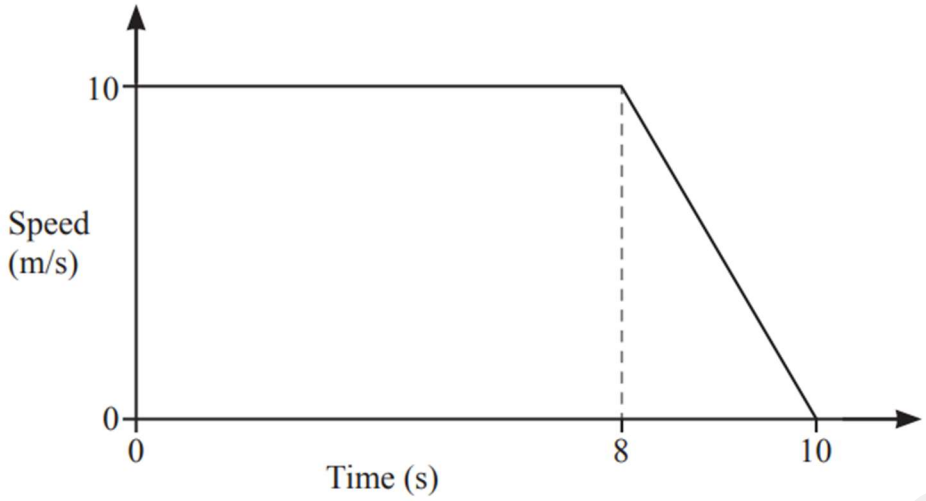
13



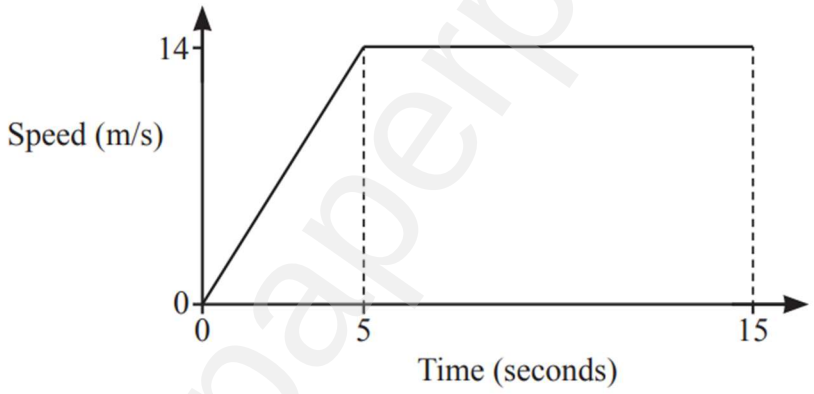
NOT TO SCALE

The diagram shows the speed–time graph for part of a car journey.

Calculate the total distance travelled during the 10 seconds.

..... m [2]

13



NOT TO SCALE

The diagram shows the speed–time graph of the first 15 seconds of a car journey.

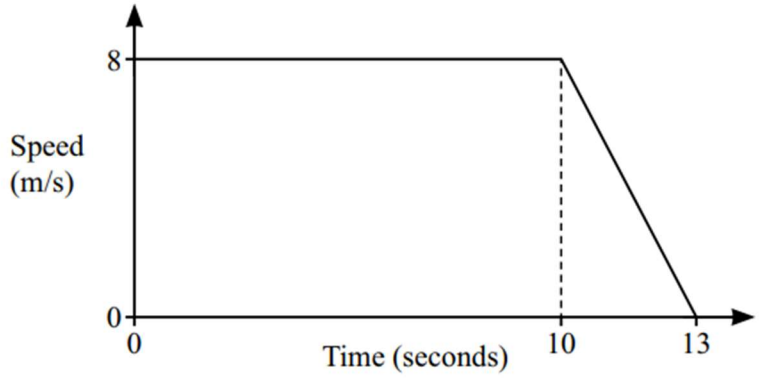
(a) Find the acceleration of the car during the first 5 seconds.

..... m/s^2 [1]

(b) Find the distance travelled during the 15 seconds.

..... m [2]

9



NOT TO
SCALE

The diagram shows the speed–time graph of part of a car journey.

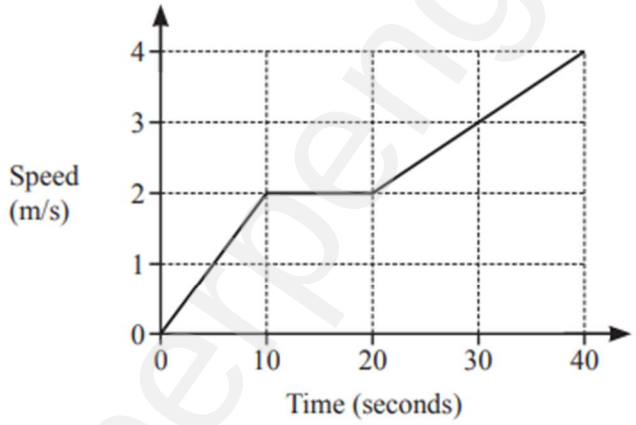
(a) Find the deceleration of the car between 10 and 13 seconds.

..... m/s^2 [1]

(b) Calculate the total distance travelled during the 13 seconds.

