

Name: \_\_\_\_\_

## GCSE (1 – 9)

# Velocity Time Graphs

### Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

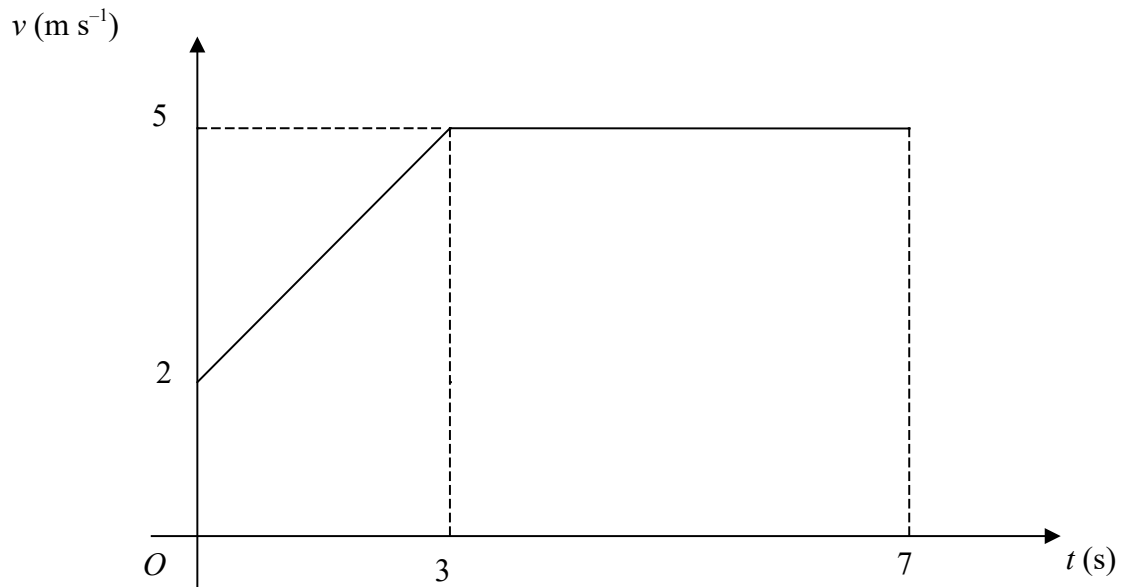
### Information

- The marks for each question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1 Below is the sketch of a speed time graph for a cyclist moving on a straight road for 7 seconds.



(a) Work out the acceleration for the first 3 seconds.

..... $\text{ms}^{-2}$   
(2)

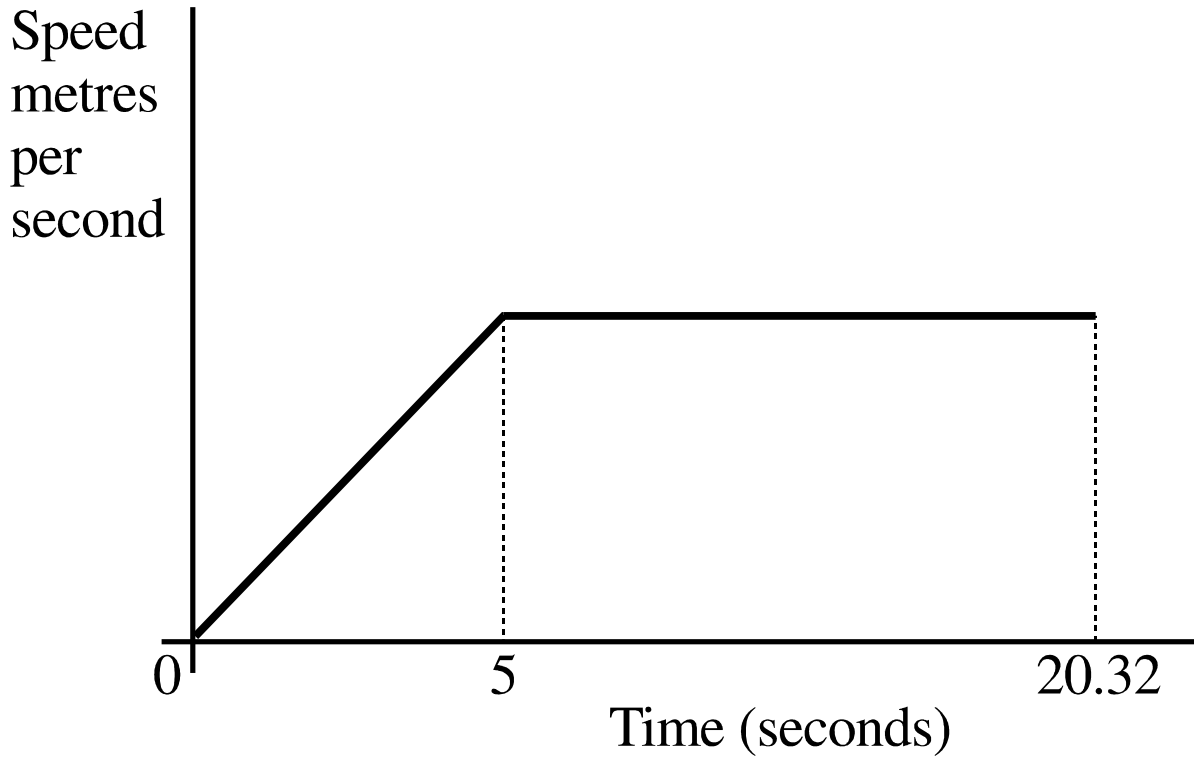
(b) Calculate the total distance covered by the cyclist.

