

Solutions

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

2.1

- The change in concentration of a reactant or product per unit time

2.2

- Any two: higher concentration, higher temperature, larger surface area, a catalyst

2.3

- A powder has a larger surface area, so more particles are exposed to collide

3.1 B

- more particles per volume means more frequent collisions

3.2

(a)

- 40°C

(b)

- Particles move faster (more frequent collisions) and more of them have energy above the activation energy (more successful collisions)

3.3

- A catalyst provides an alternative pathway with a lower activation energy, so more collisions succeed; it is regenerated at the end, so it is not consumed