..... m [2]

17



The diagram shows the speed–time graph for the first 40 seconds of a cycle ride.

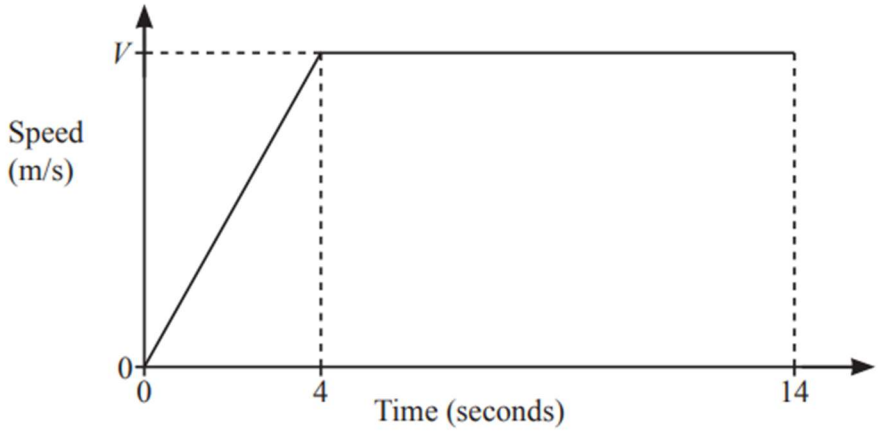
(a) Find the acceleration between 20 and 40 seconds.

..... m/s^2 [1]

(b) Find the total distance travelled.

..... m [3]

18 A car starts from rest and accelerates at a rate of $3\ m/s^2$ for 4 seconds.
The car then travels at a constant speed for 10 seconds.



The diagram shows the speed–time graph for this journey.

(a) Find the value of V.

$V =$ ..... [1]

(b) Calculate the total distance travelled by the car during the 14 seconds.

..... m [2]

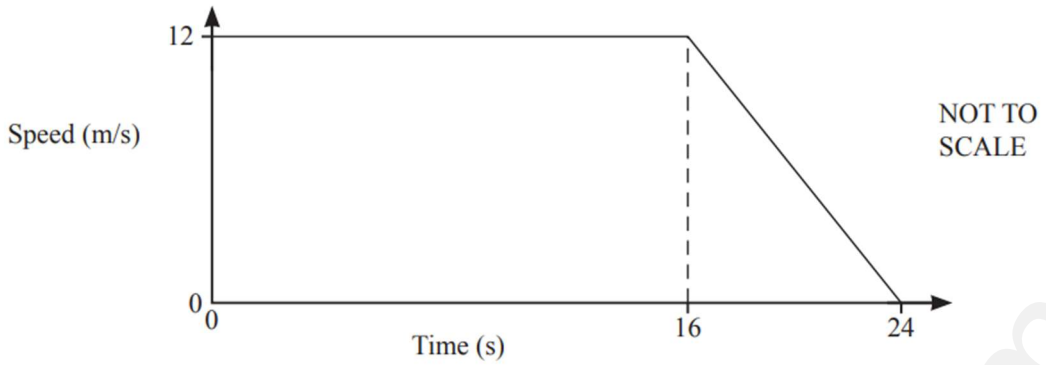
19

The speed–time graph shows information about a bus journey.

Calculate the total distance travelled by the bus.

..... m [3]

20



The diagram shows the speed–time graph for 24 seconds of a car journey.

Calculate

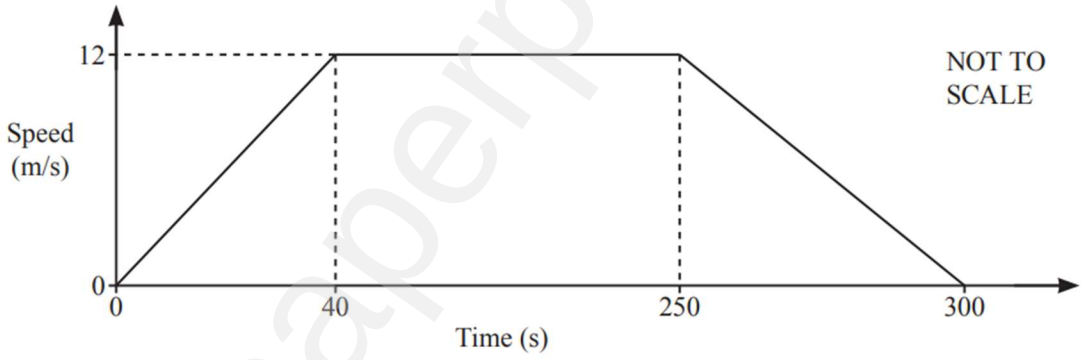
(a) the deceleration of the car in the final 8 seconds,

..... m/s^2 [1]

(b) the total distance travelled during the 24 seconds.

