

WEEK: 20

Week Beginning: (03/08/20)

Subject: MATHS

Year: 7

Lesson Objective:

- Continue our work on gradients
- Be able to work out gradient from two coordinates
- To look at it in context of velocity-time graph

Class Worksheets

- Pages 1 to 11 from the Learning Pack – see below

Homework

- Pages 12, 13 and 14 from the Learning Pack – see below

Additional Notes

- All lesson worksheets and **homework for next week (due Week 21)** worksheets can be found below
- Week 19 homework will be marked in lesson hence make sure it is fully complete

Please print 2 a page or open this document during the lesson to save paper!

Question 1: Write down the gradient of each of these lines.

(a) $y = 3x + 1$

(b) $y = 2x - 5$

(c) $y = 7x + 4$

(d) $y = 10x + 5$

(e) $y = x - 2$

(f) $y = 6x$

(g) $y = -4x + 3$

(h) $y = -3x - 7$

(i) $y = \frac{1}{2}x + 3$

(j) $y = -\frac{4}{5}x - 9$

Question 2: Write down where each of these lines cross the y-axis (y-intercept)

(a) $y = 2x + 3$

(b) $y = 7x + 1$

(c) $y = 3x - 2$

(d) $y = x - 5$

(e) $y = 2x$

(f) $y = -4x + 6$

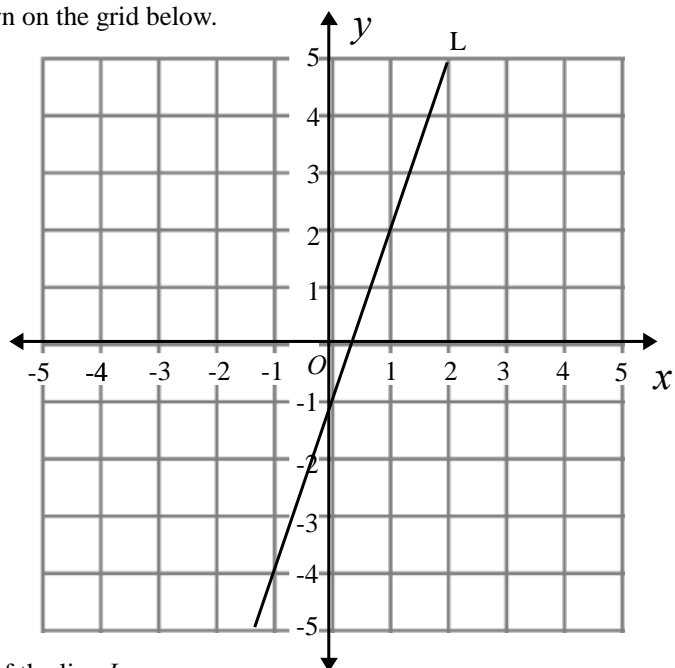
(g) $y = -5x - 3$

(h) $y = -3x$

(i) $y = \frac{4}{3}x + \frac{2}{5}$

(j) $y = -\frac{2}{3}x - \frac{1}{2}$

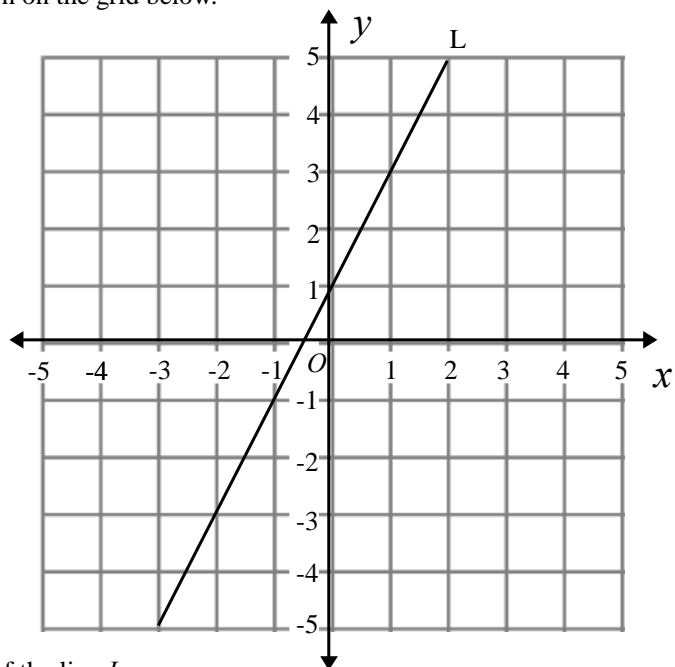
- 1 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 1 is 1 mark)

