Name:

Exam Style Questions

Area Under a Graph

Corbettmaths

Equipment needed: Ruler, pencil, calculator, pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

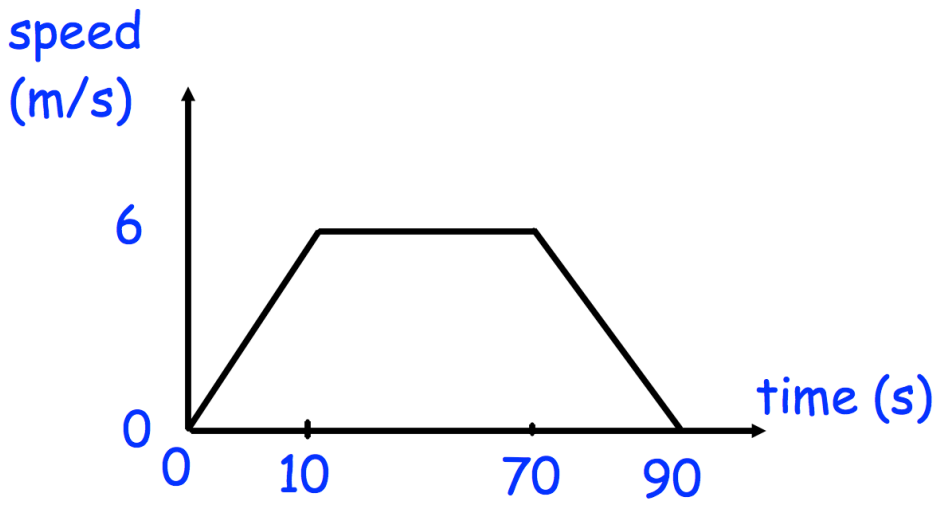
Video Tutorial

www.corbettmaths.com/contents

Video 389

Answers and Video Solutions

1. The graph shows the speed of a bicycle between two houses.



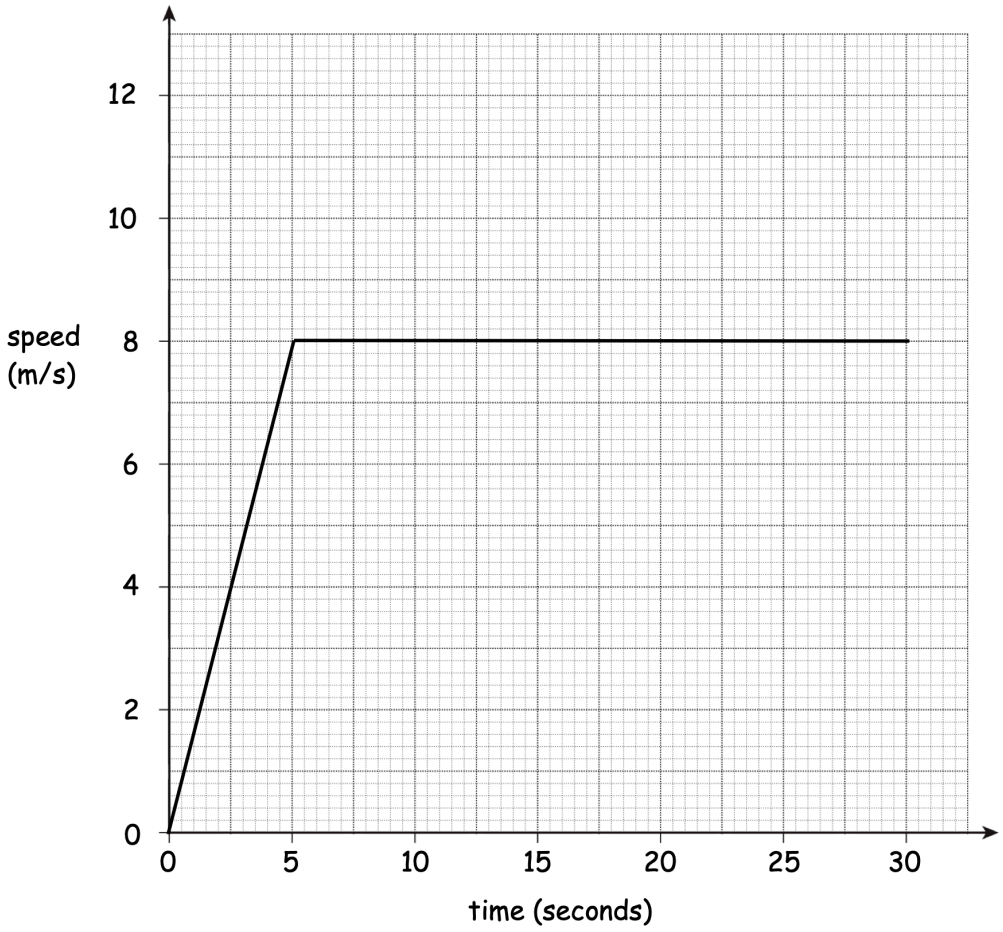
Calculate the distance between the two houses.

……..m

(2)

2. Haruki runs 5km.

The speed-time graph shows information about the first 30 seconds of the run.