..... m [2]

14 The diagram shows the speed–time graph of a train journey between two stations.



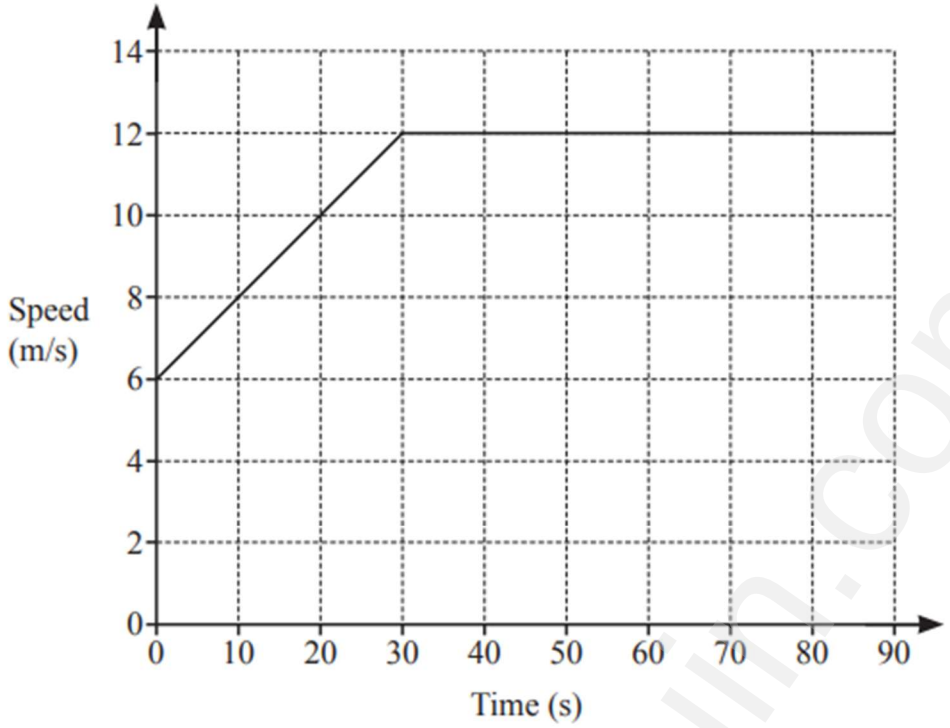
(a) Find the acceleration of the train during the first 40 seconds.

..... m/s^2 [1]

(b) Calculate the distance between the two stations.

..... m [3]

11

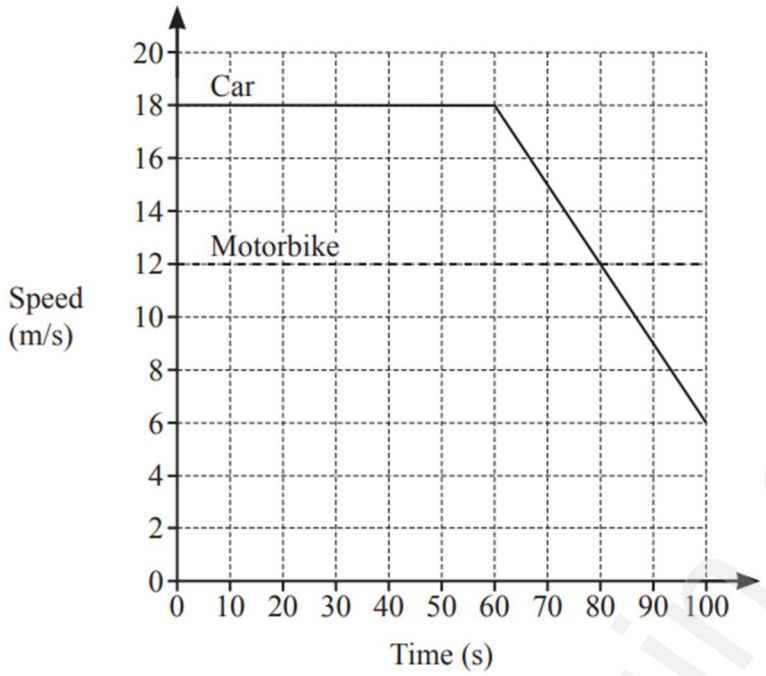


The diagram shows the speed–time graph for 90 seconds of a journey.

Calculate the total distance travelled during the 90 seconds.

..... m [3]

15



The diagram shows the speed–time graph for 100 seconds of the journey of a car and of a motorbike.

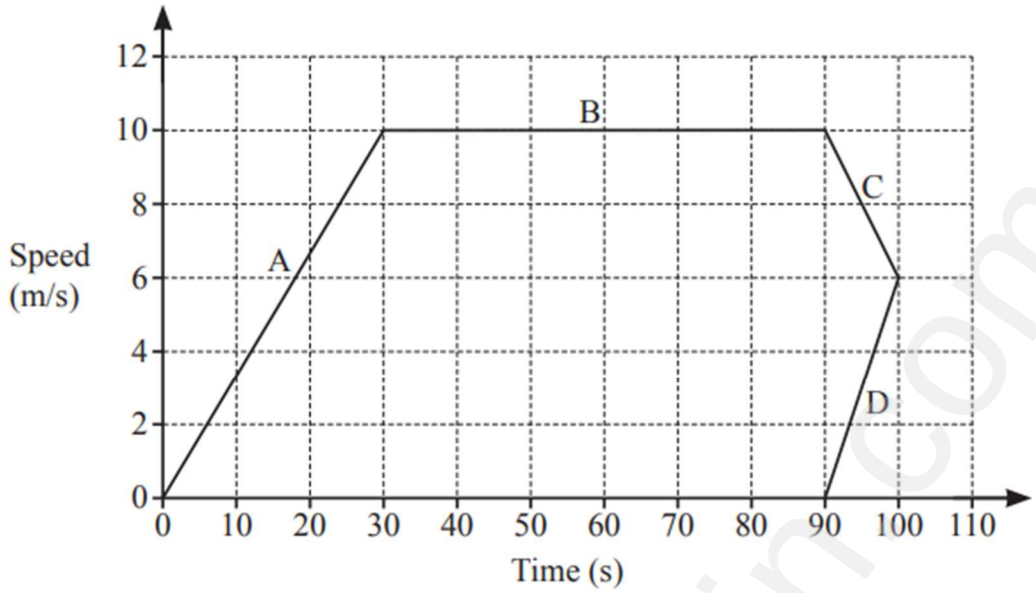
(a) Find the deceleration of the car between 60 and 100 seconds.

