

8. Reaction kinetics

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

1. An effective collision is one that:
 - ☐ has enough energy and the correct orientation, so a reaction happens
 - ☐ has any amount of energy
 - ☐ always leads to a reaction
 - ☐ happens at the wrong angle
2. The activation energy is:
 - ☐ the minimum energy a collision needs to be effective
 - ☐ the energy released by the reaction
 - ☐ the average energy of the molecules
 - ☐ always zero
3. A catalyst speeds up a reaction by:
 - ☐ providing a different route with a lower activation energy
 - ☐ raising the activation energy
 - ☐ being used up in the reaction
 - ☐ increasing the temperature
4. The rate of reaction depends on the:
 - ☐ frequency of effective collisions
 - ☐ colour of the reactants
 - ☐ mass of the container
 - ☐ number of non-effective collisions only
5. On the Boltzmann distribution, the molecules that can react are those:
 - ☐ to the right of the activation energy
 - ☐ to the left of the activation energy
 - ☐ at the peak
 - ☐ at zero energy
6. A small rise in temperature can give a large rise in reaction rate.
 - ☐ True ☐ False

7. The rate of reaction can be found from the _____ of a concentration-time graph.

8. Increasing temperature increases the proportion of molecules with energy above the activation energy.
 - ☐ True ☐ False
9. A catalyst speeds up a reaction by providing a route with a lower activation energy.
 - ☐ True ☐ False
10. A catalyst does NOT change the:
 - ☐ enthalpy change (ΔH) of the reaction
 - ☐ activation energy
 - ☐ rate of reaction
 - ☐ reaction mechanism

1. **has enough energy and the correct orientation, so a reaction happens**

A collision only reacts with sufficient energy and the right orientation.

2. **the minimum energy a collision needs to be effective**

Only collisions with at least the activation energy can react.

3. **providing a different route with a lower activation energy**

A catalyst offers a new mechanism with a lower E_a , so more molecules can react; it is not used up.

4. **frequency of effective collisions**

More effective collisions per second means a faster rate.

5. **to the right of the activation energy**

Molecules with energy greater than E_a (right of the line) have enough energy to react.

6. **True**

Because the reacting fraction grows sharply with temperature, even a small increase greatly speeds the reaction.

7. **gradient**

A steeper gradient means a faster rate.

8. **True**

So more collisions are successful.

9. **True**

It is not used up.

10. **enthalpy change (ΔH) of the reaction**

A catalyst lowers E_a and speeds the rate, but the overall ΔH (reactants to products) is unchanged.