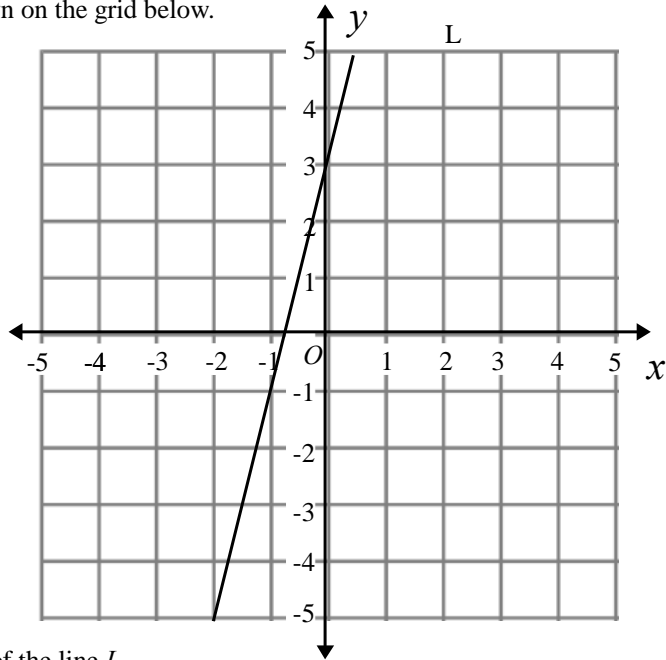
- 2 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 2 is 1 mark)

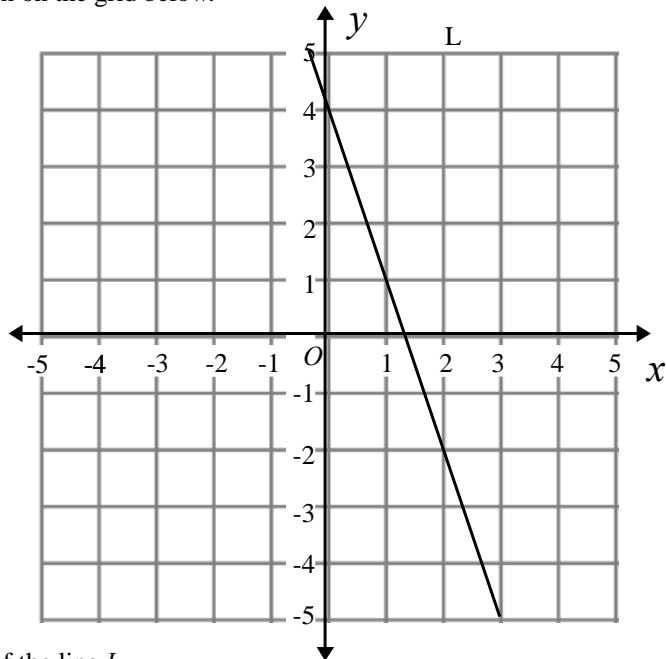
3 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 3 is 1 mark)

