



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Real-Life Graphs · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Real-Life Graphs

Total marks available: 136

Real-Life Graphs

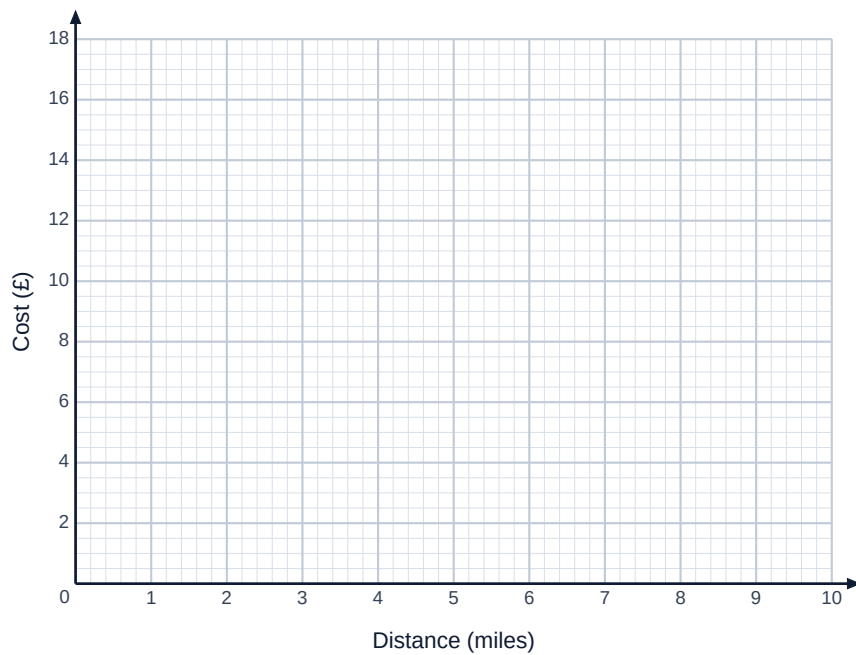
Q1

[5 marks]

A taxi company charges a fixed fee of £2 plus £1.50 for each mile.

- Complete the table.
- On the grid, draw a graph to show the cost for up to 10 miles.
- The cost is £3.50. Use your graph to find the number of miles.

Distance (miles)	0	2	4	6	8	10
Cost (£)	2	5			14	

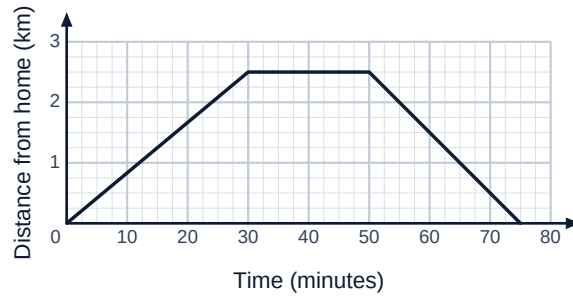


Q2

[5 marks]

Mia walks from home to her friend's house, stays there, and then returns home.
The distance-time graph shows the journey.

- (a) Work out Mia's speed, in km/h, on the way home.
(b) Work out Mia's average speed, in km/h, for the whole time away from home.

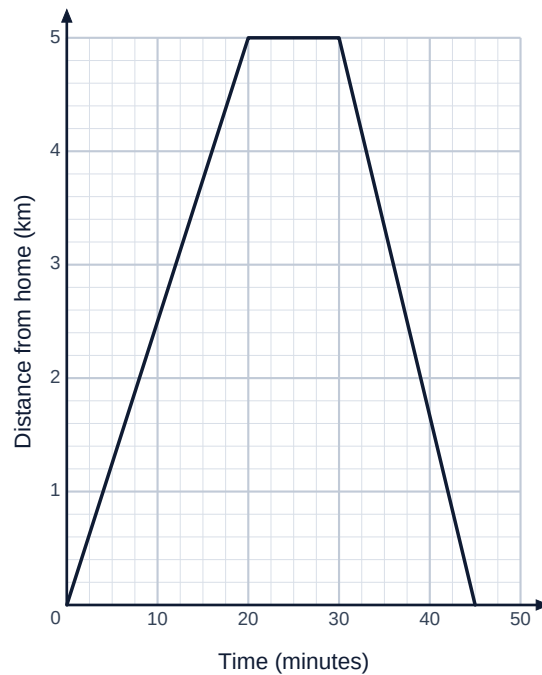


Q3

[5 marks]

Amir cycles from home to the park, stays there, and then returns home.
The distance-time graph shows the journey.

- (a) Work out Amir's speed, in km/h, on the way home.
(b) Work out Amir's average speed, in km/h, for the whole time away from home, correct to 1 decimal place.

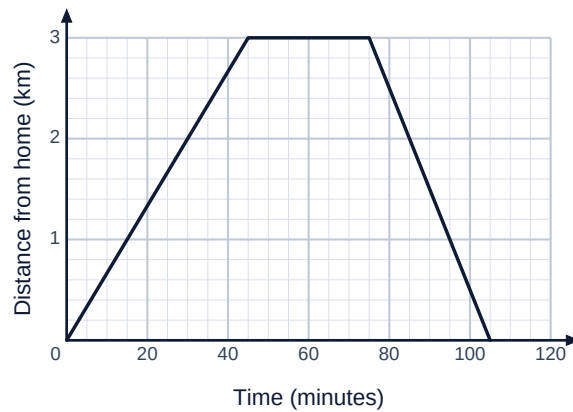


Q4

[5 marks]

Mia walks from home to her friend's house, stays there, and then returns home.
The distance-time graph shows the journey.

