Name:

Collision theory

This is the theory used to explain how factors affect the rate of reaction. Rate is a measure of how much reaction has occurred in a set amount of _____. The units of rate are _____.

For a reaction to happen two things must take place:

1. The reactants must _____.
2. The collision must provide enough _____ for a reaction to happen. This is called the _____ _____.

The factors which affect reaction rate are:

a) Surface area

Surface area is only a factor when one of the reactants is a _____. If a fixed mass of solid is used in a reaction the _____ of the particles will alter the rate of reaction. This is because the smaller the particles are the _____ surface area there is in contact with the other reactant. This will increase / decrease the number of collisions between the reactants in a set amount of time. It will / will not affect the energy of these collisions. The smaller the particles in a fixed mass of solid the faster / slower the reaction.

b) Concentration

Concentration is the term used to express how many _____ there are in a fixed volume of solution. The units of concentration are usually given as _____.

If a solution is concentrated there are more / fewer particles of reactant per unit volume in the solution. The more particles there are in a solution per unit volume the chance of collisions between reactants is greater / lesser. Concentration will / will not affect the energy of the collisions.

c) Temperature

When the temperature is high the particles in the reaction have more / less energy. The more energy the particles have the faster / slower they move. If particles are moving faster they will _____ more often and with more _____.

This means there will be more _____ collisions per unit time and the rate will increase.

d) Catalysts

Catalysts offer an alternative route by which a reaction can happen. This often means more / less energy is required to allow the reaction to take place. This means that the rate of reaction _____ when a catalyst is present, because more of the collisions occur with more than the _____ energy.