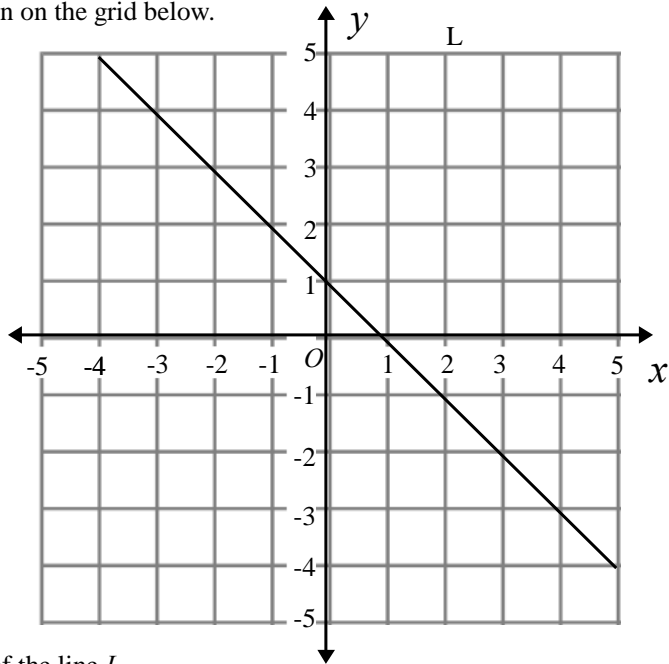
4 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 4 is 1 mark)

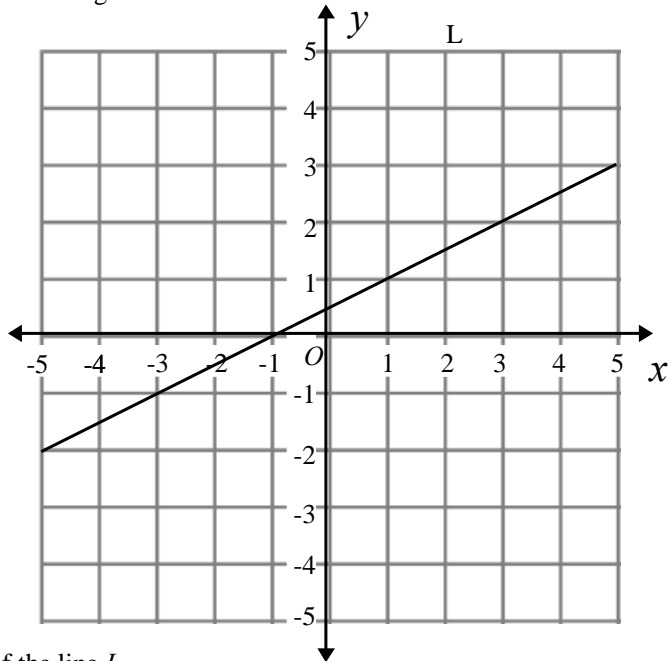
5 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 5 is 1 mark)

6 The line L is drawn on the grid below.



Find the gradient of the line L .

.....
(Total for question 6 is 1 mark)

7 Find the gradient of the line that passes through (2, 1) and (5, 10).

.....
(Total for question 7 is 2 marks)

8 Find the gradient of the line that passes through (5, 4) and (7, 0).

.....
(Total for question 8 is 2 marks)

9 Find the gradient of the line that passes through (-3, 4) and (5, 8).

.....
(Total for question 9 is 2 marks)

10 Find the gradient of the line that passes through (3, 7) and (1, 10).

.....
(Total for question 10 is 2 marks)

11 Find the gradient of the line that passes through (1, -1) and (-3, -9).

.....
(Total for question 11 is 2 marks)

12 Find the gradient of the line that passes through (8, 1) and (3, -3).

.....
(Total for question 12 is 2 marks)

13 Find the gradient of the line that passes through (3, -1) and (-2, 9).

.....
(Total for question 13 is 2 marks)

14 Find the gradient of the line that passes through (-1, -2) and (-3, 10).

.....
(Total for question 14 is 2 marks)

15 Find the gradient of the line that passes through (-3, 4) and (-5, 7).

.....
(Total for question 15 is 2 marks)

16 The line AB passes through the points $A(2, -1)$ and $(6, k)$.

The gradient of AB is 5.

