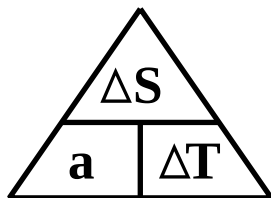


6.5 Answers

GCSE Mathematics Kinematics

6.5.1 Solutions (Introduction)



$$\text{After 1 s, } \Delta S = 1.5 \text{ ms}^{-1} \quad \therefore \text{ speed} = 4 + 1.5 = 5.5 \text{ ms}^{-1}$$

$$\text{After 2 s, } \Delta S = 3 \text{ ms}^{-1} \quad \therefore \text{ speed} = 4 + 3 = 7 \text{ ms}^{-1}$$

$$\text{After 3 s, } \Delta S = 4.5 \text{ ms}^{-1} \quad \therefore \text{ speed} = 4 + 4.5 = 8.5 \text{ ms}^{-1}$$

$$\text{After 4 s, } \Delta S = 6 \text{ ms}^{-1} \quad \therefore \text{ speed} = 4 + 6 = 10 \text{ ms}^{-1}$$

$$\text{After } t, \Delta S = 1.5 t \quad \therefore \text{ speed} = 4 + 1.5t$$

(In physics, this will be taught as $v = u + at$)

6.5.2 Solutions (6.3 Example)

(i) 18 ms^{-1} Emphasise units: ms^{-1} or m/s "metres per second"

(ii) 6 ms^{-2} Emphasise units: ms^{-2} or m/s^2 "metres per second squared"

6.5.3 Solutions (6.4 Exercise)

Answer 1

(i) 9 ms^{-1}

(ii) 3 ms^{-2}

Answer 2

(i) 4 ms^{-1}

(ii) 14 ms^{-1}

(iii) 10 ms^{-1}

(iv) 2 ms^{-2}

(v) 45 m

Answer 3

(i) 5 ms^{-1}

(ii) 0.5 ms^{-2}

Answer 4

- (i) 14 ms^{-1}
- (ii) 2 ms^{-2}

Answer 5

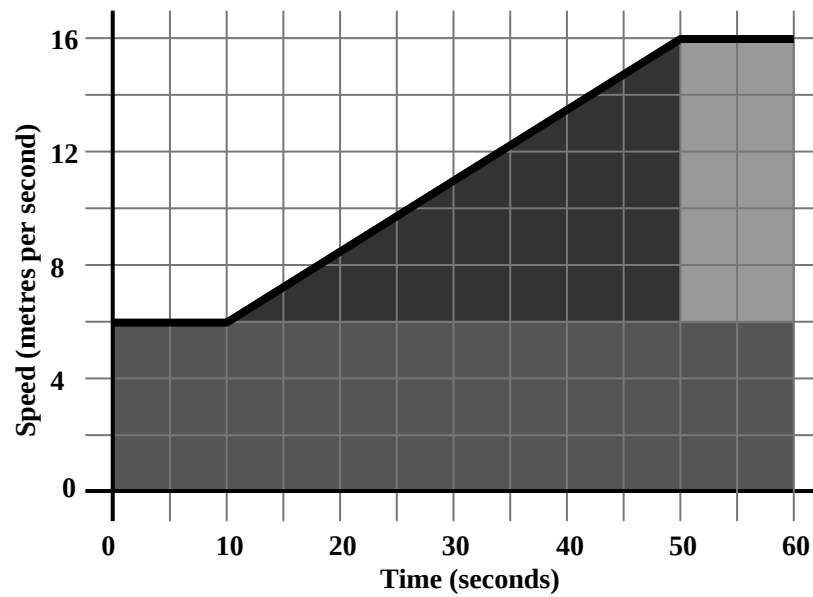
- (i) Between $t = 5 \text{ s}$ and $t = 7 \text{ s}$
- (ii) 5 ms^{-2}
- (iii) $48 + 10 + 50 = 108 \text{ m}$

Answer 6

- (i) 12 ms^{-1}
- (ii) 20 ms^{-1}

Answer 7

- (i)



- (ii) 0 ms^{-2}
- (iii) 0.25 ms^{-2}
- (iv) 0 ms^{-2}
- (v) $360 + 200 + 100 = 660 \text{ m}$

Answer 8

- (i) 12 ms^{-1}
- (ii) 17.5 ms^{-1}

Answer 9

9 s

Answer 10

- (i) 1 ms^{-2}
(ii) 0.15 ms^{-2}
(iii) 1.6 ms^{-2}

Answer 11

- (a) (i) 2 s
(ii) 10 m
- (b) (i) 4 s
(ii) 40 m
- (c) (i) 6 s
(ii) 90 m
- (d) (i) 8 s
(ii) 160 m

(e)

speed m/s (mph)	10 (22)	20 (45)	30 (67)	40 (90)
time to stop seconds	2	4	6	8
distance to stop metres	10	40	90	160

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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com