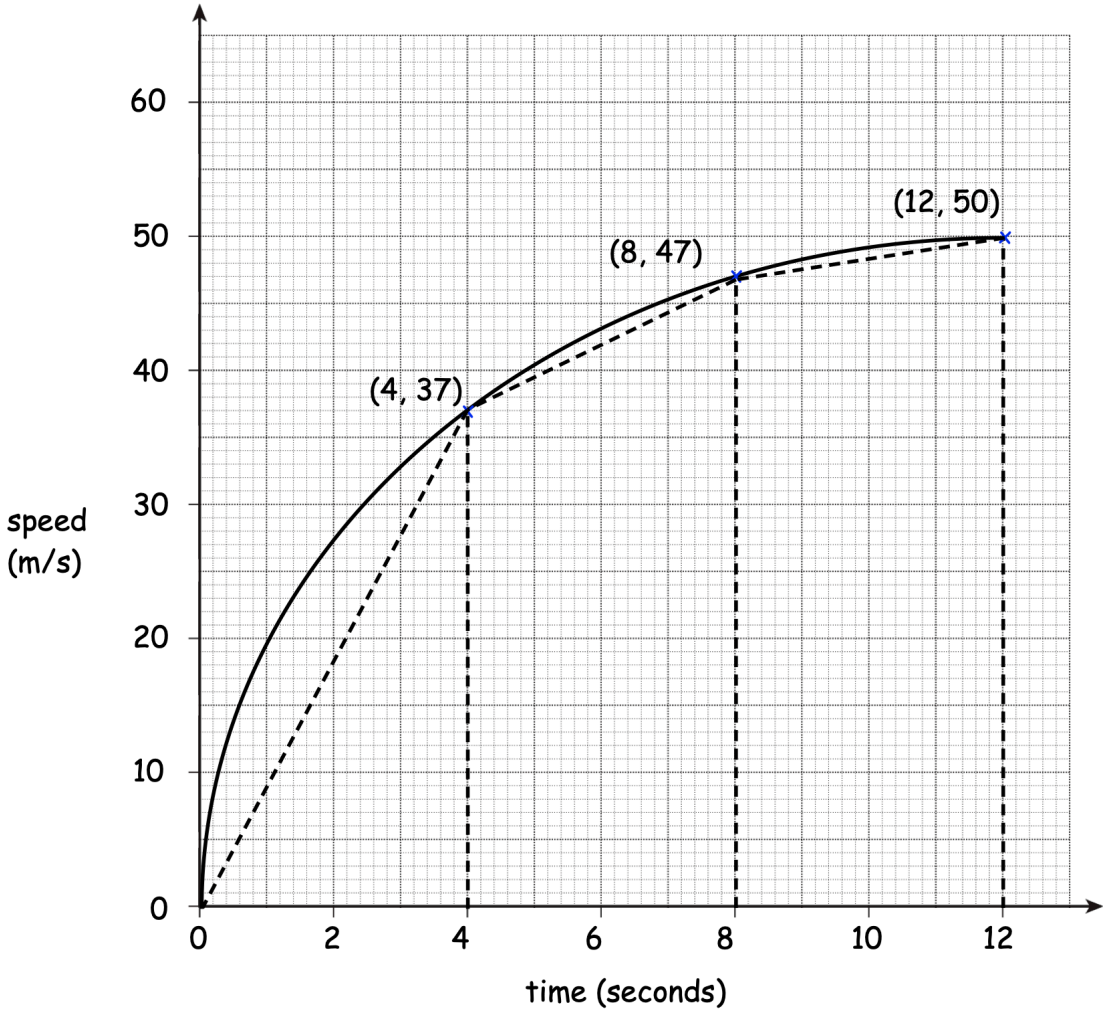
Work out how far Haruki has left to run.

.....

(3)

3. A sports car travels down a straight racetrack.

The speed-time graph shows information about the first 12 seconds of its journey.

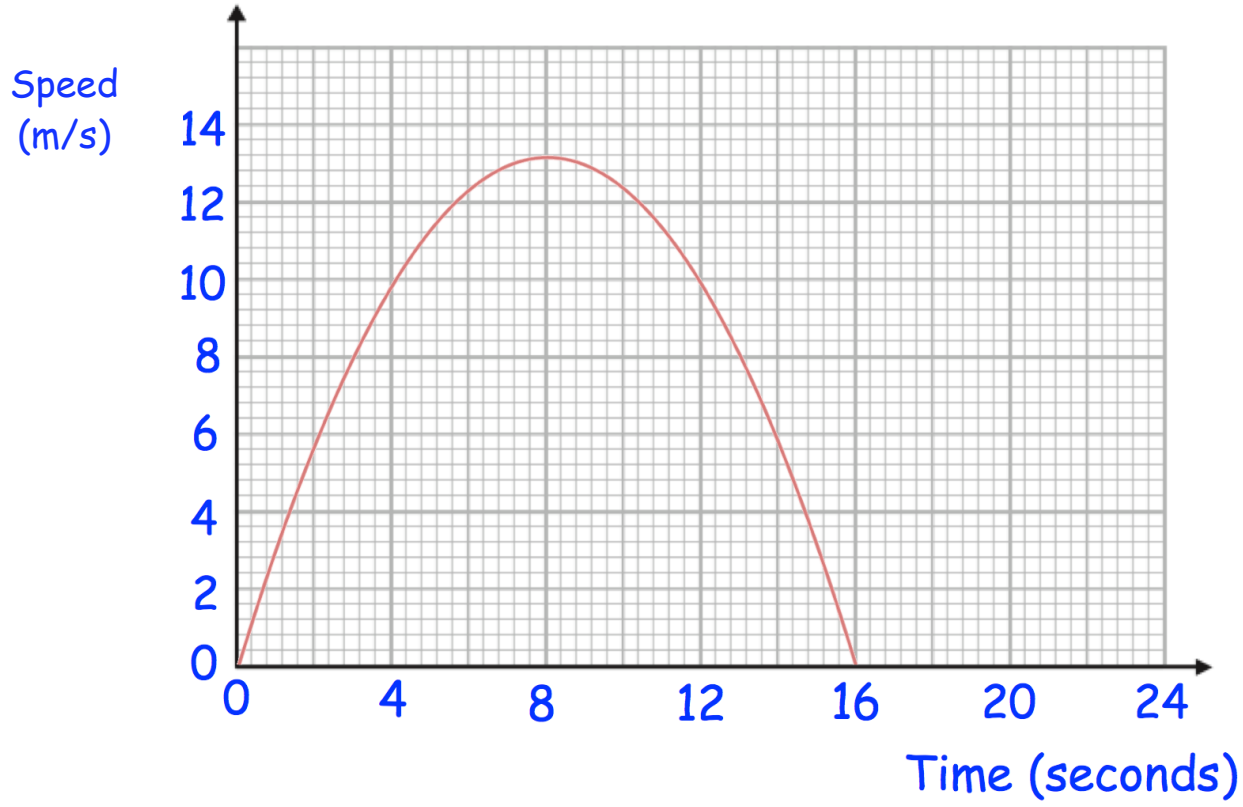


Calculate an estimate of the distance the car travels, by working out the areas of the triangle and two trapezia.

