

Solutions

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

2.1

- The velocity

2.2

- The displacement

2.3

- displacement is the area under the v - t graph, here a rectangle:

$$\Delta x = v \Delta t = (6 \text{ m s}^{-1})(5 \text{ s})$$

- $\Delta x = \mathbf{30 \text{ m}}$

2.4

- acceleration is the gradient of the v - t graph:

$$a = \frac{\Delta v}{\Delta t} = \frac{8 \text{ m s}^{-1} - 0}{2 \text{ s}}$$

- $a = \mathbf{4 \text{ m s}^{-2}}$

3.1 B

- acceleration is the slope of the velocity-time graph

3.2 B

- constant acceleration gives a straight sloped v - t line

3.3

(a)

- acceleration is the gradient of the v - t graph:

$$a = \frac{\Delta v}{\Delta t} = \frac{12 \text{ m s}^{-1} - 0}{6 \text{ s}}$$

- $a = \mathbf{2 \text{ m s}^{-2}}$

(b)

- displacement is the area of the triangle under the graph:

$$\Delta x = \frac{1}{2} \Delta t v_{\max} = \frac{1}{2}(6 \text{ s})(12 \text{ m s}^{-1})$$

- $\Delta x = \mathbf{36 \text{ m}}$

3.4

(a)

- $v = 0$ (the position is constant)

(b)

- $a = 0$