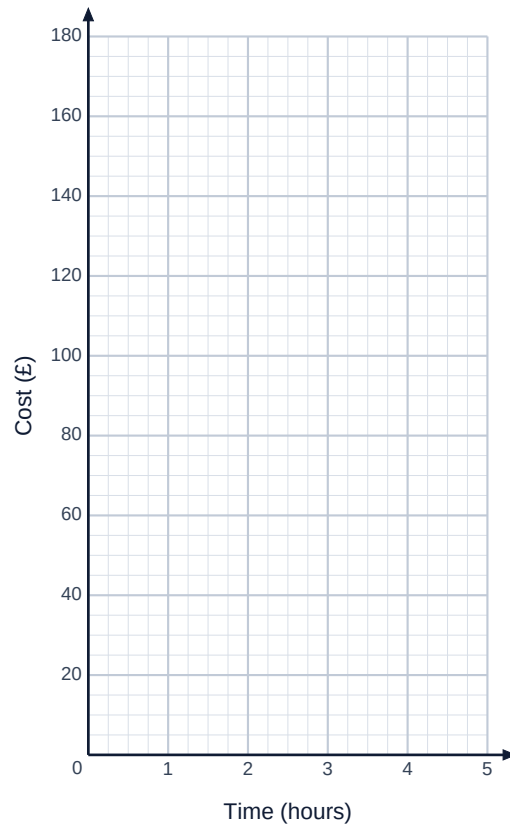
- (a) Work out Mia's speed, in km/h, on the way home.
(b) Work out Mia's average speed, in km/h, for the whole time away from home, correct to 1 decimal place.



A plumber charges a call-out fee of £30 plus £30 for each hour of work.

- (a) Complete the table.
 (b) On the grid, draw a graph to show the cost for up to 5 hours.
 (c) The cost is £105. Use your graph to find the number of hours.

Time (hours)	0	1	2	3	4	5
Cost (£)	30			120		180



Q6

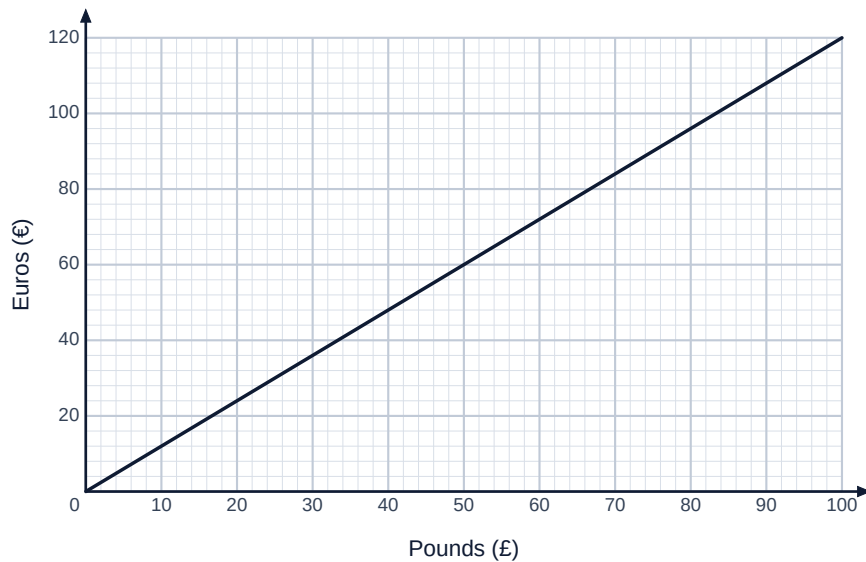
[3 marks]

The graph can be used to convert between pounds (£) and euros (€).

A tennis racket costs €144 in Paris and £135 in London.

(a) Use the graph to change €36 to pounds.

(b) In which city is the tennis racket cheaper, and by how many pounds?



Q7

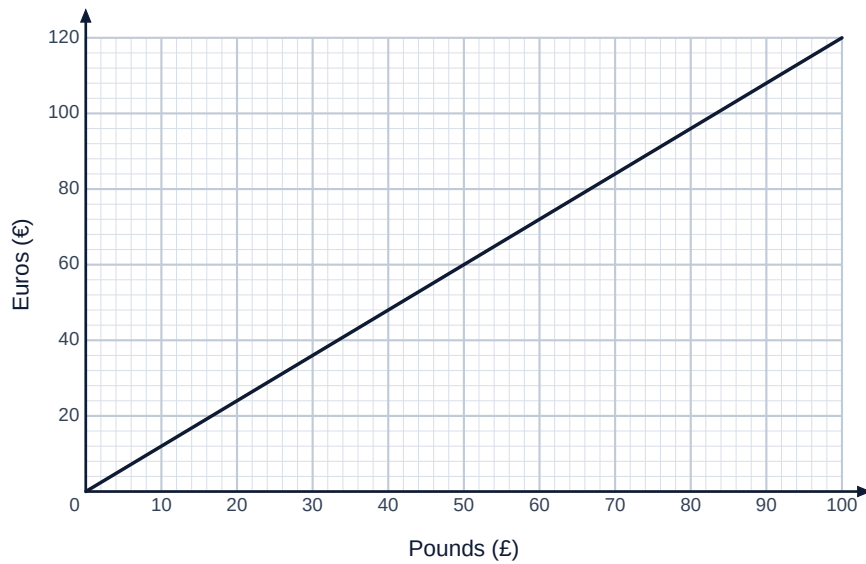
[3 marks]

The graph can be used to convert between pounds (£) and euros (€).

A tennis racket costs €144 in Paris and £110 in London.

(a) Use the graph to change €36 to pounds.

(b) In which city is the tennis racket cheaper, and by how many pounds?



