Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- $v = \Delta d / \Delta t = 24/3 = \mathbf{8}$ km/h.

2.2

- No distance change means **stopped for 35 minutes**.

2.3

- $Y = 7(12) = \mathbf{84}$; $X = 56/7 = \mathbf{8}$.

2.4

- **Plot the four points and join consecutive points by straight lines**. The middle section is horizontal.

3.1

(a)

- With time in hours: $(0, 0), (2, 9), (2.5, 9), (4, 15)$. Join consecutive points.

(b)

- $v = 6/1.5 = \mathbf{4}$ km/h.

(c)

- $v_{\text{average}} = 15/(2 + 0.5 + 1.5) = 15/4 = \mathbf{3.75}$ km/h.

3.2

(a)

- Plot **(0,0), (30,30), (45,30), (90,75)**.
- Label minutes and km on the axes and join consecutive points by straight segments, including the horizontal rest.

(b)

- $v_1 = 30/(30/60) = 60$ and $v_2 = 45/(45/60) = \mathbf{60}$ km/h.
- Whole-journey $v = 75/(90/60) = \mathbf{50}$ km/h.
- The rest lowers the average despite equal moving speeds.

3.3

(a)

- $C = 8 + 2.5 \times 12 = \mathbf{38}$ yuan.

(b)

- At $d = 0$, $C = \mathbf{8}$.
- It is the fixed charge paid before any distance is travelled.

3.4

- Rate $= \dfrac{\text{change in depth}}{\text{change in time}} = \dfrac{35 - 5}{10}$.
- **3** cm per minute.