..... m/s^2 [1]

(b) Calculate how much further the car travelled than the motorbike during the 100 seconds.

..... m [3]

16 Abdul draws this speed–time graph for a journey.
The graph has four sections A, B, C and D.



Complete these statements about the speed–time graph.

Section ..... cannot be correct.

Section ..... shows constant speed.

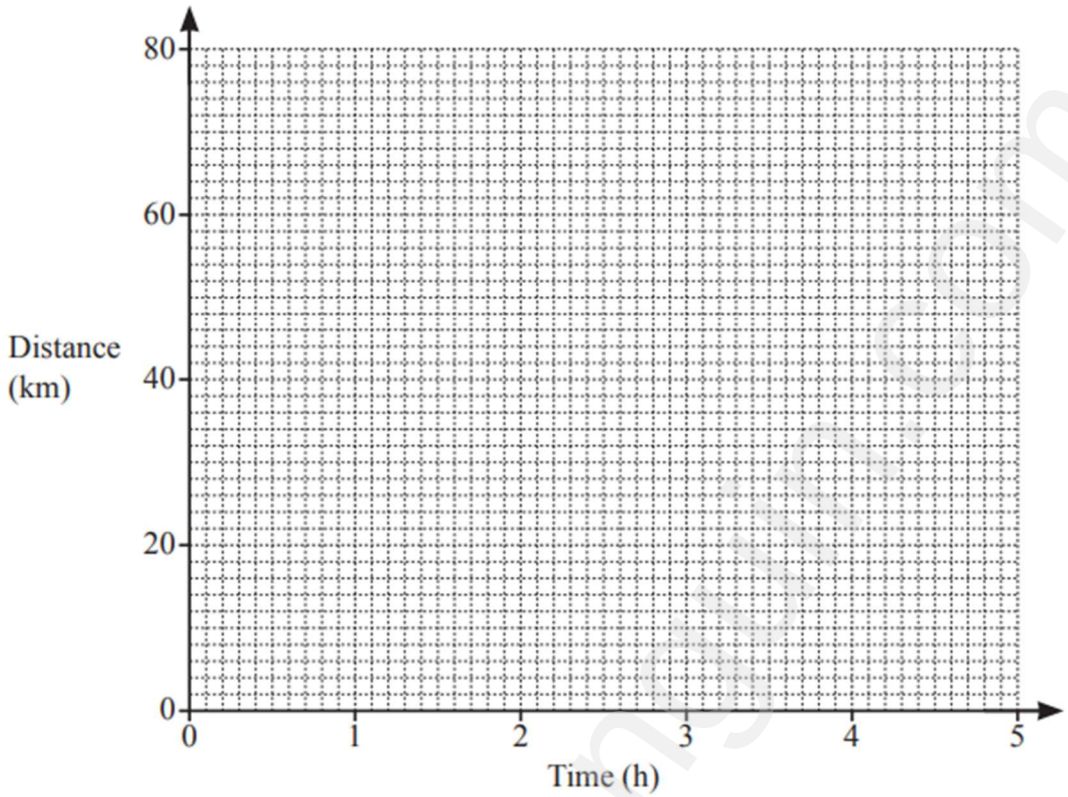
Section ..... shows deceleration.

Section A shows acceleration of ..... m/s^2.

The distance travelled in the first 30 seconds of the journey is ..... m.

[4]

12 Annette cycles a distance of 70 km from Midville to Newtown.
Leaving Midville, she cycles for 1 hour 30 minutes at a constant speed of 20 km/h and then stops for 30 minutes.
She then continues the journey to Newtown at a constant speed of 16 km/h.