Q8

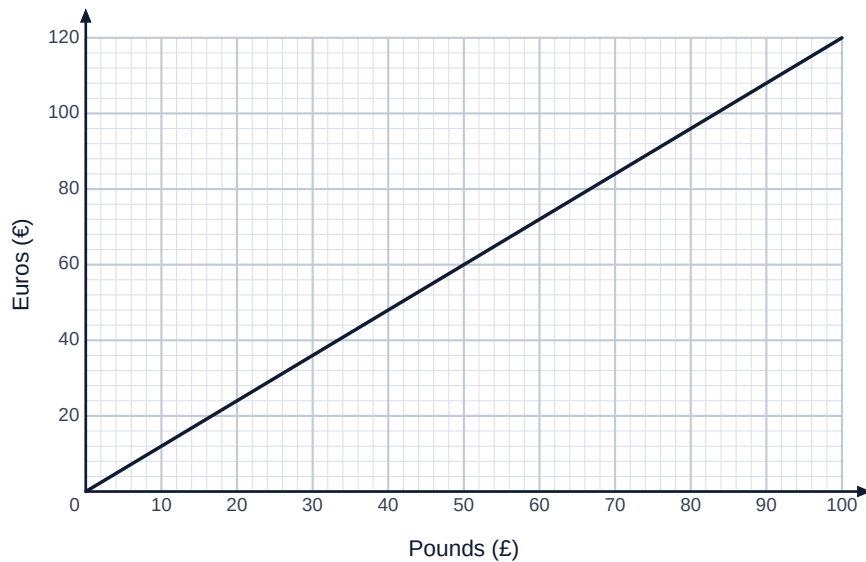
[3 marks]

The graph can be used to convert between pounds (£) and euros (€).

A tennis racket costs €180 in Paris and £165 in London.

(a) Use the graph to change €60 to pounds.

(b) In which city is the tennis racket cheaper, and by how many pounds?

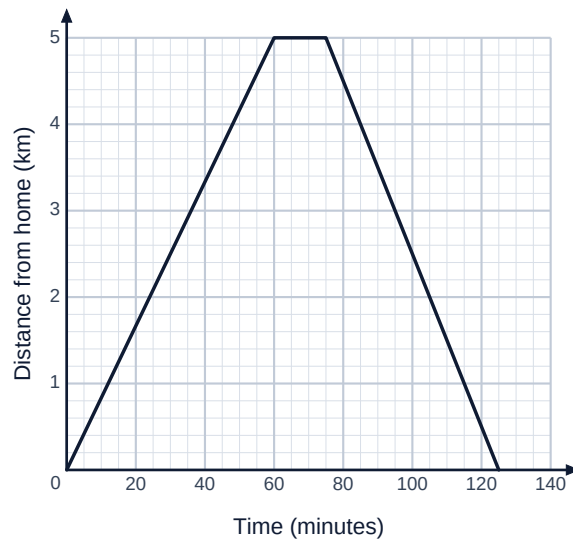


Q9

[5 marks]

Mia walks from home to her friend's house, stays there, and then returns home.
The distance-time graph shows the journey.

- (a) Work out Mia's speed, in km/h, on the way home.
(b) Work out Mia's average speed, in km/h, for the whole time away from home, correct to 1 decimal place.



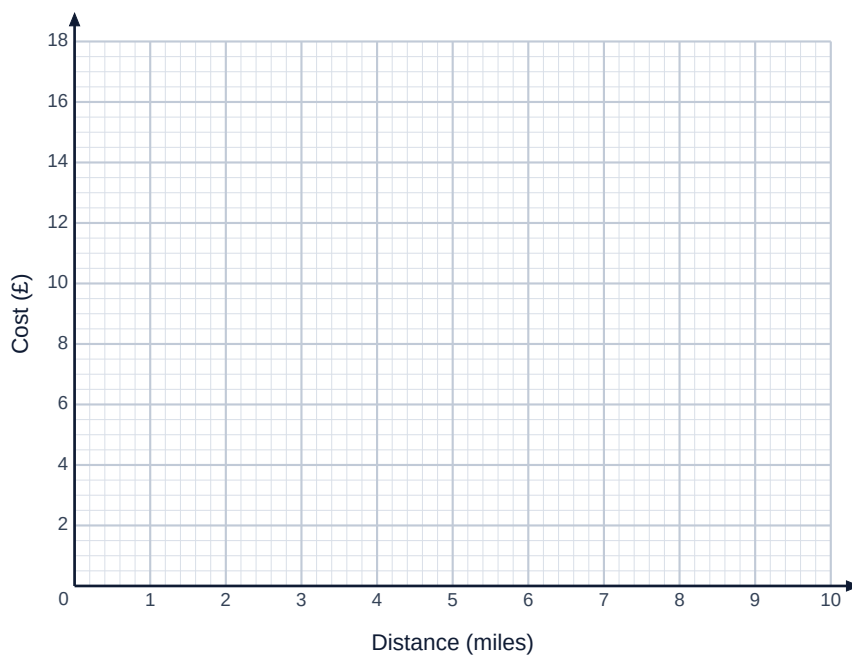
A taxi company charges a fixed fee of £2 plus £1.50 for each mile.

(a) Complete the table.

(b) On the grid, draw a graph to show the cost for up to 10 miles.

(c) The cost is £6.50. Use your graph to find the number of miles.

Distance (miles)	0	2	4	6	8	10
Cost (£)	2		8			17



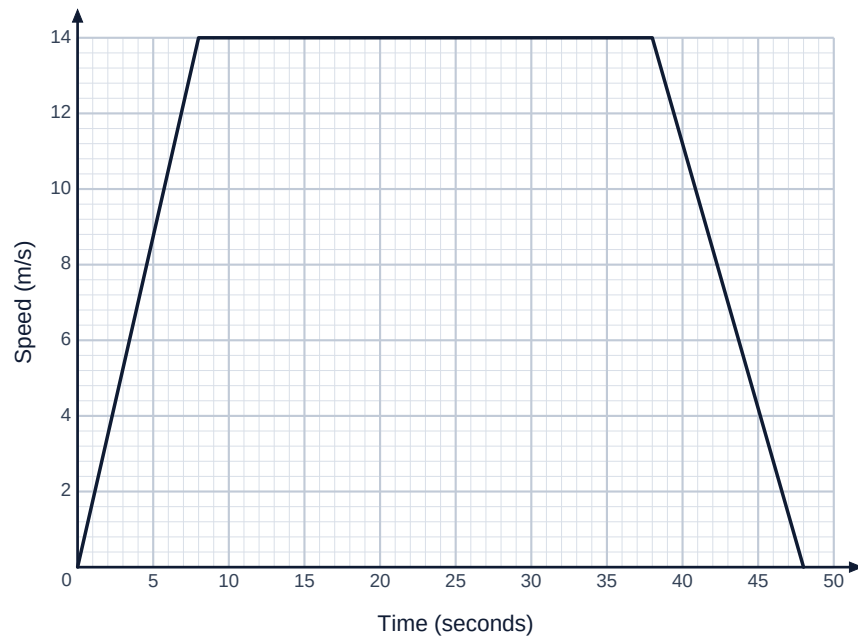
Q11

[5 marks]

The speed-time graph shows a cyclist's journey between two sets of traffic lights.

