

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

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

2.1

- speed = distance $\div$ time = $90 \div 1.5$
 $= \mathbf{60}$ km/h

2.2

- acceleration = change in speed $\div$ time = $20 \div 8$
 $= \mathbf{2.5}$ m/s²

2.3

- the area is a triangle: $\frac{1}{2} \times 8 \times 20$
 $= \mathbf{80}$ m

3.1

(a)

- $24 \div 12$
 $= \mathbf{2}$ m/s²

(b)

- first stage, a triangle: $\frac{1}{2} \times 12 \times 24 = 144$ m
- middle stage, a rectangle: $30 \times 24 = 720$ m
- last stage, a triangle: $\frac{1}{2} \times 8 \times 24 = 96$ m

$$144 + 720 + 96 = \mathbf{960} \text{ m}$$

(c)

- total time = $12 + 30 + 8 = 50$ s, so average speed = $960 \div 50$
 $= \mathbf{19.2}$ m/s

- note this is NOT the average of 0, 24 and 0