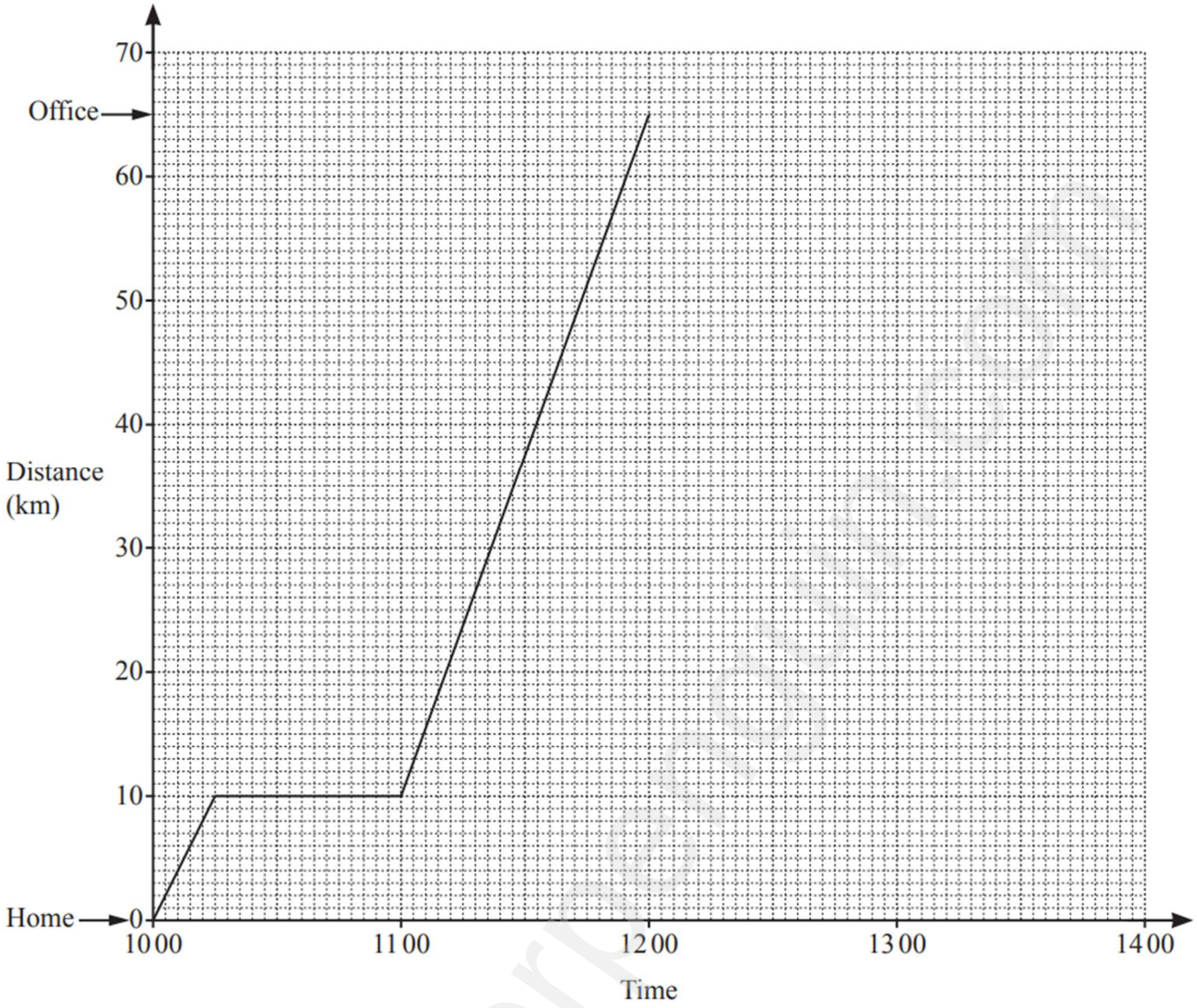


(a) On the grid, draw the distance–time graph for the journey. [3]

(b) Calculate the average speed for the whole journey.

..... km/h [3]

9 The distance–time graph shows information about Kai's journey from home to the office.



(a) Calculate the average speed, in km/h, for Kai's journey from home to the office.

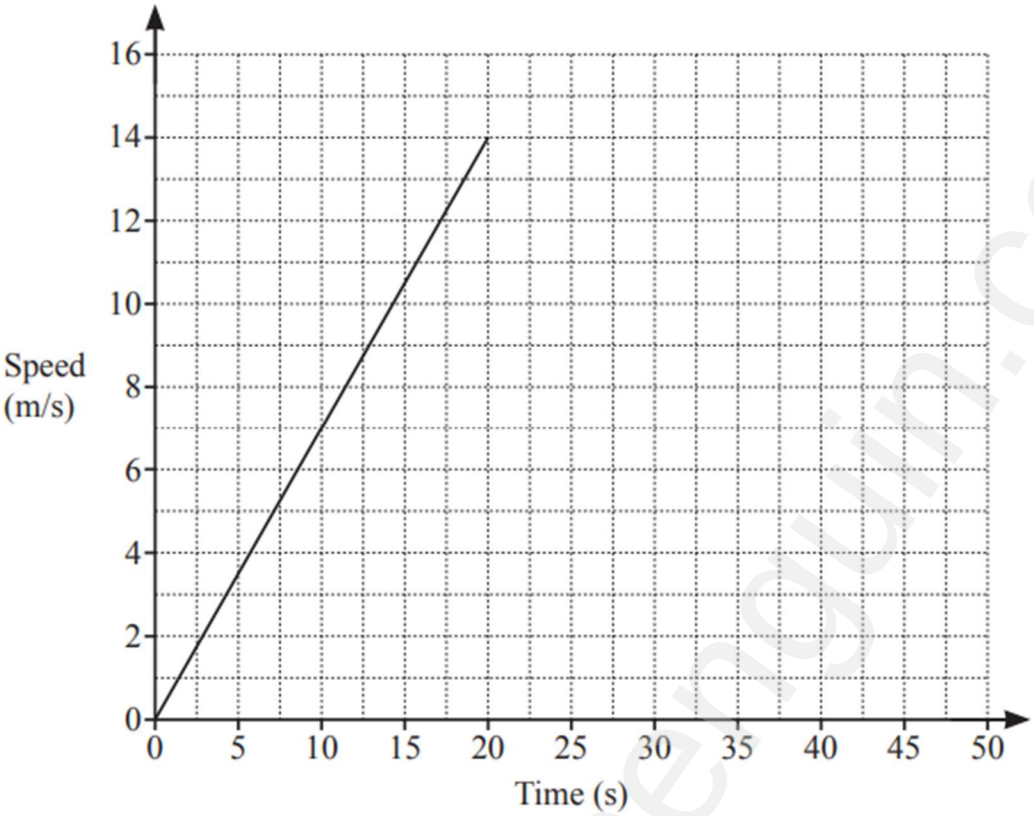
..... km/h [2]