Work out the value of k .

$k = \dots\dots\dots$

(Total for question 16 is 3 marks)

17 The line AB passes through the points $A(-3, 4)$ and $(k, 12)$.

The gradient of AB is 4.

Work out the value of k .

$k = \dots\dots\dots$

(Total for question 17 is 3 marks)

18 The line AB passes through the points $A(-2, k)$ and $(4, 8)$.

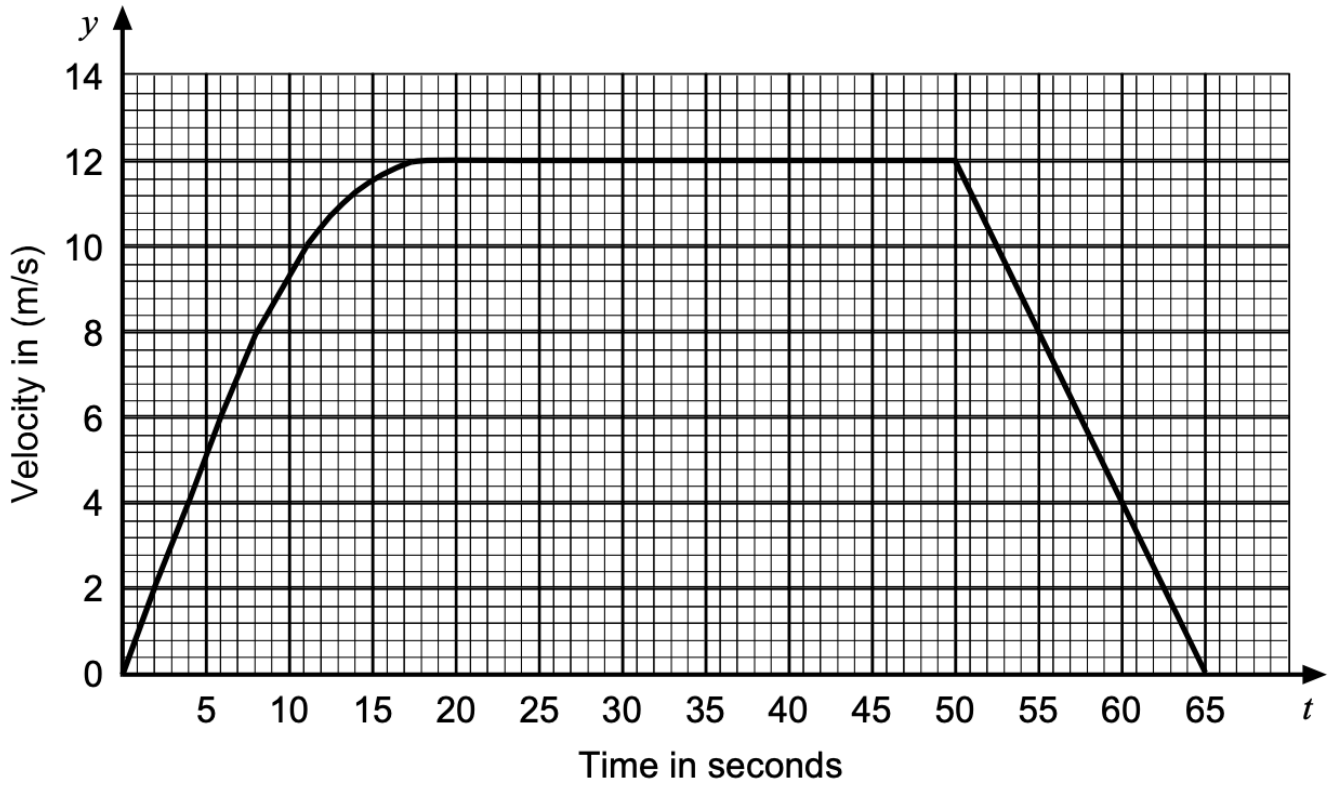
The gradient of AB is -2.

