

Solutions

Each answer shows the steps, then the **result**.

2.1

- the minimum energy a collision needs to be effective (to react)

2.2

- those with energy greater than (to the right of) the activation energy

3.1 B

- A higher temperature gives a larger fraction of molecules with energy $\geq E_A$

3.2 B

- The area under the curve is the total number of molecules

3.3

- curve from the origin rising to a peak then tailing off, not touching the x-axis; E_A marked on the energy axis to the right of the peak; area to the right of E_A shaded

3.4

- at higher temperature the curve spreads to the right; the fraction of molecules with energy $\geq E_A$ increases greatly; so many more collisions are effective each second, roughly doubling the rate