

Solutions

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

2.1

- enough energy (at least the activation energy); the correct orientation/direction

2.2

- there are more particles in the same volume, so they collide more often — more effective collisions per second

3.1 B

- Higher pressure brings particles closer, so they collide more often

3.2 B

- $48/20 = 2.4 \text{ cm}^3 \text{ s}^{-1}$

3.3

(a)

- $\frac{54 - 30}{45 - 15} = \frac{24}{30} = 0.80 \text{ cm}^3 \text{ s}^{-1}$

(b)

- at the start the reactant concentration is highest, so collisions are more frequent and the rate is faster; as reactant is used up the rate falls