Work out the value of k .

$k = \dots\dots\dots$

(Total for question 18 is 3 marks)

1. A car travels between two sets of traffic lights.
The diagram represents the velocity/time graph of the car.



The car leaves the first set of traffic lights.

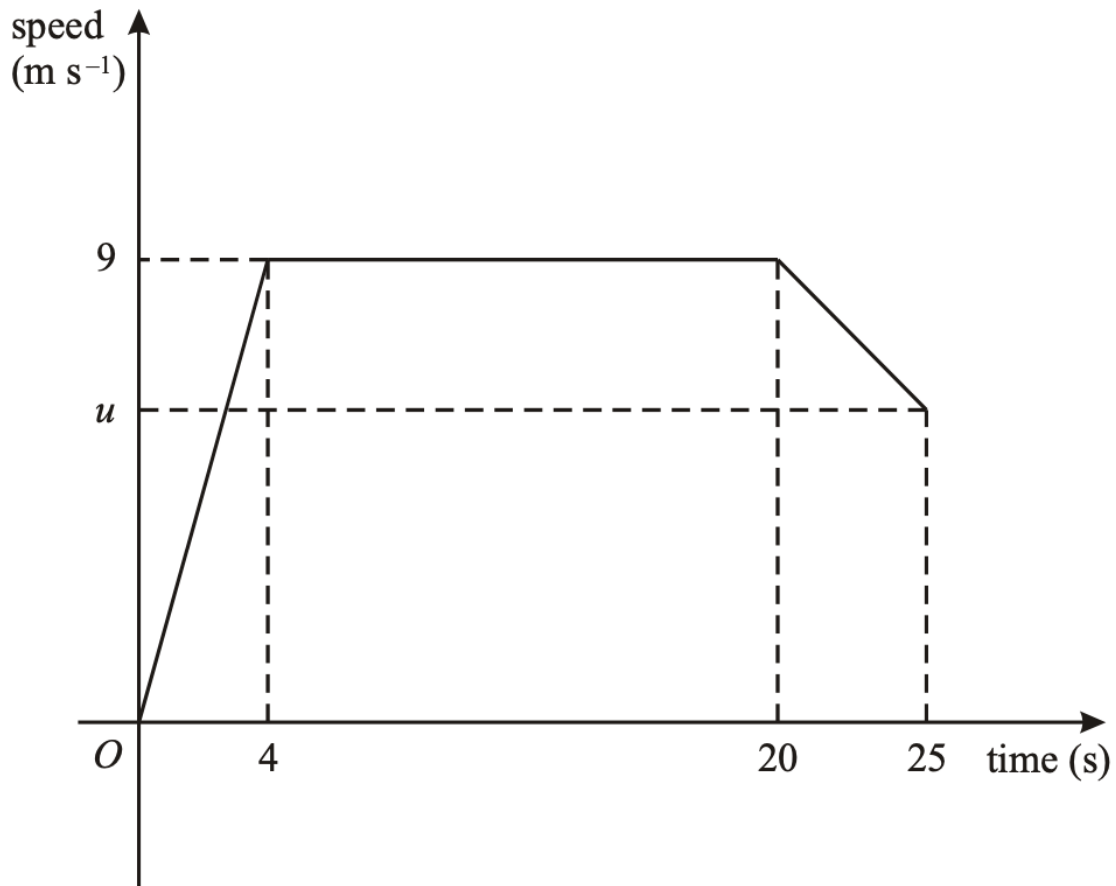
- (a) Use the graph to find the velocity of the car after 15 seconds.

..... (1)

- (b) Calculate an estimate for the acceleration of the car, in m/s^2 , after 10 seconds.

