

8 Rate of reaction — Part 2 — Answers

Answers

Work through these after trying the questions yourself.

8.1 The minimum energy a collision needs in order to react.

8.2 Those with energy greater than the activation energy (to the right of E_A).

8.3 Raising the temperature spreads the curve to the right, so a much larger fraction of molecules have energy above E_A and many more collisions are effective.

8.4 It provides a different route (mechanism) with a lower activation energy, so more collisions have enough energy to react.

8.5 No — ΔH is unchanged.

8.6 A homogeneous catalyst is in the same physical state as the reactants; a heterogeneous catalyst is in a different state (e.g. a solid with gas/liquid reactants).

8.7 A catalyst lowers the activation energy. On the Boltzmann distribution this means a *larger fraction* of molecules already have energy above the new, lower E_A — so more collisions are effective and the rate rises, without raising the temperature.