..... $\text{m}$   
(2)

**(Total for question 1 is 4 marks)**

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- 2 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.



- (a) Work out the maximum speed of the sprinter during the race.

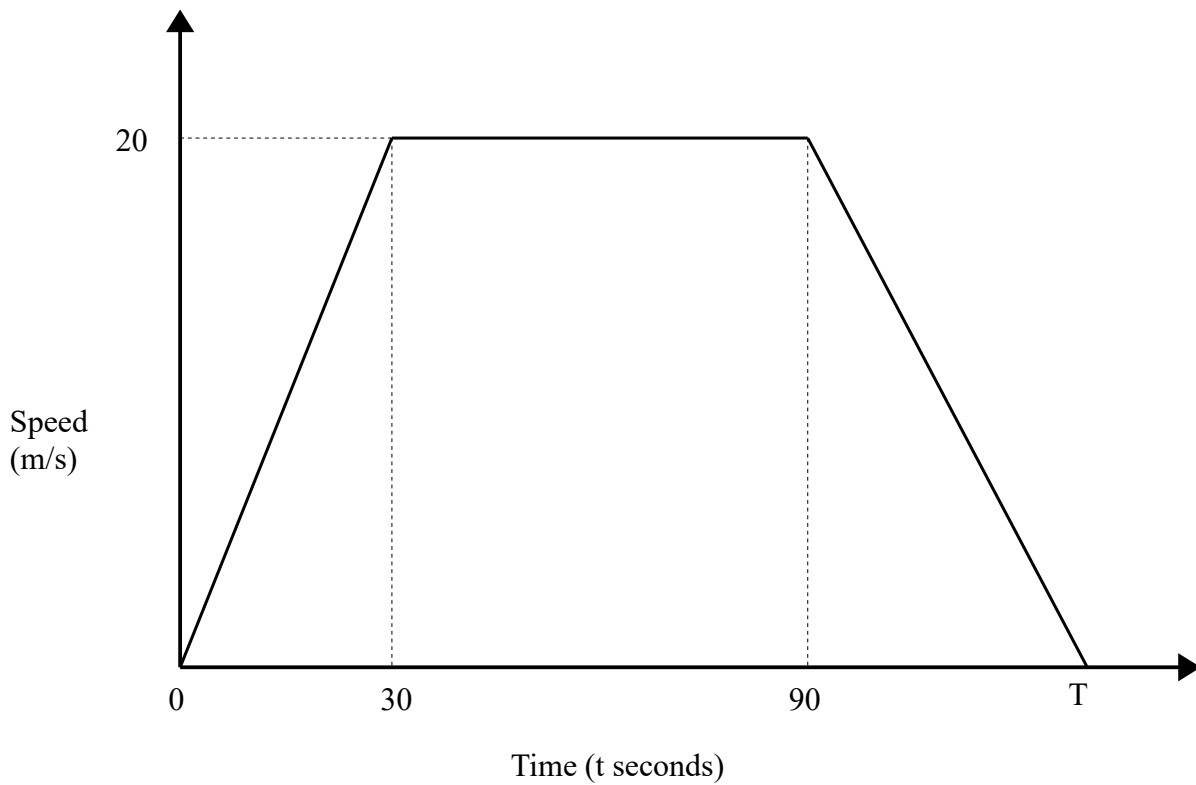
.....ms<sup>-1</sup>  
 (4)

- (b) Calculate the distance covered by the sprinter in the first 5 seconds of the race.