(a) Work out the acceleration of the cyclist during the first 8 seconds.

(b) Work out the total distance travelled.



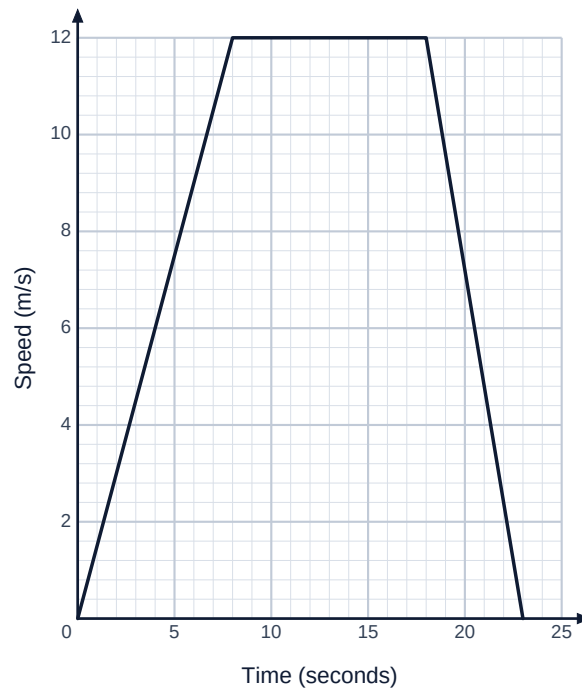
Q12

[5 marks]

The speed-time graph shows a cyclist's journey between two sets of traffic lights.

(a) Work out the acceleration of the cyclist during the first 8 seconds.

(b) Work out the total distance travelled.



Q13

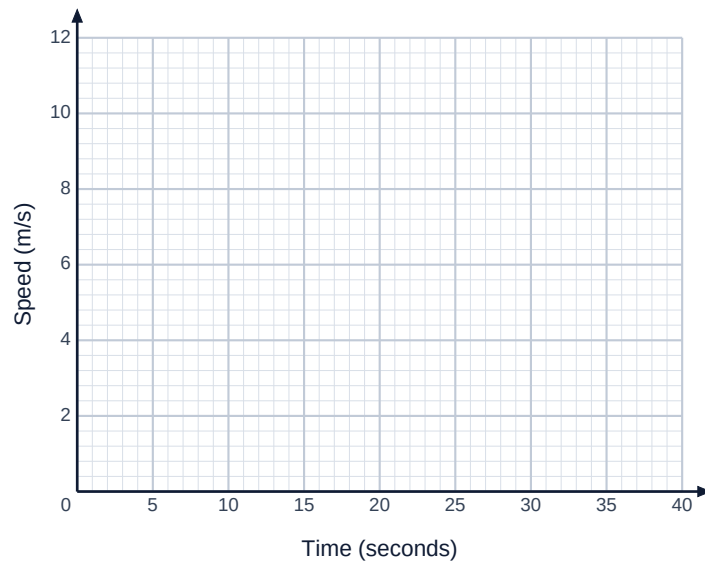
[4 marks]

A tram starts from rest and accelerates steadily to 12 m/s in 6 seconds.

It travels at 12 m/s for 20 seconds, then slows down steadily and stops 10 seconds later.

(a) On the grid, draw a speed-time graph for the journey.

(b) Work out the total distance the tram travels.



Q14

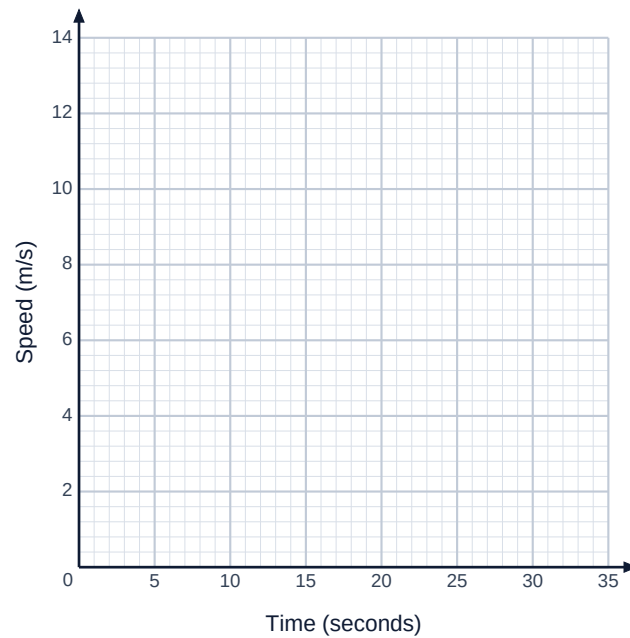
[4 marks]

A tram starts from rest and accelerates steadily to 14 m/s in 8 seconds.

It travels at 14 m/s for 20 seconds, then slows down steadily and stops 4 seconds later.

(a) On the grid, draw a speed-time graph for the journey.

(b) Work out the total distance the tram travels.