..... (2)

3. A sprinter runs a race of 200 m.
 Her total time for running the race is 25 s.
 Below is a sketch of the speed-time graph for the motion of the sprinter.



Calculate:

- a) The acceleration in the first 4 seconds of the race

..... (2)

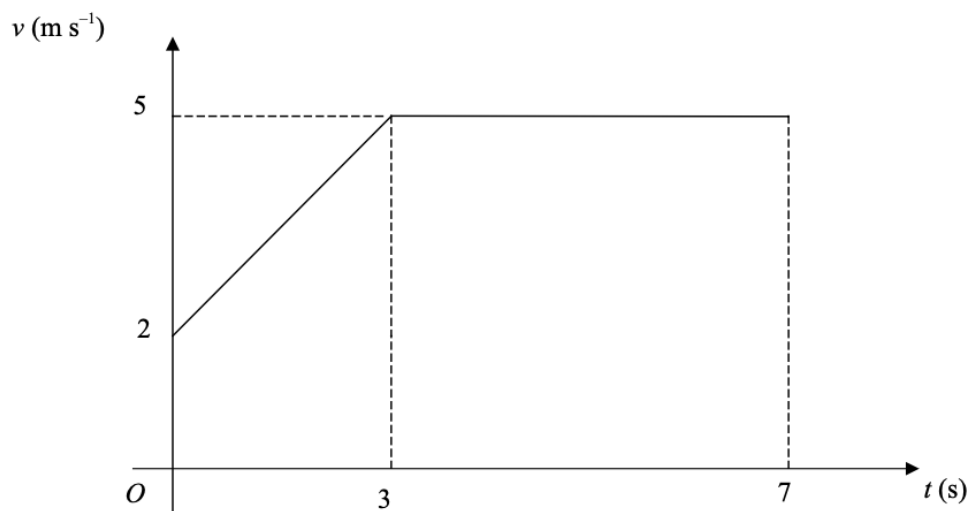
- b) The distance covered by the sprinter in the first 20 seconds of the race

..... (2)

- c) The value of u

..... (3)

4. Below is a sketch of the speed-time graph of a cyclist moving on a straight road over a 7 second period.



Calculate:

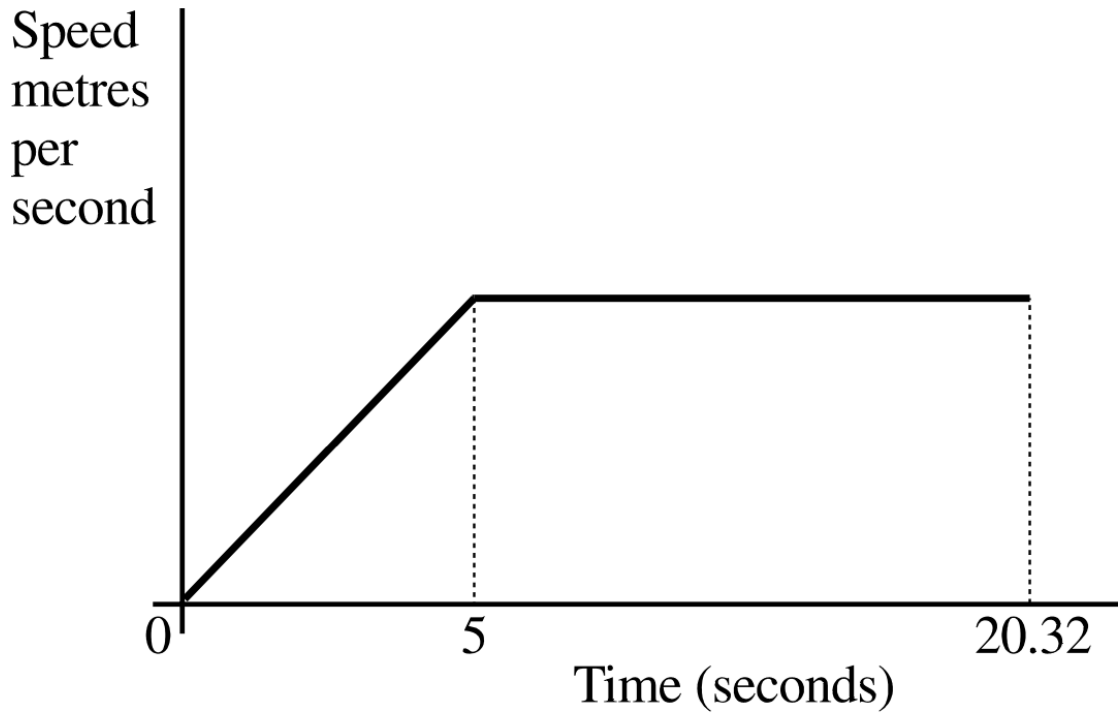
- a) The acceleration for the first 3 seconds