.....m  
 (2)

**(Total for question 2 is 6 marks)**

3 Here is a speed-time graph for a train journey between 2 stations.



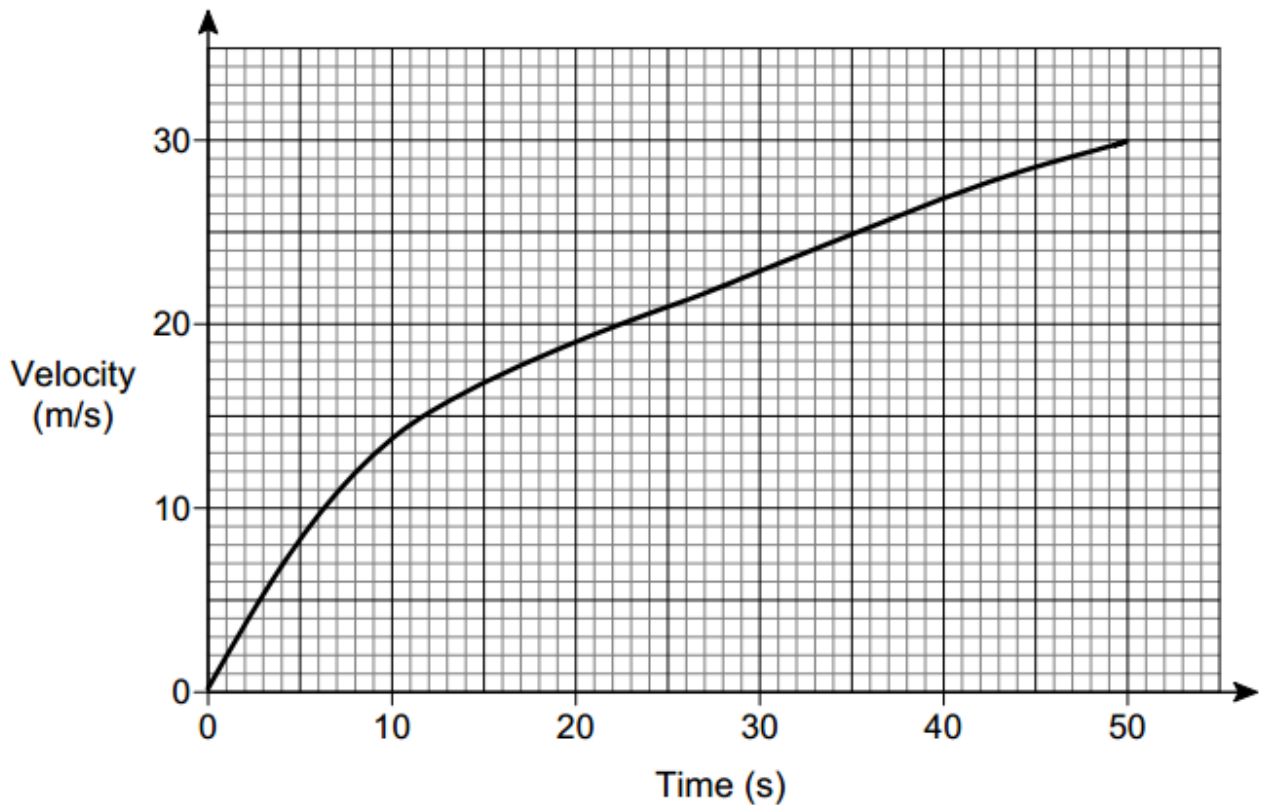
The train travelled 2km in T seconds.

Work out the value of T.

.....  
**(Total for question 3 is 3 marks)**

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



(a) Work out the average acceleration during the 50 seconds.

Give the units of your answer.