.....m

(4)

4. Here is a speed-time graph for a toy rocket.



(a) Work out an estimate for the distance the rocket travelled in the 16 seconds.
Use 4 strips of equal width.

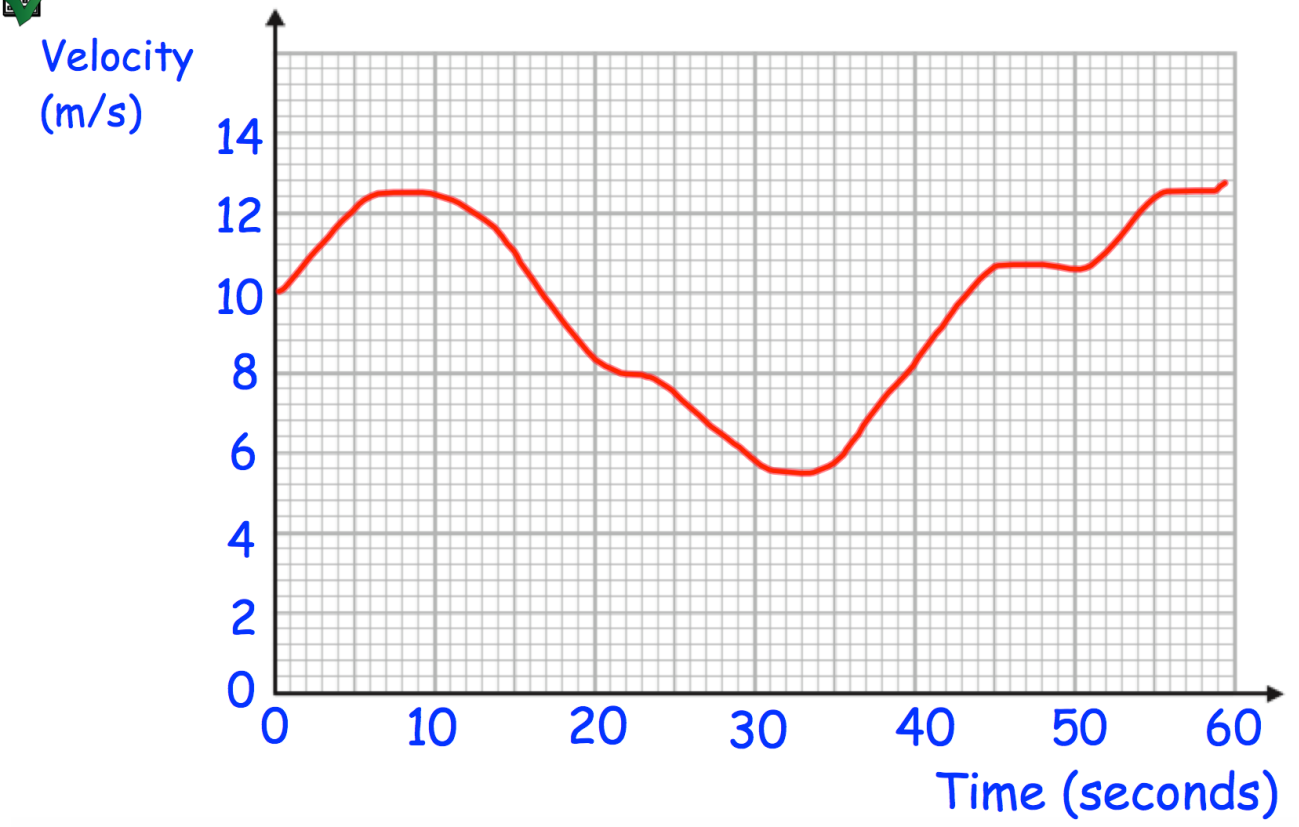
……..m
(3)

(b) Is your answer to (a) an underestimate or an overestimate of the actual distance the rocket travelled?
Give a reason for your answer

……

……
(1)