..... (2)

- b) The distance covered by the cyclist over the 7 second period

..... (2)

5. A sprinter runs a race of 200 m.
 His total time for running the race is 20.32s.
 Below is a sketch of the speed-time graph for the motion of the sprinter.



Calculate:

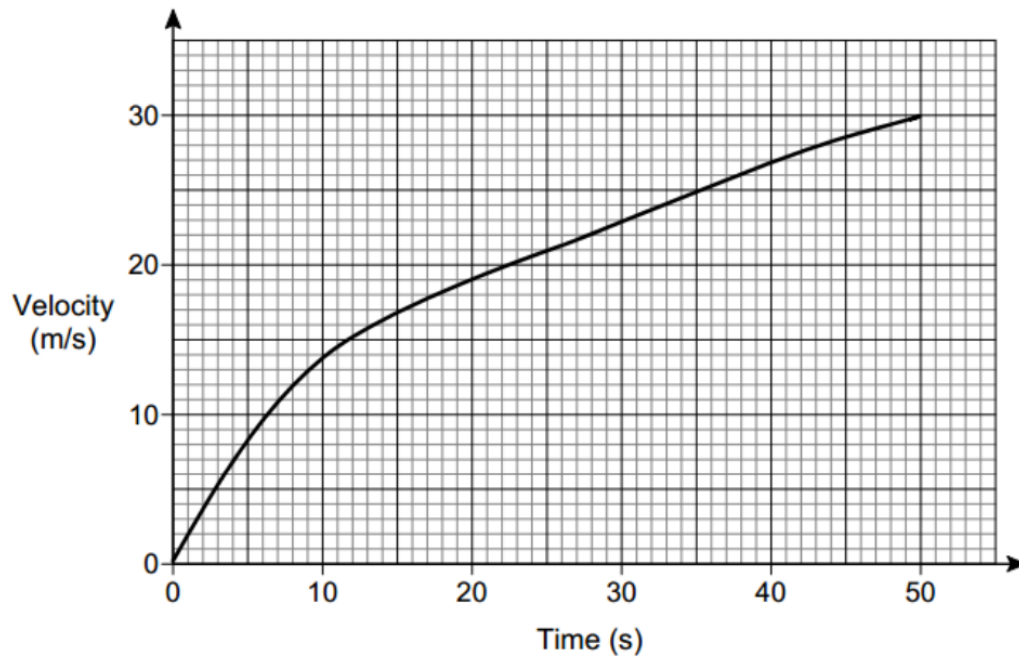
- a) The maximum speed of the sprinter during the race

..... (4)

- b) The distance covered by the sprinter in the first 5 seconds of the race

..... (2)

6. Here is the velocity-time graph of a car for 50 seconds.



Work out the average acceleration during the 50 seconds.
Give the units of your answer.

..... (2)

Estimate the time during the 50 seconds when
the instantaneous acceleration = the average acceleration
You must show your working on the graph.

..... (2)