.....  
(2)

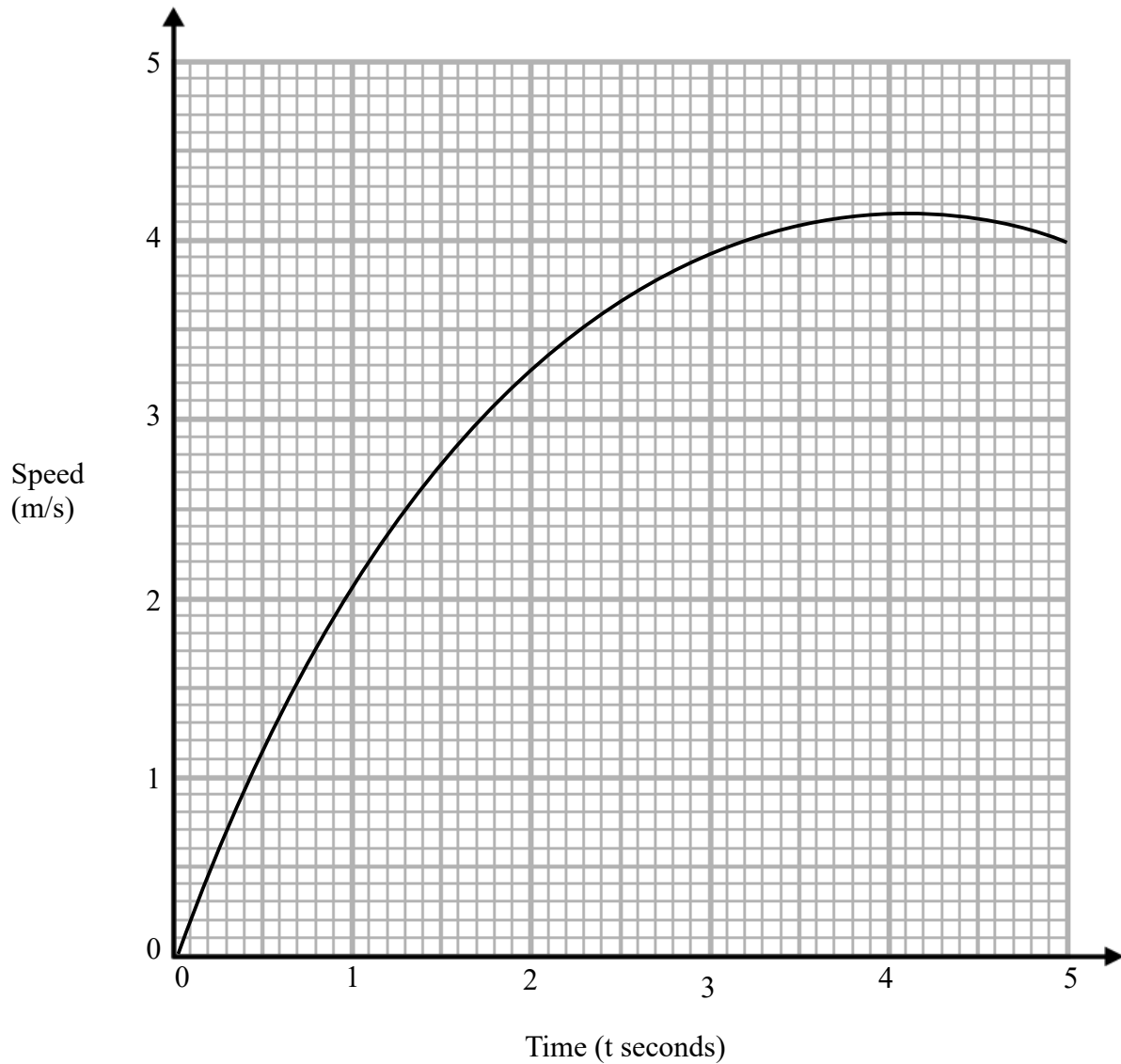
(b) Estimate the time during the 50 seconds when the instantaneous acceleration = the average acceleration.

You must show your working on the graph.

.....  
(2)

**(Total for question 4 is 4 marks)**

5 Here is a speed-time graph.



(a) Use 3 strips of equal width to find an estimate for the area under the graph for the first 3 seconds.

