KEY

Collision Theory

16.1

Q1 Fill in the blanks below using each word once.

~~energy~~ ~~collide~~ ~~catalyst~~ ~~concentration~~ ~~collision theory~~

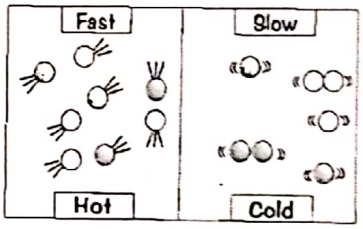
Particles can only react if they collide with enough energy for the reaction to take place. This is called the collision theory. There are four factors that can change the rate of a reaction; temperature, concentration, surface area and the use of a suitable catalyst

Q2 Fill in the blanks in the text and complete the diagrams below using each word once.

~~moderate~~ ~~collision~~ ~~faster~~ ~~energy~~ ~~surface area~~ ~~faster~~ ~~catalyst~~ ~~fast~~ ~~slow~~ ~~particles~~ ~~faster~~ ~~faster~~ ~~more often~~ ~~collision~~ ~~successful~~ ~~slow~~ ~~fast~~ ~~faster~~ ~~low concentration~~ ~~catalyst present~~ ~~high concentration~~ ~~large surface area~~

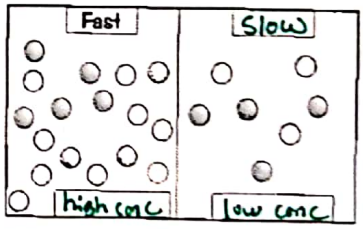
TEMPERATURE

Increasing the temperature will cause the particles to move faster with more energy. They will therefore collide more often and with greater energy. These two things mean there are more successful collisions per second and therefore a faster rate of reaction.



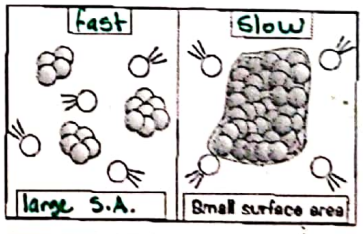
CONCENTRATION

Increasing the concentration of a reactant simply means there are more particles which may collide and so react. More collisions means a faster reaction.



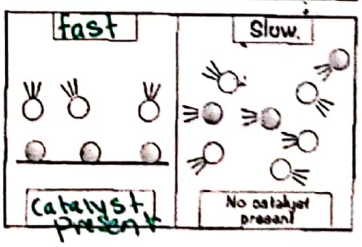
SURFACE AREA

Using a powder instead of a lump means the surface area is greater, which means a greater area of reactant is exposed and so available for a collision. More collisions means a faster reaction.



CATALYSTS

Use of a suitable catalyst means that the particles may react even if they collide with only moderate energy. This means more successful collisions are likely. Some catalysts work because one of the particles is fixed to a surface. This makes the chance of a collision more likely. More collisions means a faster reaction.



Q3 Choose the sentence that **best describes** the collision theory:

- Particles collide at random and always react.
- Collisions between particles often result in a reaction.
- Reacting particles must collide with enough energy in order to react.
- Collisions between molecules are sometimes needed before a reaction occurs.