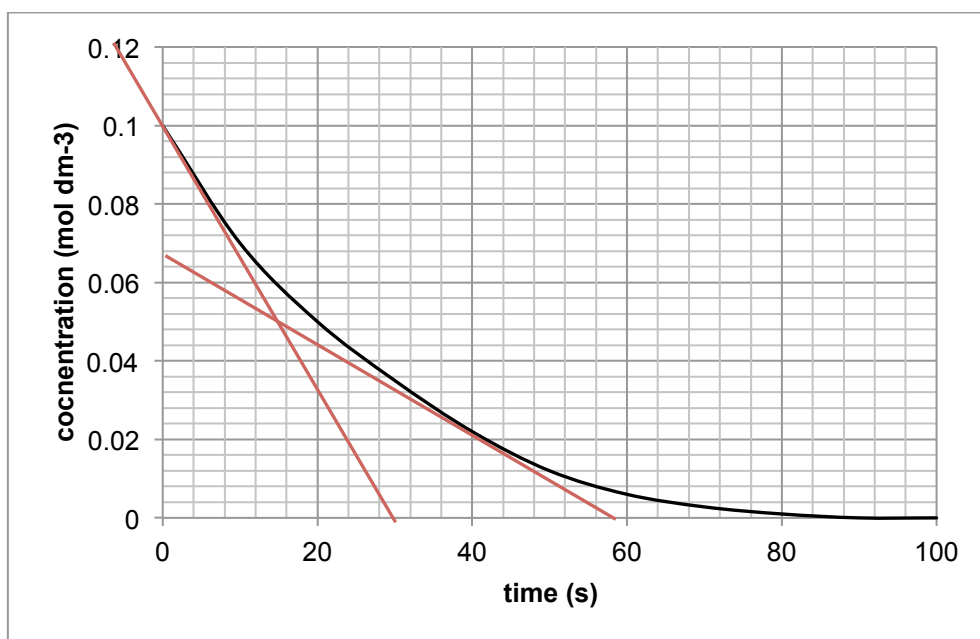




The concentration of a reactant in a solution reaction was plotted against time.



a Explain why the reaction slows down over time.

**fewer reactant particles therefore less frequent successful collisions between reactant particles**

b Calculate the initial rate of reaction (at time = 0 seconds) by drawing a tangent and finding the gradient.

$$\text{rate} = \frac{0.1-0}{30-0} = 0.0033 \text{ mol dm}^{-3} \text{ s}^{-1}$$

c Calculate the rate of reaction at time = 40 seconds by drawing a tangent and finding the gradient.

$$\text{rate} = \frac{0.068-0}{58-0} = 0.0018 \text{ mol dm}^{-3} \text{ s}^{-1}$$

d The reaction would be faster if carried out at a higher temperature. Explain why.

**particles move faster so successful collisions are more frequent, and**

**particles have more energy so a higher proportion of the collisions have energy greater than or equal to the activation energy and are successful**