5. Here is a velocity time graph for the first 60 seconds of a journey.

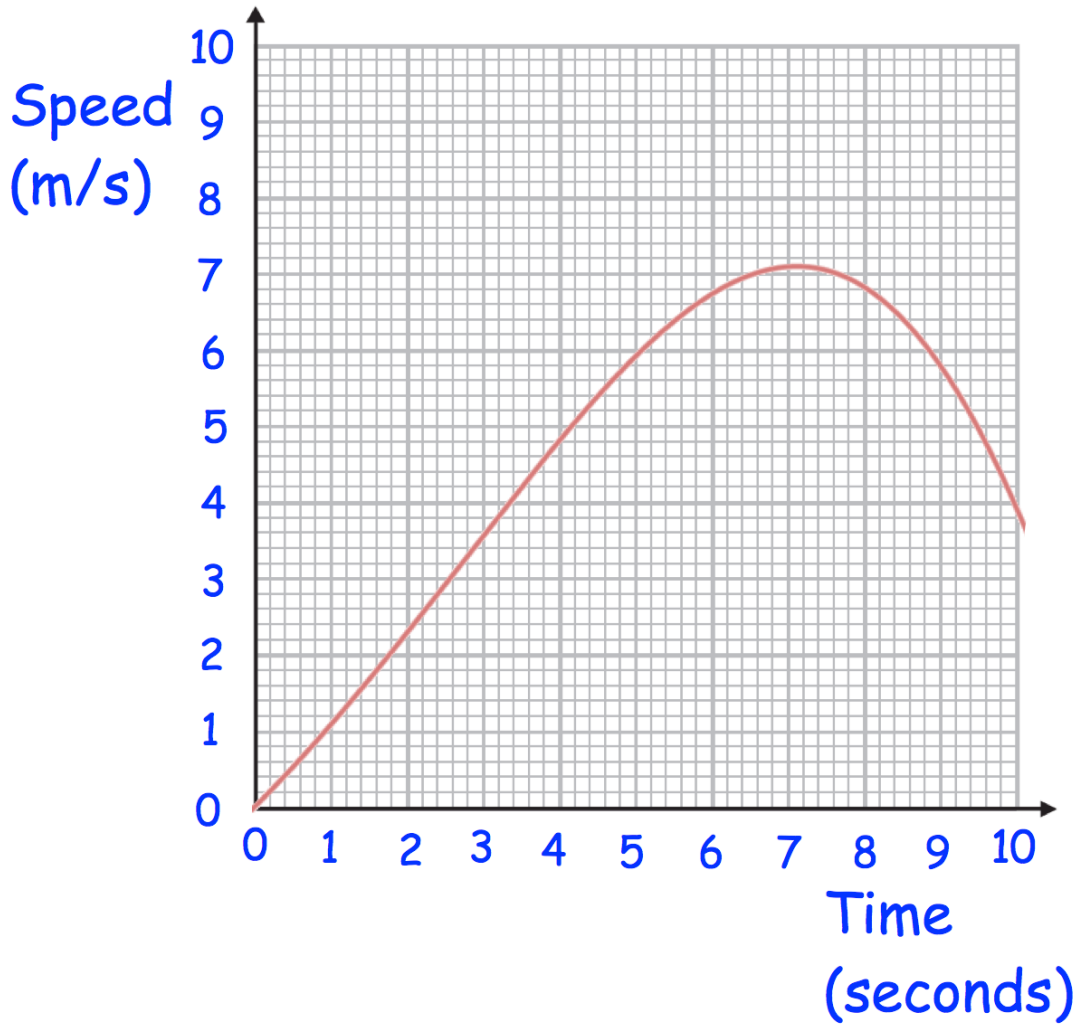


Calculate an estimate for the total distance travelled in the 60 seconds.

……..m

(5)

6. Here is a speed-time graph of a remote control car for 10 seconds.



(a) After how many seconds was the acceleration zero?

……..seconds

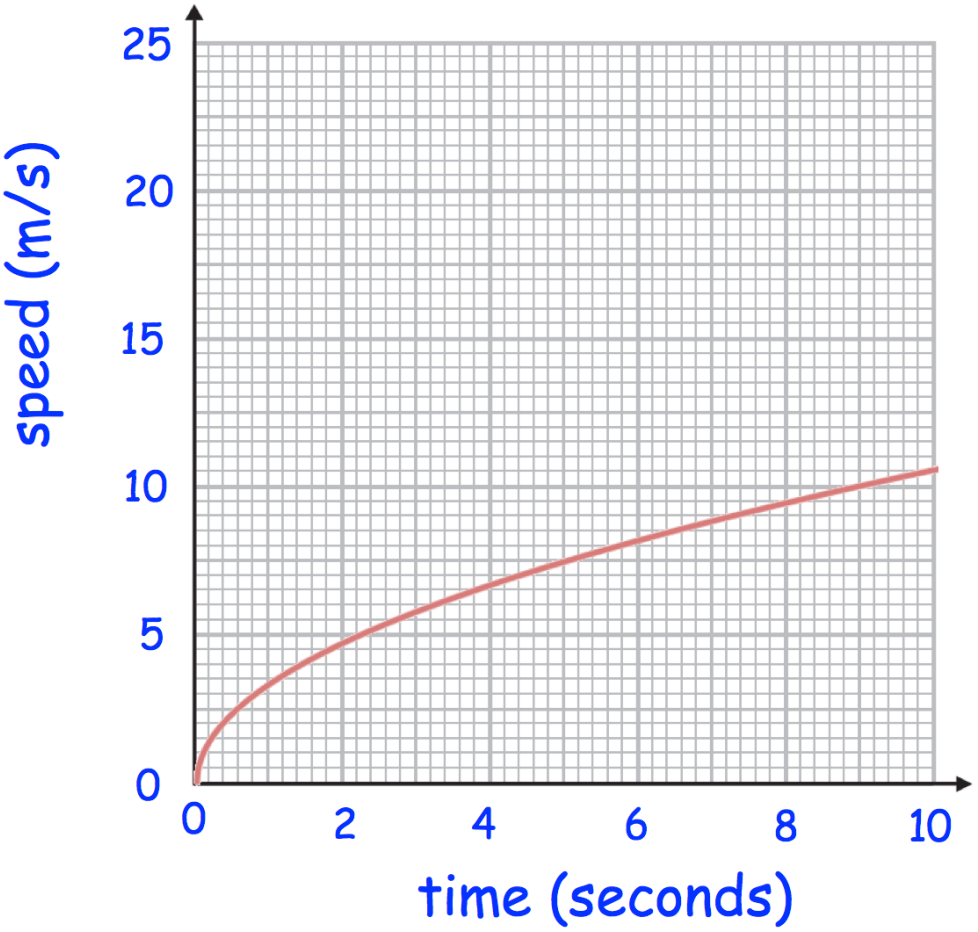
(1)

(b) Work out the distance travelled in the first 5 seconds

……..metres

(2)

7. Here is a speed-time graph for first 10 seconds of the journey of a car.



(a) Work out an estimate for the distance the car travelled in the 10 seconds.

……..m

(4)

(b) Is your answer to (a) an underestimate or an overestimate of the actual distance the car travelled?
Give a reason for your answer