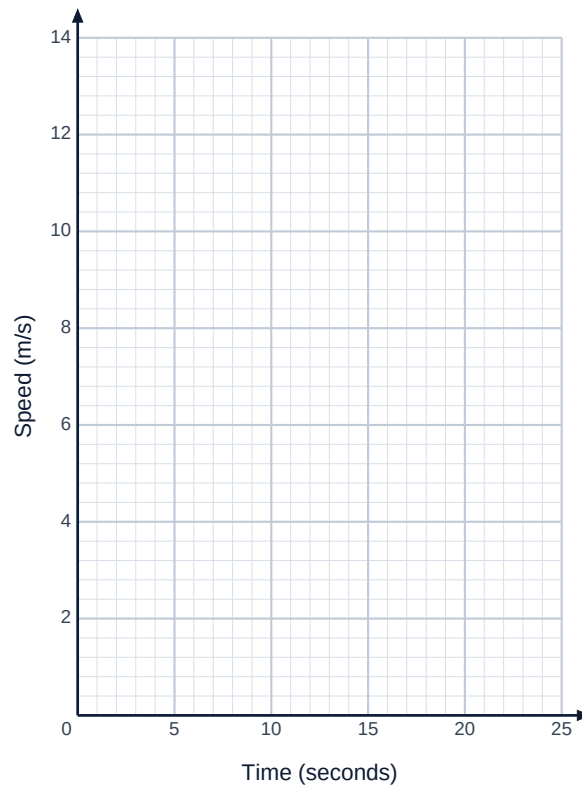
Q15

[4 marks]

A tram starts from rest and accelerates steadily to 14 m/s in 5 seconds. It travels at 14 m/s for 10 seconds, then slows down steadily and stops 8 seconds later.

(a) On the grid, draw a speed-time graph for the journey.

(b) Work out the total distance the tram travels.



Q16

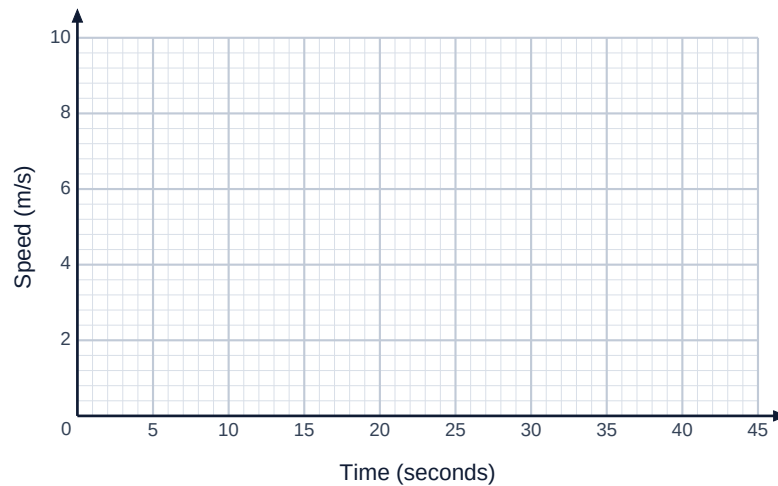
[4 marks]

A tram starts from rest and accelerates steadily to 10 m/s in 4 seconds.

It travels at 10 m/s for 30 seconds, then slows down steadily and stops 10 seconds later.

(a) On the grid, draw a speed-time graph for the journey.

(b) Work out the total distance the tram travels.



Q17

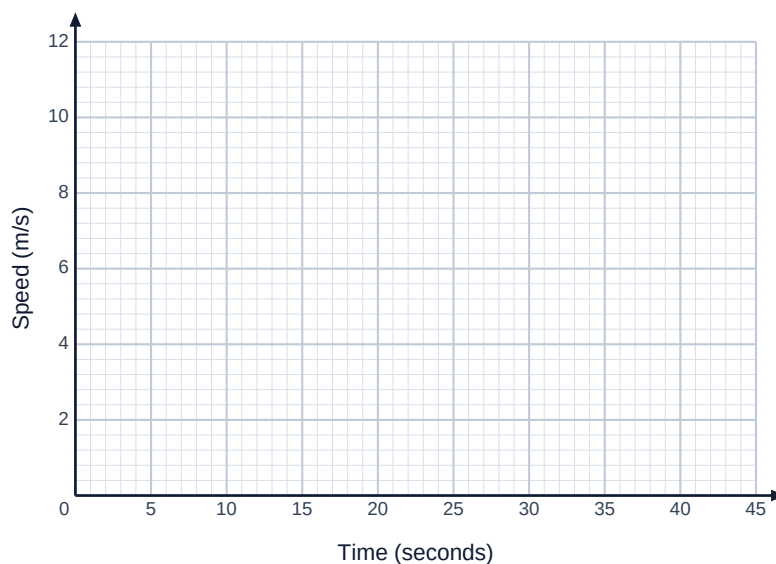
[4 marks]

A tram starts from rest and accelerates steadily to 12 m/s in 8 seconds.

It travels at 12 m/s for 30 seconds, then slows down steadily and stops 6 seconds later.

(a) On the grid, draw a speed-time graph for the journey.

(b) Work out the total distance the tram travels.

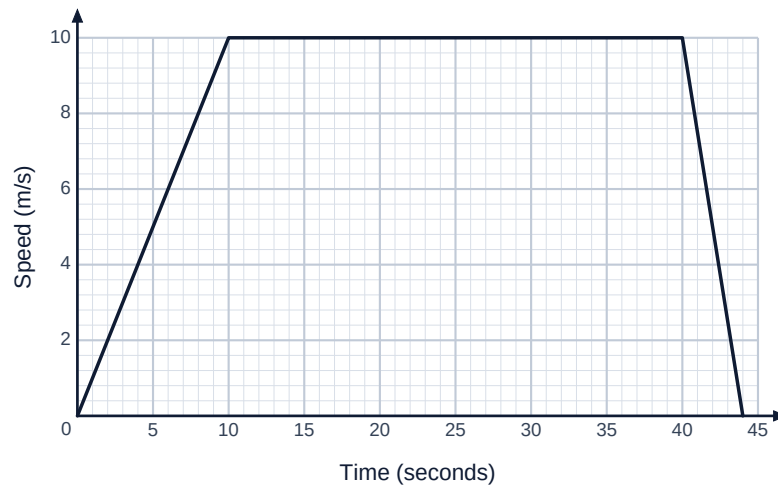


Q18

[5 marks]

The speed-time graph shows a cyclist's journey between two sets of traffic lights.

