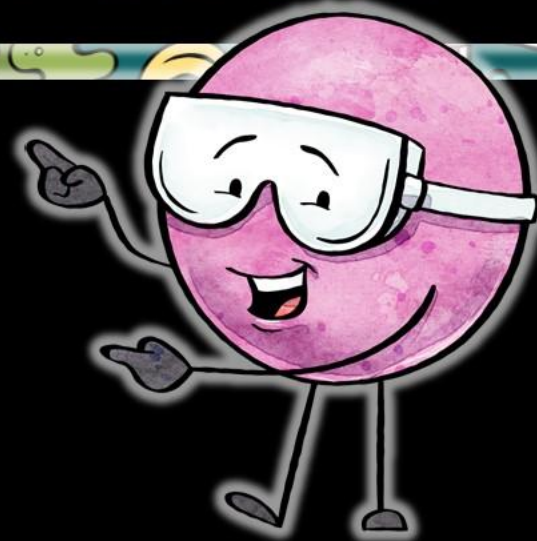
RATES OF REACTION

TEMPERATURE:



RATES OF REACTION

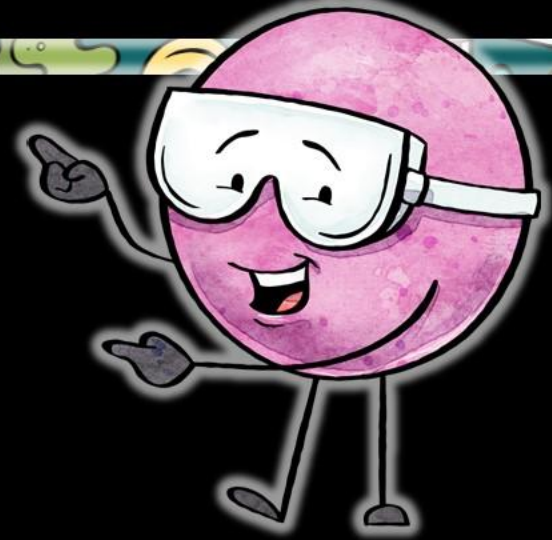
CATALYSTS:



A catalyst speeds up reactions by lowering the activation energy required for reaction collisions.

RATES OF REACTION

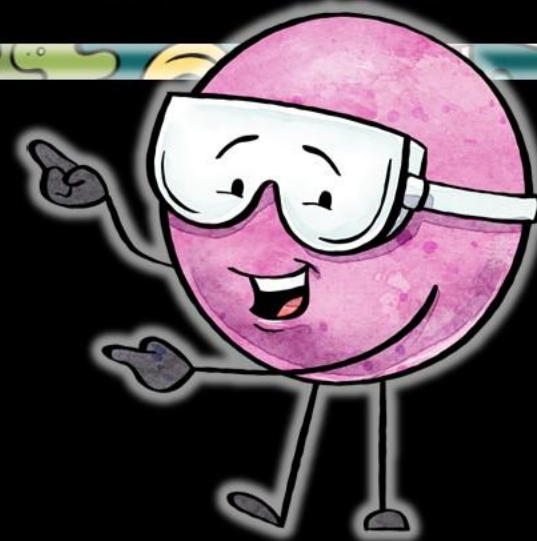
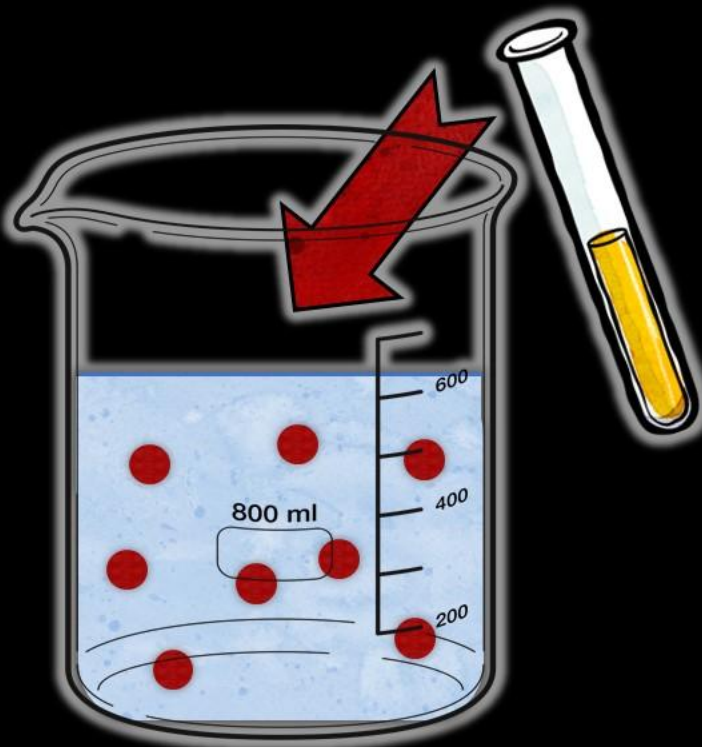
CATALYSTS:



Enzymes are protein molecules that act as catalysts in reactions in living organisms.