(b) When Kai arrives at the office, he finds his meeting is cancelled. He immediately returns home at a constant speed of 50 km/h.

Complete the distance–time graph to show his journey home. [1]

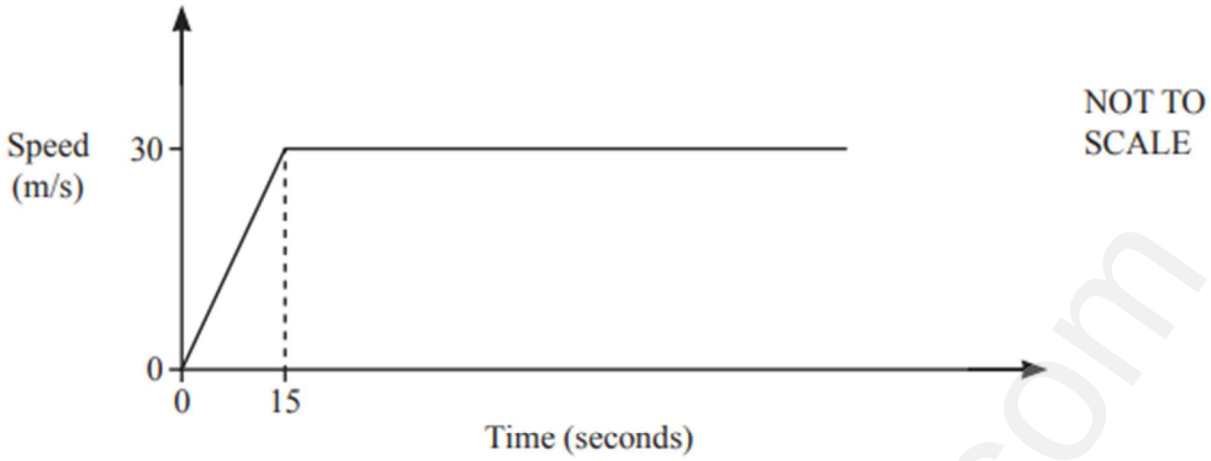
11 A car starts its journey by accelerating from rest at a constant rate of $0.7\,m/s^2$ for 20 seconds, before reaching a constant speed of 14 m/s.
It then travels at 14 m/s for a distance of 210 m.
The car then decelerates at a constant rate of $1.4\,m/s^2$, before coming to a stop.

On the grid, complete the speed–time graph for the car's journey.



[3]

15 The diagram shows the speed–time graph for part of the journey of a car.



The car starts from rest and accelerates at a uniform rate for 15 seconds before reaching a constant speed of 30 m/s.

(a) Calculate the acceleration for the first 15 seconds.

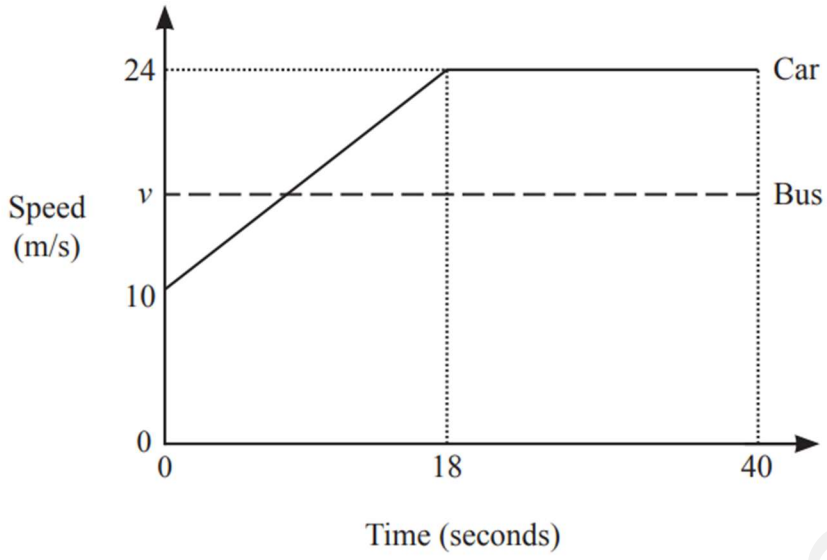
..... m/s^2 [1]

(b) After T **minutes**, the total distance travelled is 45 **kilometres**.

Find the value of T.