……

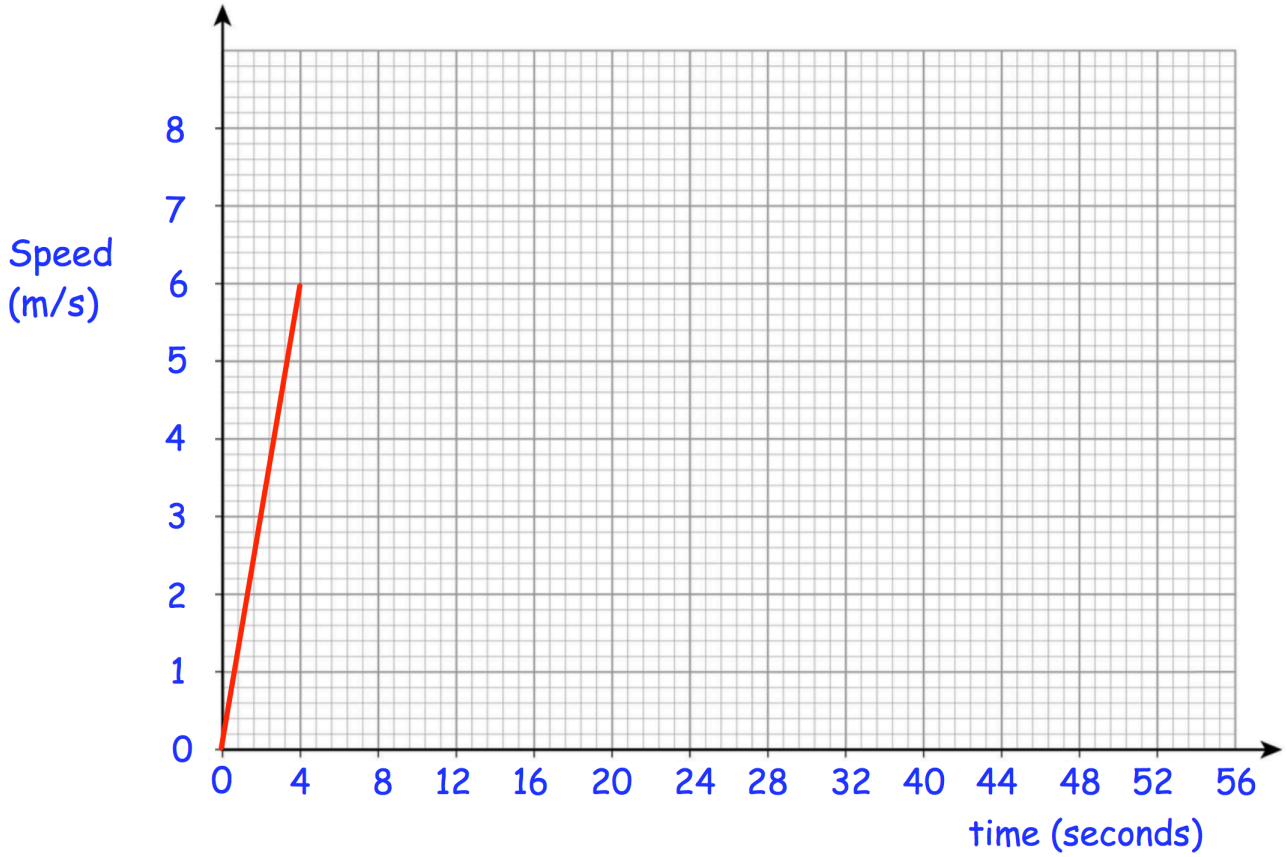
……

(1)

8. Harry and Jack ran a 300 metre race.

Here is a graph for the first 4 seconds of Harry's race.

Harry completed the race at a constant speed of 6 m/s



Jack completed the race in 51 seconds.

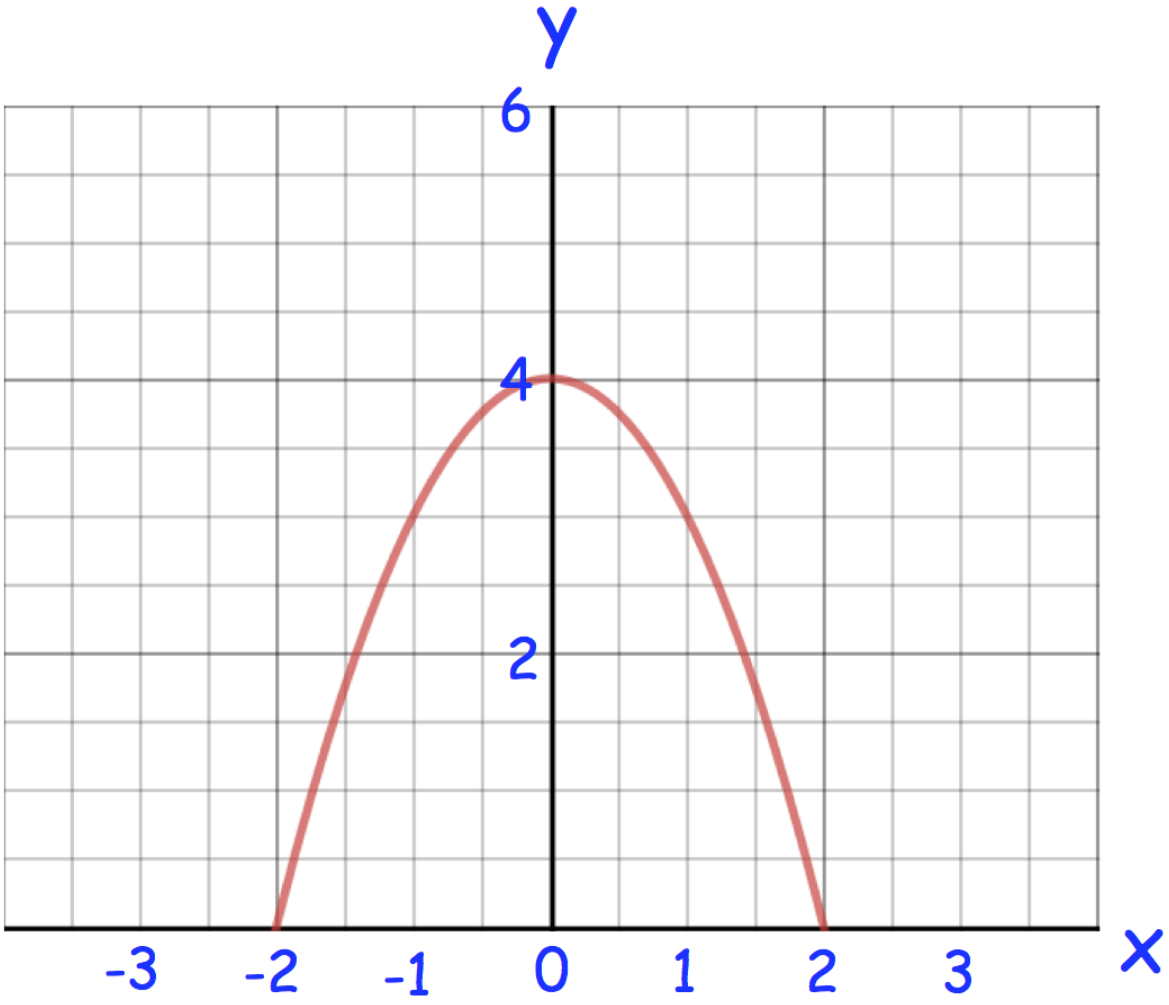
Did Harry finish before Jack?
You **must** show your working.