- (a) Work out the acceleration of the cyclist during the first 10 seconds.
(b) Work out the total distance travelled.



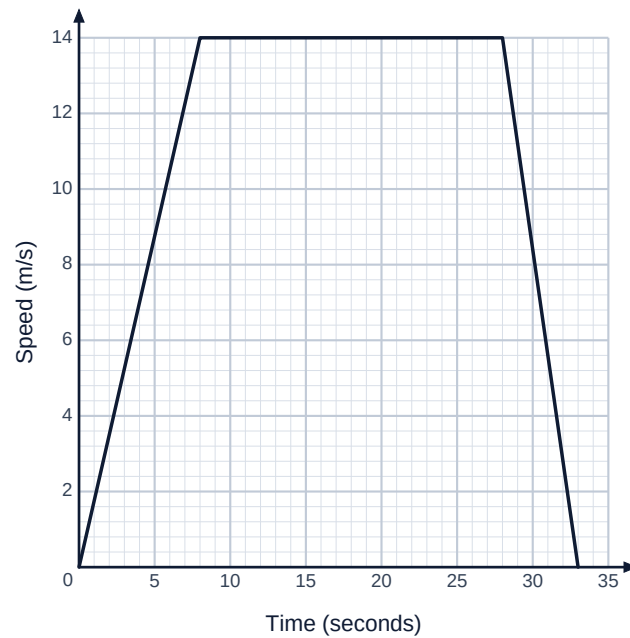
Q19

[5 marks]

The speed-time graph shows a cyclist's journey between two sets of traffic lights.

(a) Work out the acceleration of the cyclist during the first 8 seconds.

(b) Work out the total distance travelled.

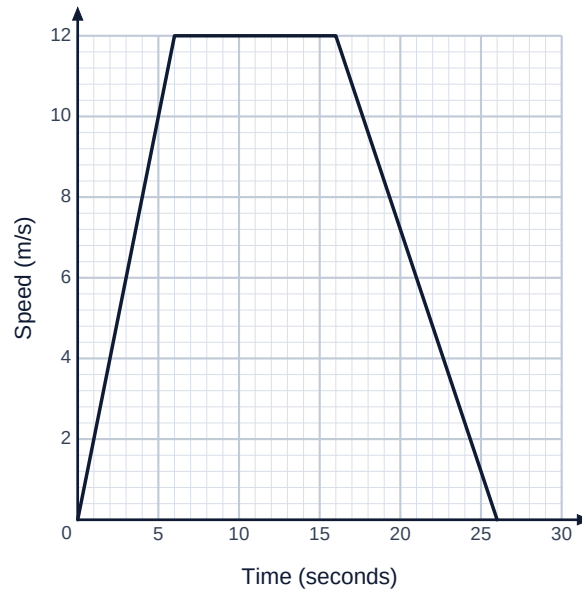


Q20

[5 marks]

The speed-time graph shows a cyclist's journey between two sets of traffic lights.

- (a) Work out the acceleration of the cyclist during the first 6 seconds.
(b) Work out the total distance travelled.

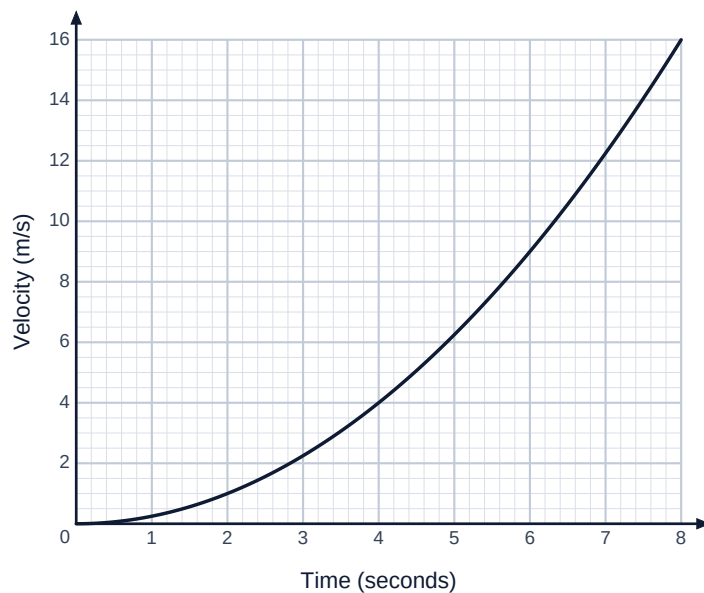


Q21

[4 marks]

The velocity-time graph shows the first 8 seconds of a car's journey.

- (a) Use 4 strips of equal width to estimate the distance travelled in the first 8 seconds.
(b) Is your answer to (a) an overestimate or an underestimate? Give a reason.



A large dashed rectangular box for writing the answer to part (a) and (b).

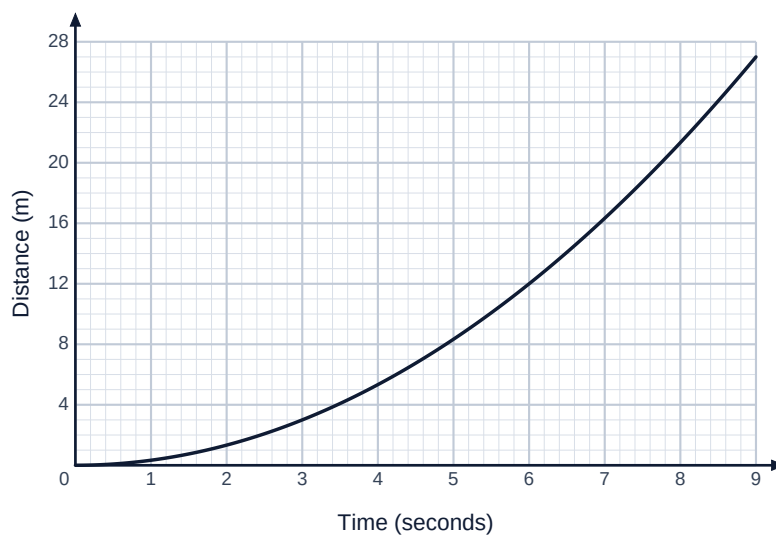
Q22

[5 marks]

The distance-time graph shows the first 9 seconds of a ball rolling down a slope.