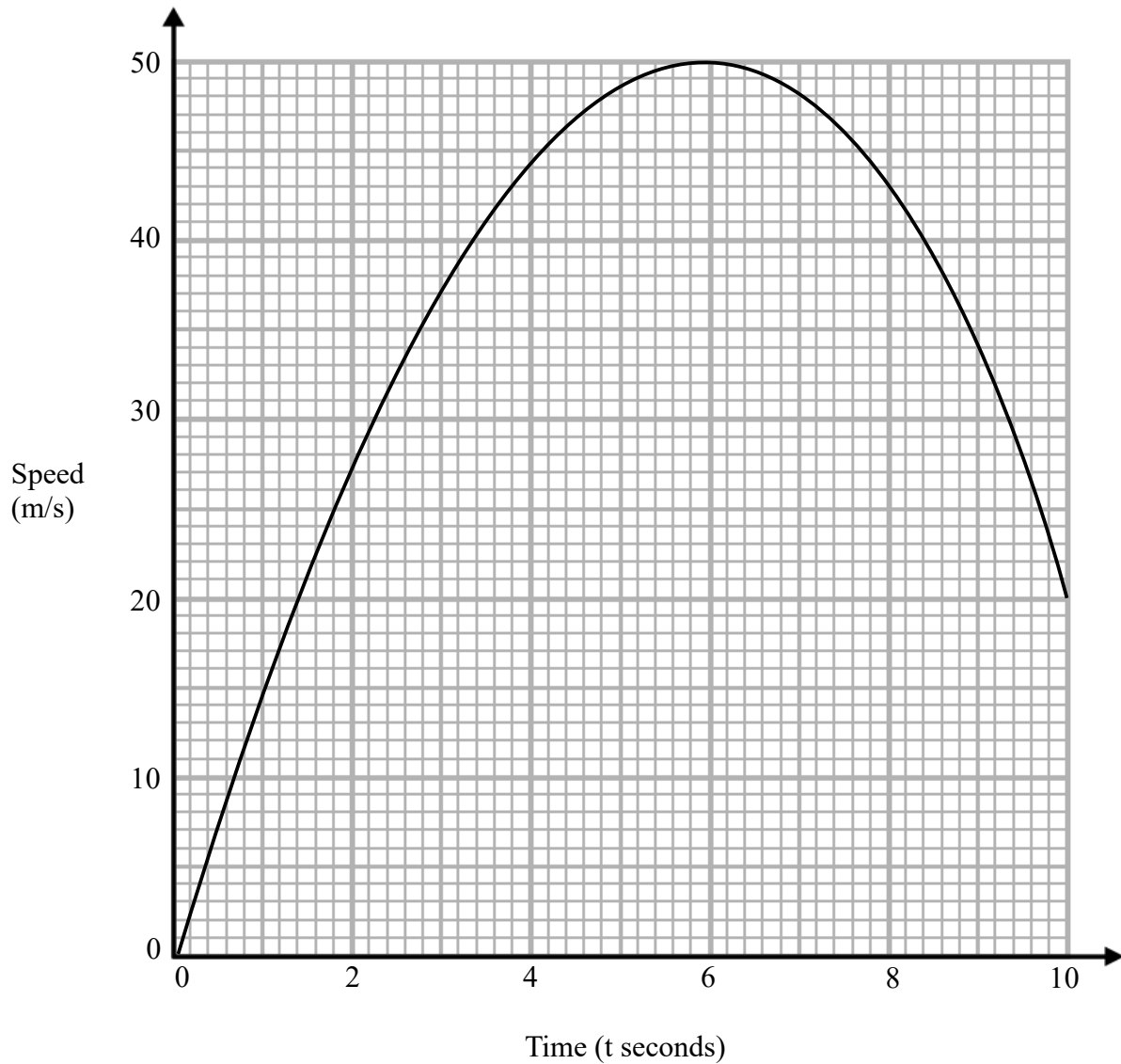
.....  
(3)

(b) Describe what your answer to part a represents.

.....  
.....  
(1)

(Total for question 5 is 4 marks)

6 Here is a speed-time graph.



(a) Work out an estimate for the acceleration when  $t = 2$ .