RATES OF REACTION

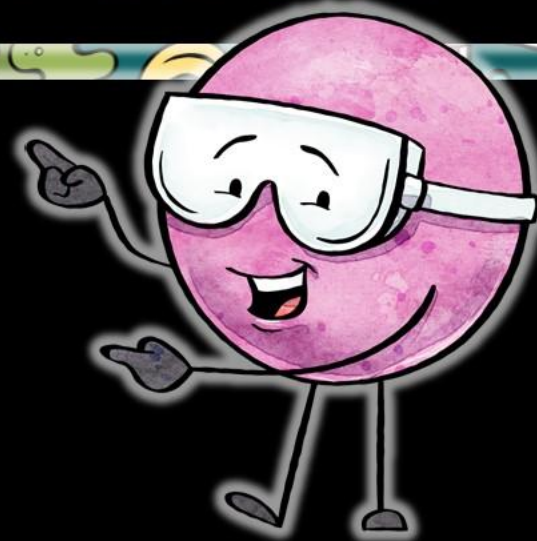
CATALYSTS:



Greek - "to untie"

RATES OF REACTION

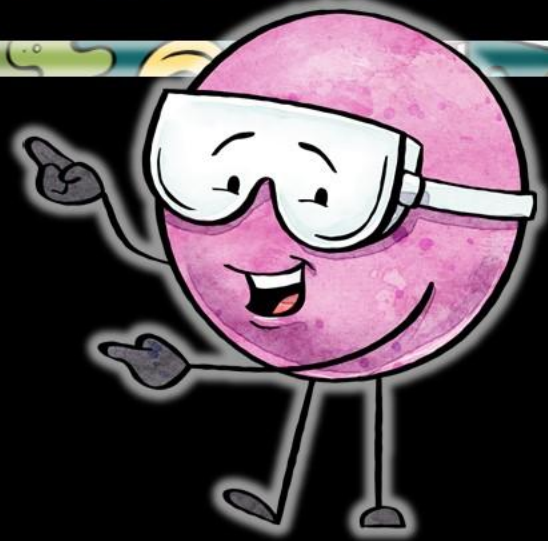
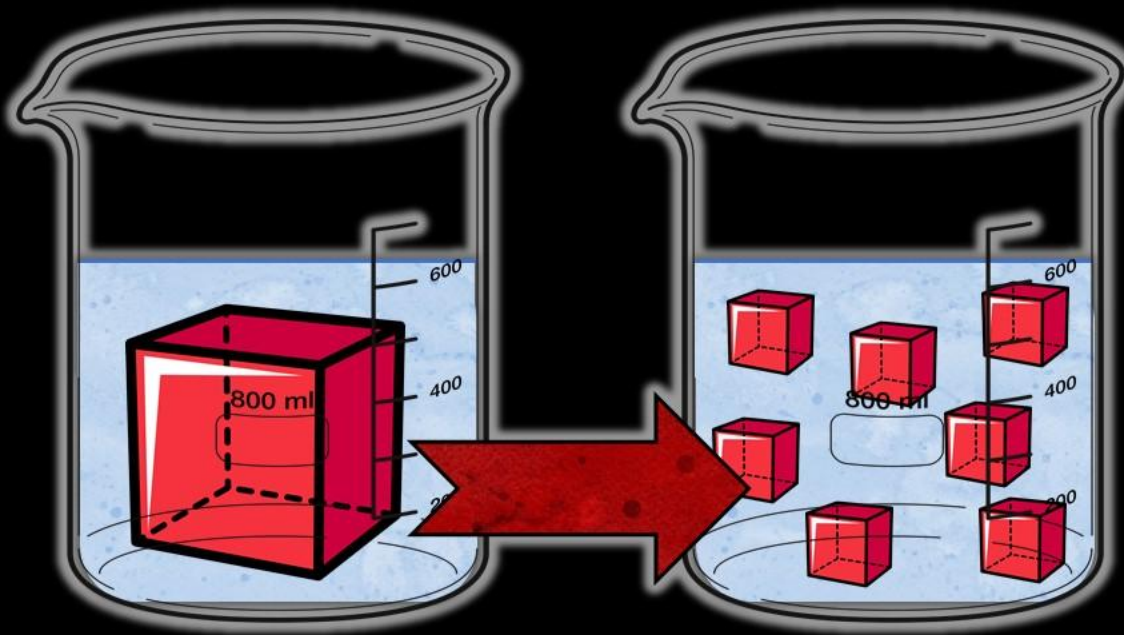
SURFACE AREA:



Increasing surface area of a solid increases the number of particles that are exposed. This increases the frequency of collisions.

RATES OF REACTION

SURFACE AREA:



*powdered
drink mix
dissolves faster,
same principle!*