(a) By drawing a tangent, estimate the speed of the ball at 3 seconds.

(b) Work out the average speed of the ball between 0 and 9 seconds.

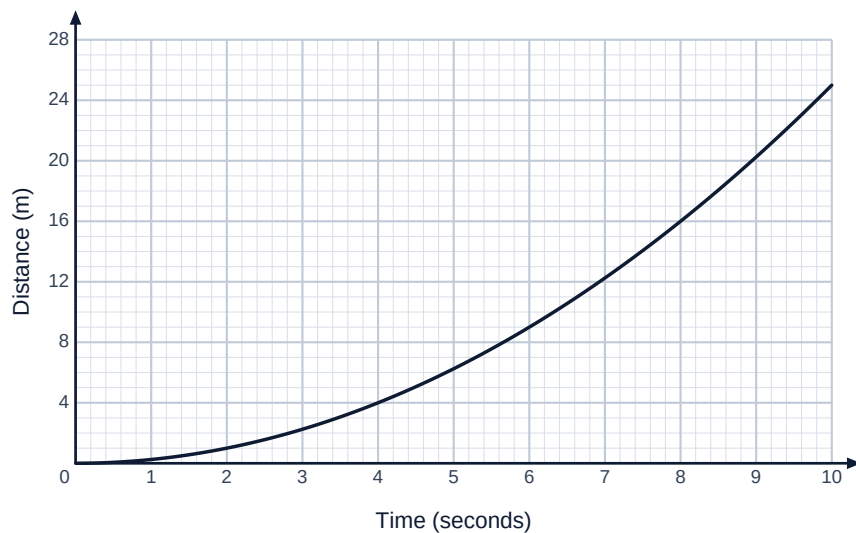


Q23

[5 marks]

The distance-time graph shows the first 10 seconds of a ball rolling down a slope.

- (a) By drawing a tangent, estimate the speed of the ball at 6 seconds.
(b) Work out the average speed of the ball between 0 and 2 seconds.



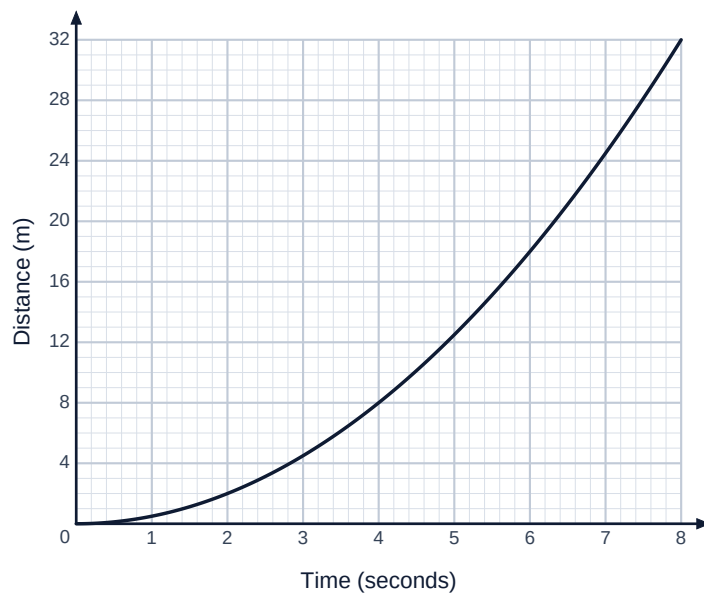
Q24

[5 marks]

The distance-time graph shows the first 8 seconds of a ball rolling down a slope.

(a) By drawing a tangent, estimate the speed of the ball at 6 seconds.

(b) Work out the average speed of the ball between 0 and 8 seconds.



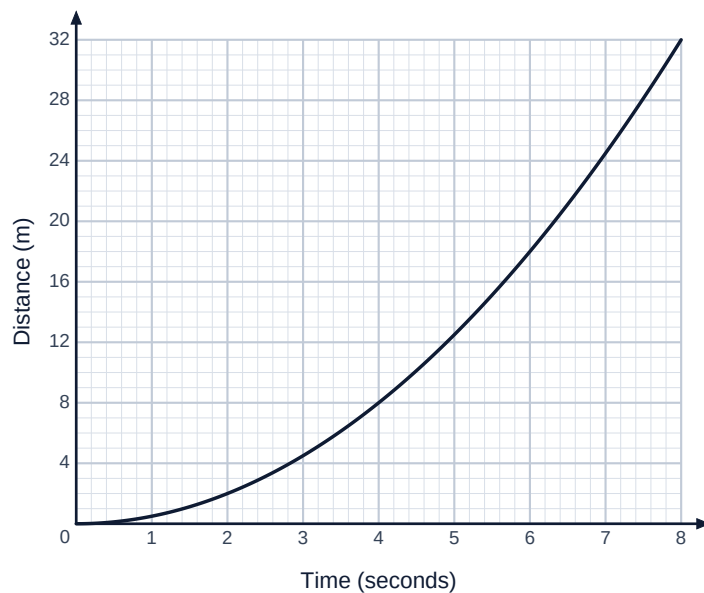
A large dashed rectangular box for working space.

Q25

[5 marks]

The distance-time graph shows the first 8 seconds of a ball rolling down a slope.

- (a) By drawing a tangent, estimate the speed of the ball at 5 seconds.
(b) Work out the average speed of the ball between 0 and 2 seconds.