$T =$ ..... min [4]

5 **(a)** The diagram shows the speed–time graph for part of a journey for two vehicles, a car and a bus.



NOT TO SCALE

(i) Calculate the acceleration of the car during the first 18 seconds.

..... m/s^2 [1]

(ii) In the first 40 seconds the car travelled 134 m more than the bus.

Calculate the constant speed, v, of the bus.

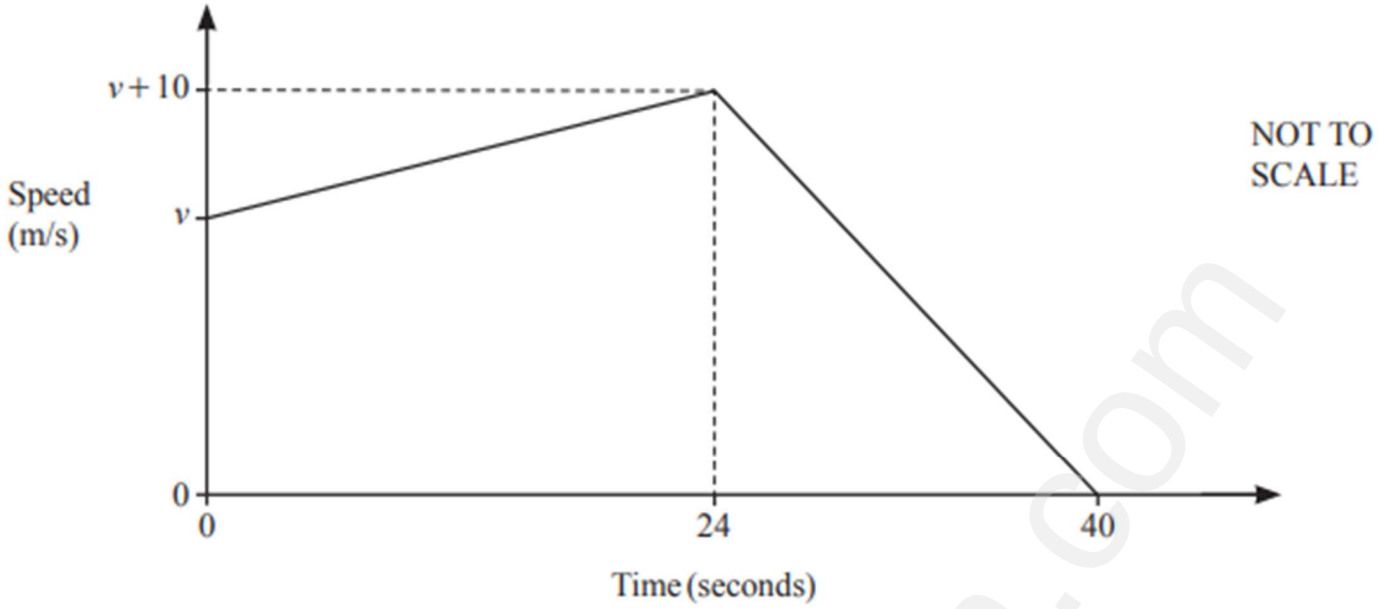
v = ... m/s [4]

(b) A train takes 10 minutes 30 seconds to travel 16 240 m.

Calculate the average speed of the train.
Give your answer in kilometres per hour.

..... km/h [3]

19



The diagram shows the speed–time graph for the final 40 seconds of a car journey.
At the start of the 40 seconds the speed is v m/s.

(a) Find the acceleration of the car during the first 24 seconds.

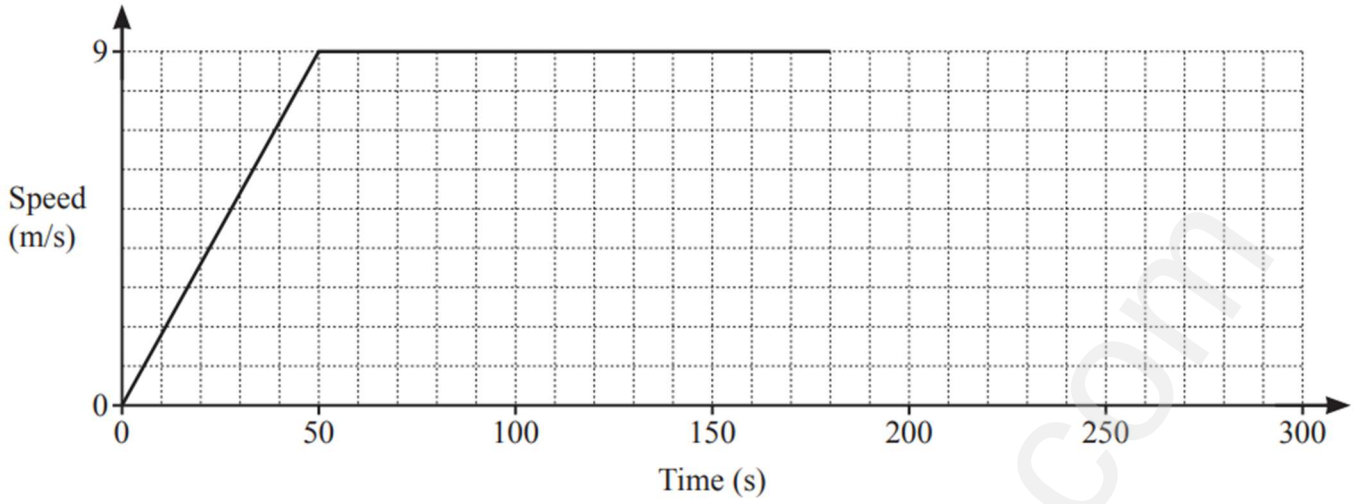
..... m/s^2 [1]

(b) The total distance travelled during the 40 seconds is 1.24 **kilometres**.