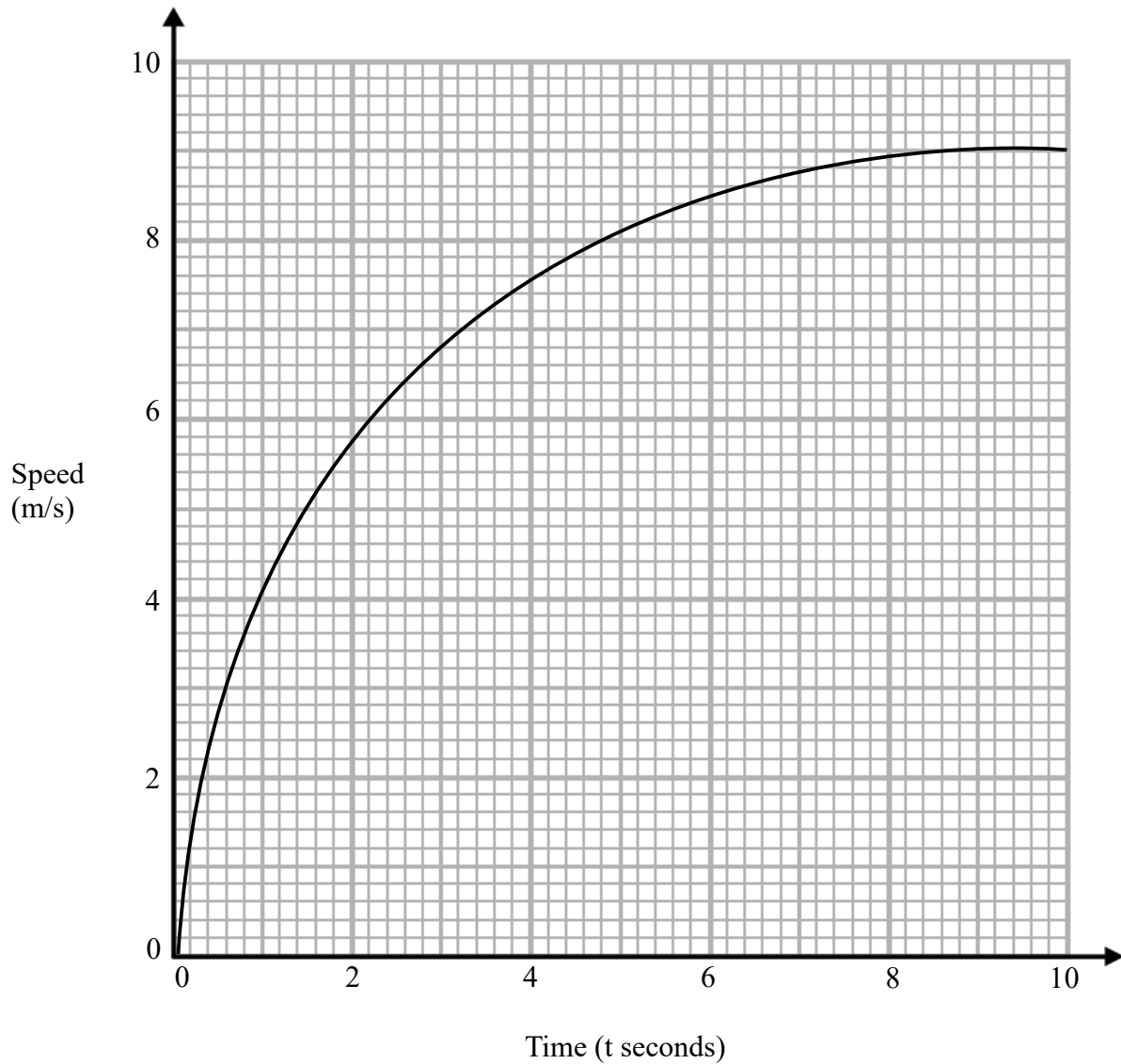
.....  $\text{ms}^{-2}$   
(2)

(b) Use 5 strips of equal width to find an estimate for the distance travelled in 10 seconds.

..... m  
(3)

**(Total for question 6 is 5 marks)**

7 Here is a speed-time graph.



(a) Use 5 strips of equal width to find an estimate for the distance travelled in 10 seconds.

..... m  
(3)

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

.....  
.....

(1)

**(Total for question 7 is 4 marks)**