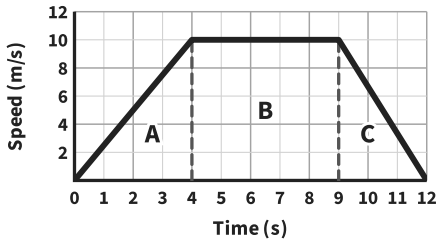
Speed-Time Graphs: Distance

ANSWERS

1

Find the distance travelled.



A = ½ × 4 × 10 = 20

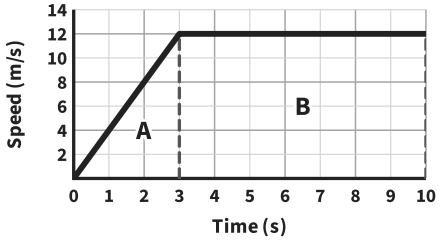
B = 5 × 10 = 50

C = ½ × 3 × 10 = 15

Distance 85 m

2

Find the distance travelled.



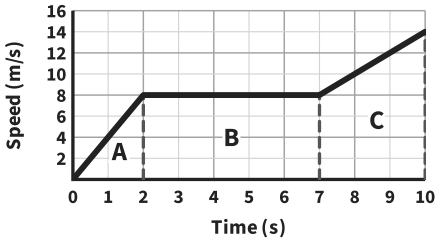
A = ½ × 3 × 12 = 18

B = 7 × 12 = 84

Distance 102 m

3

Find the distance travelled.



A = ½ × 2 × 8 = 8

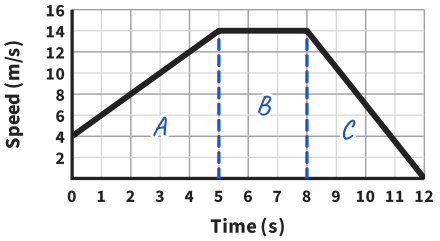
B = 5 × 8 = 40

C = $\frac{8 + 14}{2}$ × 3 = 33

Distance 81 m

4

Split the area into shapes.
Find the distance travelled.



A = $\frac{4 + 14}{2}$ × 5 = 45

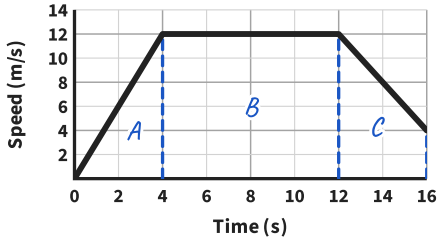
B = 3 × 14 = 42

C = ½ × 4 × 14 = 28

Distance 115 m

5

Find the distance travelled. Then find the average speed for the whole journey.



A: ½ × 4 × 12 = 24 B: 8 × 12 = 96

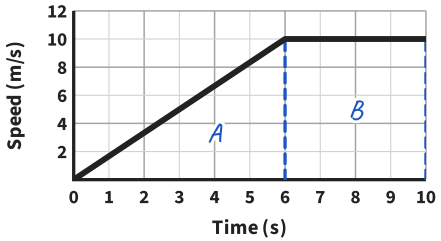
C: $\frac{12 + 4}{2}$ × 4 = 32, distance 152 m

152 ÷ 16 = 9.5

Average speed 9.5 m/s

6

Jo finds the distance travelled:
6 × 10 + 4 × 10 = 100 m.
Explain Jo's mistake.
Then find the distance.



The triangle is half of 6 × 10:

½ × 6 × 10 = 30, 30 + 40 = 70

Distance 70 m

7

A bus speeds up steadily from rest to 12 m/s in 8 seconds. It then travels at 12 m/s for 25 seconds. How far does the bus travel?

½ × 8 × 12 = 48, 25 × 12 = 300

48 + 300 = 348

Distance 348 m

8

A cyclist rides at 6 m/s for 30 seconds. She then slows down steadily and stops 10 seconds later. Find her average speed.

30 × 6 = 180, ½ × 10 × 6 = 30

210 ÷ 40 = 5.25

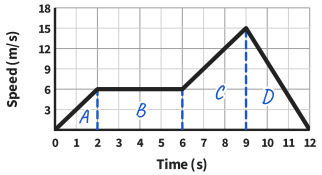
Average speed 5.25 m/s

Speed-Time Graphs: Distance *further practice*

ANSWERS

9

Find the distance travelled.



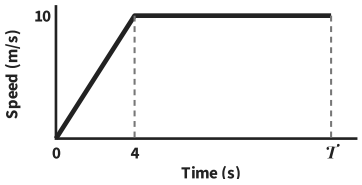
A 6, B 24, C 31.5, D 22.5

6 + 24 + 31.5 + 22.5 = 84

Answer 84 m

10

A scooter's journey is shown in the sketch. It travels 120 m. Find T.



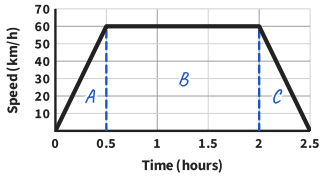
½ × 4 × 10 = 20, so 100 m at 10 m/s

100 ÷ 10 = 10 s, T = 4 + 10 = 14

Answer $T = 14$

11

The graph shows a coach journey.
How far does the coach travel?
Give your answer in km.



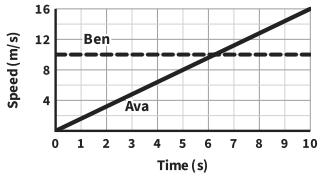
½ × 0.5 × 60 = 15, 1.5 × 60 = 90

15 + 90 + 15 = 120

Answer 120 km

12

Ava and Ben set off together.
The graph shows their speeds for 10 seconds. Who travels further in that time, and by how much?



Ava: ½ × 10 × 16 = 80 m

Ben: 10 × 10 = 100 m

Answer Ben, by 20 m

13

A car speeds up steadily from rest for 8 seconds and travels 60 m.
Find its speed after 8 seconds.
Then find its acceleration.

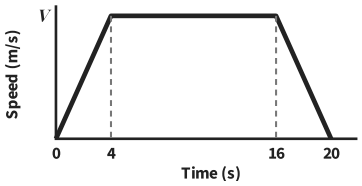
½ × 8 × V = 60, so 4V = 60, V = 15

15 ÷ 8 = 1.875 m/s²

Answer 15 m/s, 1.875 m/s²

14

The sketch shows a train's journey between two stations.
Its average speed is 10 m/s. Find V.



distance = 10 × 20 = 200 m

2V + 12V + 2V = 16V = 200, V = 12.5

Answer $V = 12.5$

15

A car is travelling at 18 m/s.
The driver sees a hazard 60 m ahead.
After 0.8 seconds she brakes, and the car slows down steadily and stops 5 seconds later. Does the car stop before the hazard?

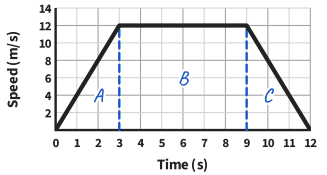
0.8 × 18 = 14.4, ½ × 5 × 18 = 45

14.4 + 45 = 59.4 m

Answer Yes, 59.4 m < 60 m

16

Mo says the distance travelled is 12 × 12 = 144 m.
Explain Mo's mistake.
Then find the distance.



the car is not at 12 m/s all the time

18 + 72 + 18 = 108

Answer 108 m