.....

.....

(3)

9. Here is a sketch of $y = 4 - x^2$



The graph is used to model the cross section of a tunnel.

Calculate an estimate of the area under the graph.

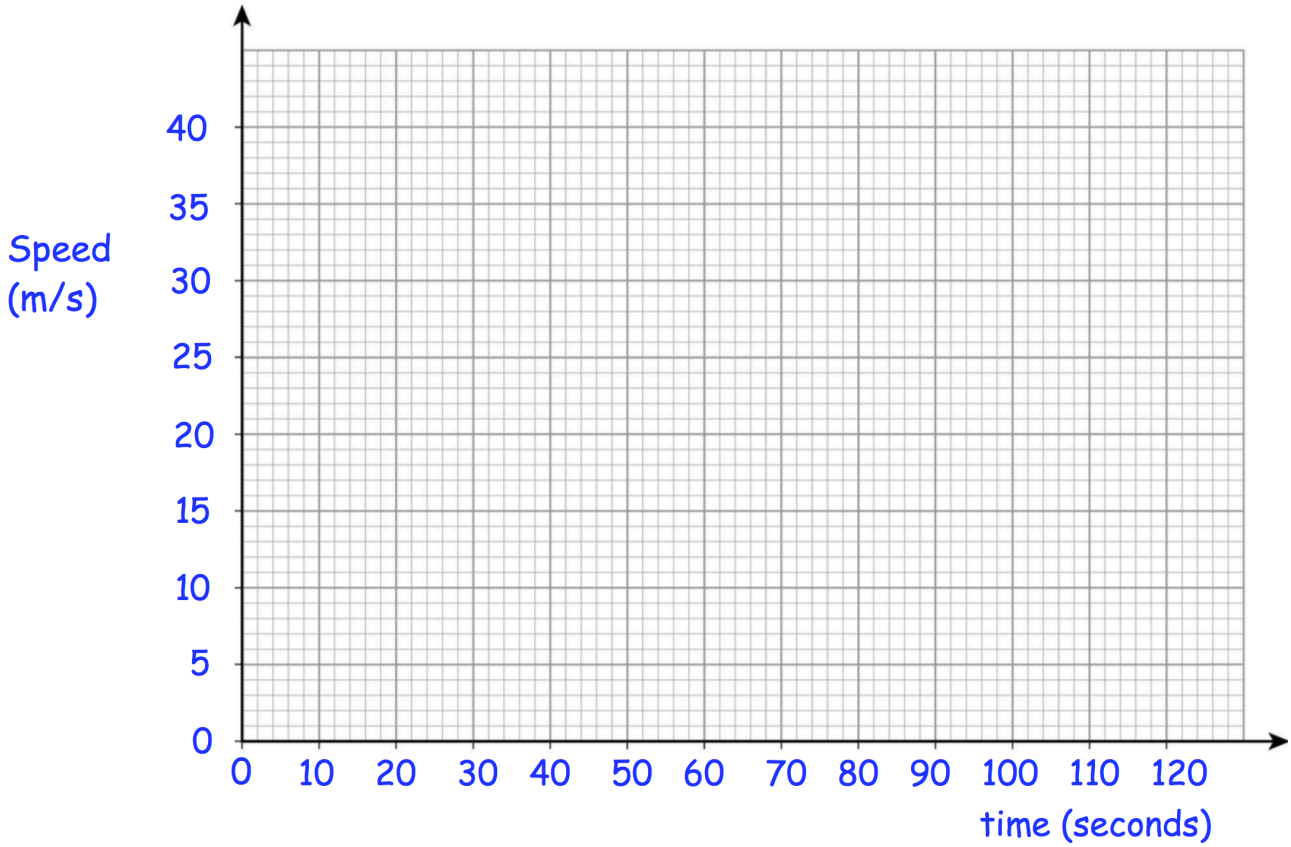
.....

(3)

10. Siobhan is driving her car in a straight line.

The car begins at rest
She accelerates uniformly to a speed of 30m/s over 20 seconds.
Siobhan drives at the same speed for the next 30 seconds.
She then accelerates uniformly to a speed of 40m/s by 90 seconds.
The remainder of the 2 minute journey is spent decelerating to rest.

(a) Draw a speed-time graph for her journey.