Find the value of v.

$v =$ ..... [4]

2 The diagram shows the speed–time graph for the first 180 seconds of a train journey.



(a) Find the acceleration, in m/s^2, of the train during the first 50 seconds.

..... m/s^2 [1]

(b) After 180 seconds, the train decelerates at a constant rate of 1944 $\mathbf{km/h^2}$.

Show that the train decelerates for 60 seconds until it stops.

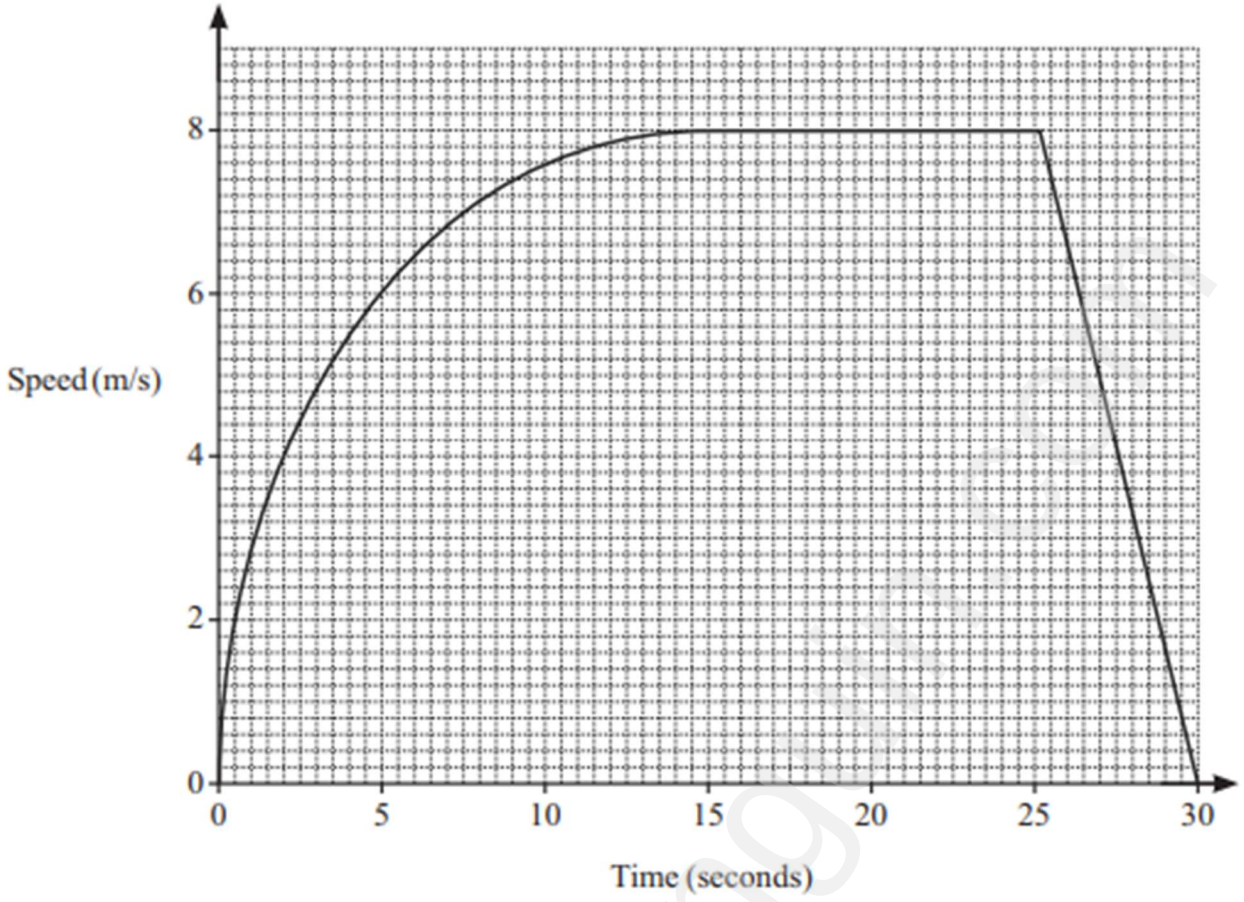
[2]

(c) Complete the speed–time graph. [1]

(d) Calculate the average speed of the train for the whole journey.

..... m/s [4]

16 The graph shows the speed of a cyclist during a journey of 30 seconds.



(a) Write down the acceleration of the cyclist between 15 seconds and 25 seconds.

..... m/s^2 [1]

(b) By drawing a tangent, find an estimate for the acceleration of the cyclist at 7.5 seconds.

..... m/s^2 [2]

(c) Work out the average speed of the cyclist between 15 seconds and 30 seconds.

..... m/s [3]