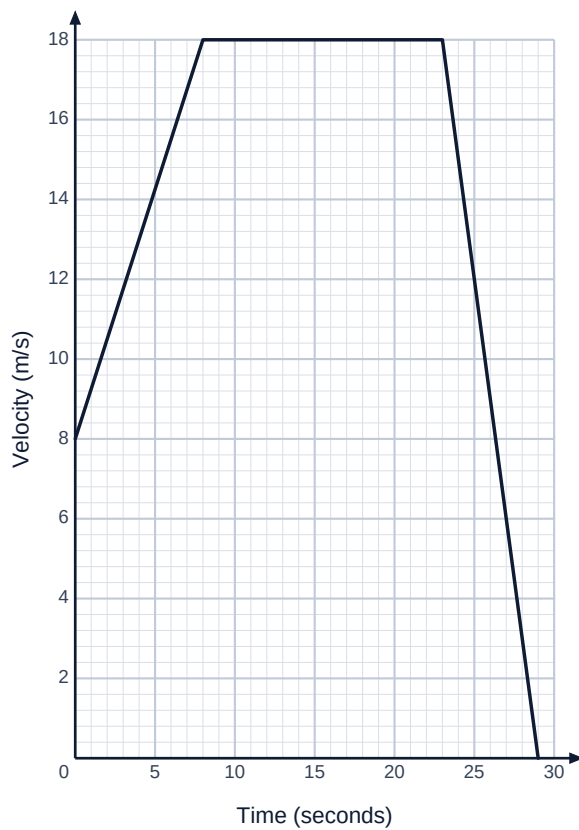
A large dashed rectangular box for working space.

Q26

[5 marks]

The velocity-time graph shows the motion of a car for 29 seconds.

- (a) Work out the total distance travelled by the car.
(b) Work out the average speed of the car over the 29 seconds, correct to 1 decimal place.

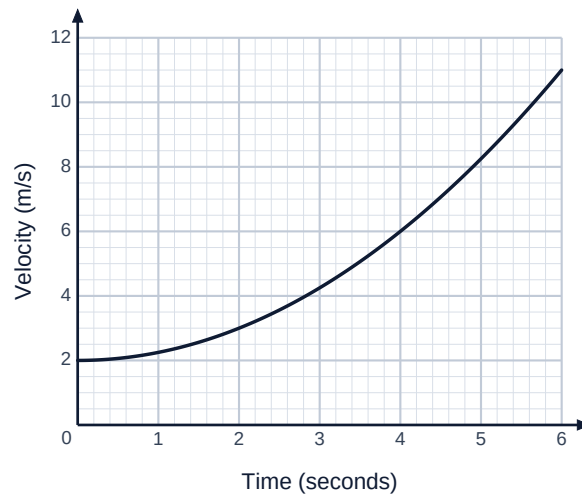


Q27

[4 marks]

The velocity-time graph shows the first 6 seconds of a car's journey.

- (a) Use 3 strips of equal width to estimate the distance travelled in the first 6 seconds.
(b) Is your answer to (a) an overestimate or an underestimate? Give a reason.



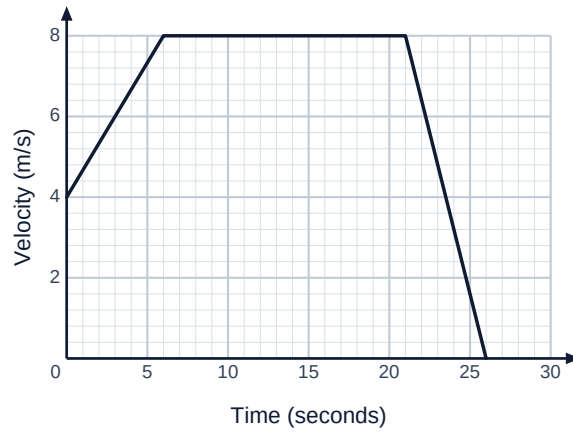
A large dashed rectangular box for writing the answer to the question.

Q28

[5 marks]

The velocity-time graph shows the motion of a car for 26 seconds.

- (a) Work out the total distance travelled by the car.
(b) Work out the average speed of the car over the 26 seconds, correct to 1 decimal place.

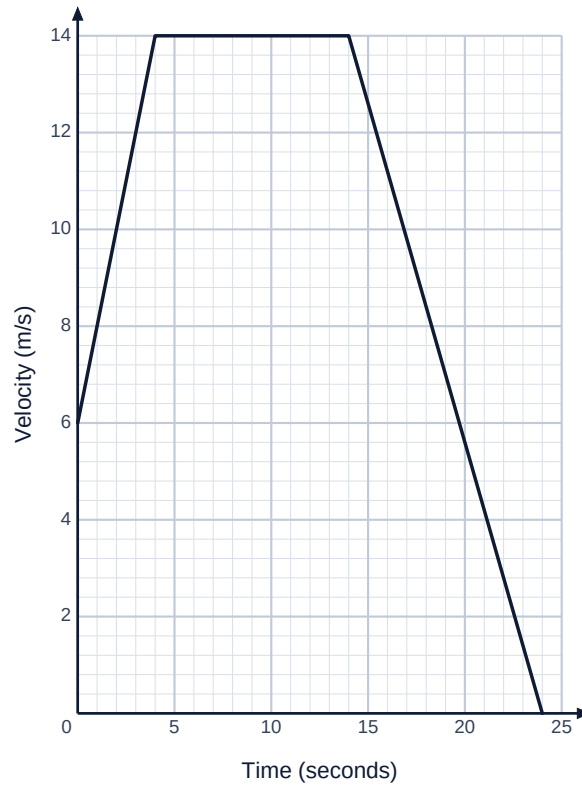


Q29

[5 marks]

The velocity-time graph shows the motion of a car for 24 seconds.

- (a) Work out the total distance travelled by the car.
(b) Work out the average speed of the car over the 24 seconds, correct to 1 decimal place.



Q30

[4 marks]

The velocity-time graph shows the first 6 seconds of a car's journey.

- (a) Use 3 strips of equal width to estimate the distance travelled in the first 6 seconds.
(b) Is your answer to (a) an overestimate or an underestimate? Give a reason.