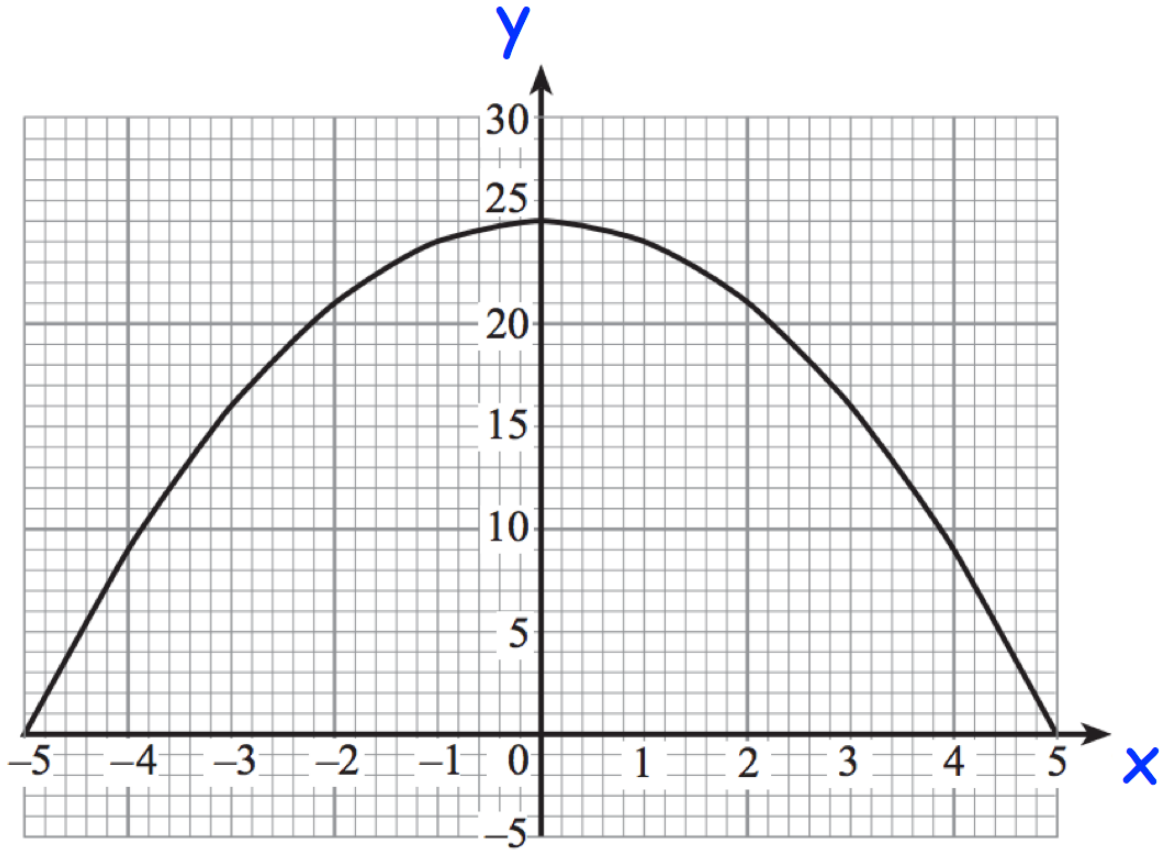


(b) Write down the average speed for the total journey.

.....m/s

(4)

11.

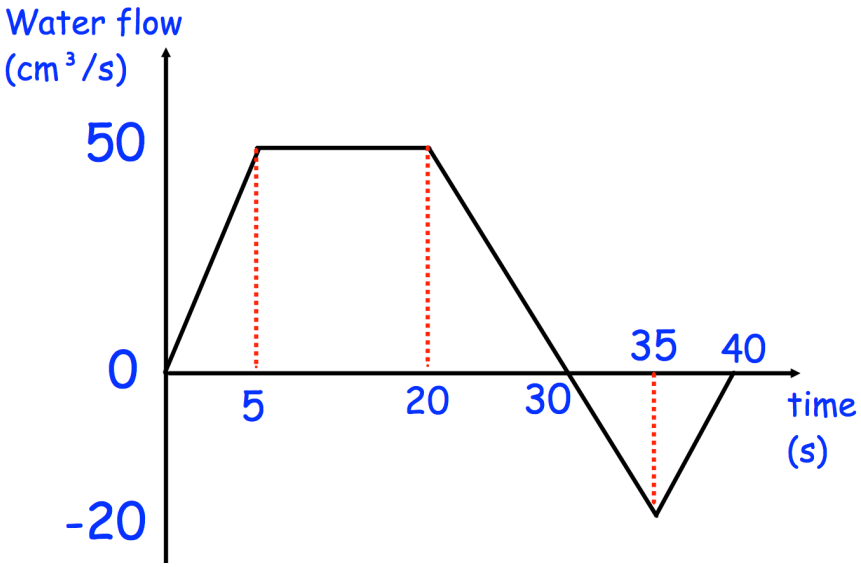


Find an estimate of the area between the curve and the x-axis between $x = 0$ and $x = 5$.

.....

(3)

12. The graph below shows information on how an empty container is being filled with water.

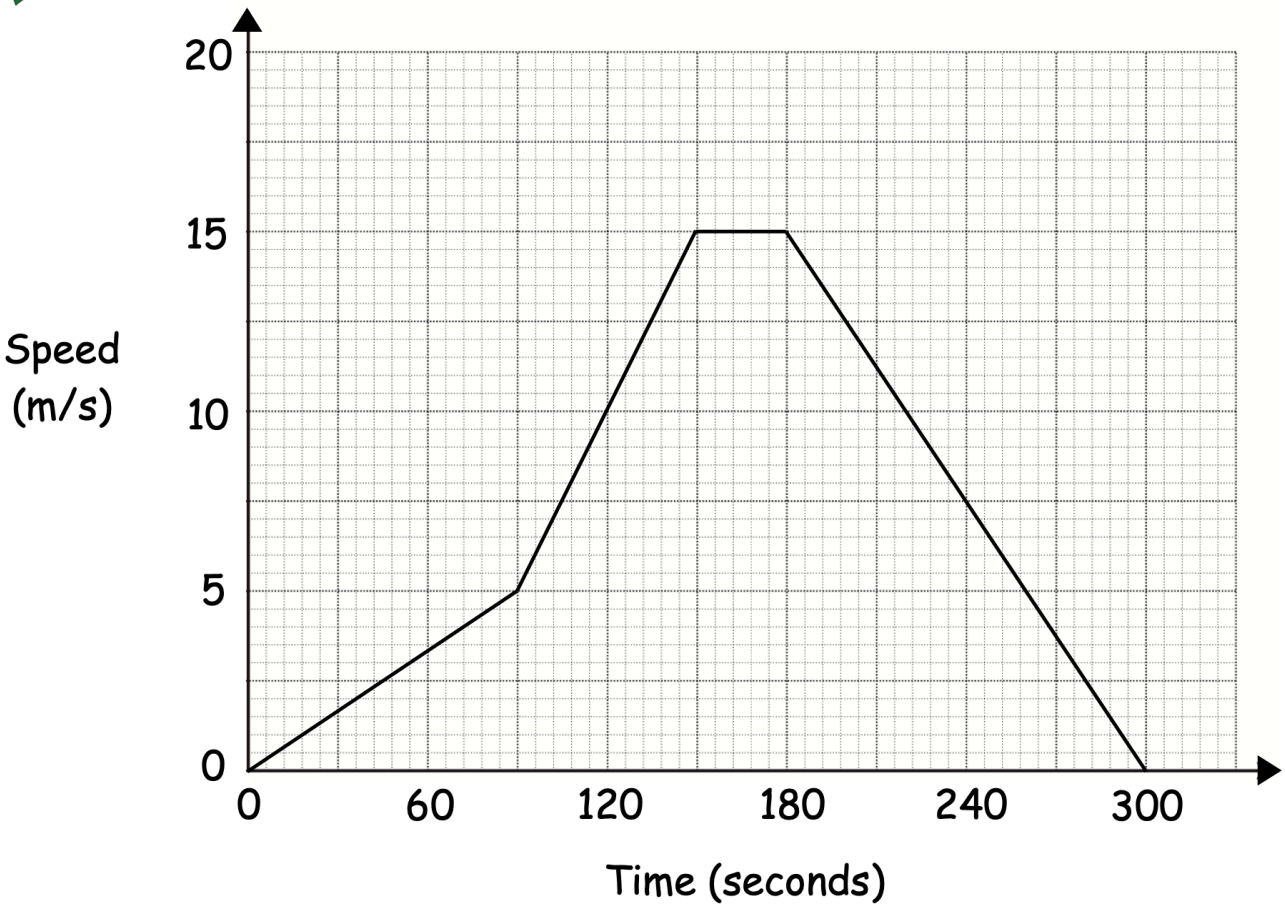


How much water is in the container after 40 seconds?

……..cm³

(3)

13. The graph shows information about the speed of a tram during its journey between two stops, A and B.



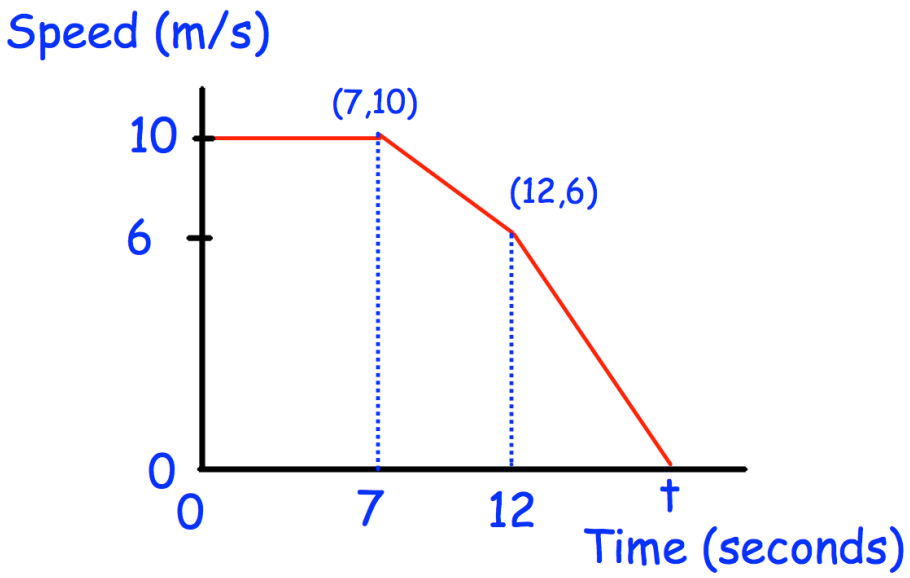
The tram is halfway between stops A and B at x seconds.

Find x.

……..seconds

(6)

14. Here is a sketch of a speed-time graph for part of a journey.



The average speed from 0 to t seconds was 5.96m/s.

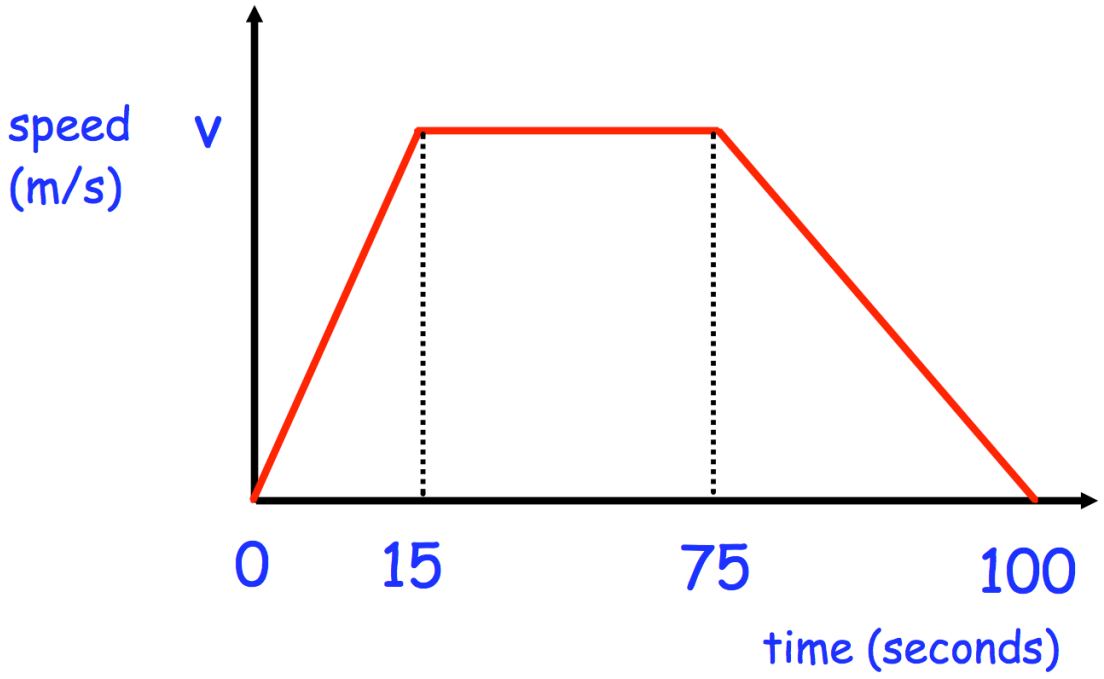
(a) Work out the value of t.

……..seconds
(5)

(b) Find the rate of deceleration from 12 to t seconds.

……..m/s²
(2)

15. Here is a speed-time graph for a train journey.



The journey took 100 seconds

The train travelled 1.92km in the 100 seconds.

Work out the value of v.

……..m/s

(3)