

Real-Life and Distance-Time Graphs - Higher

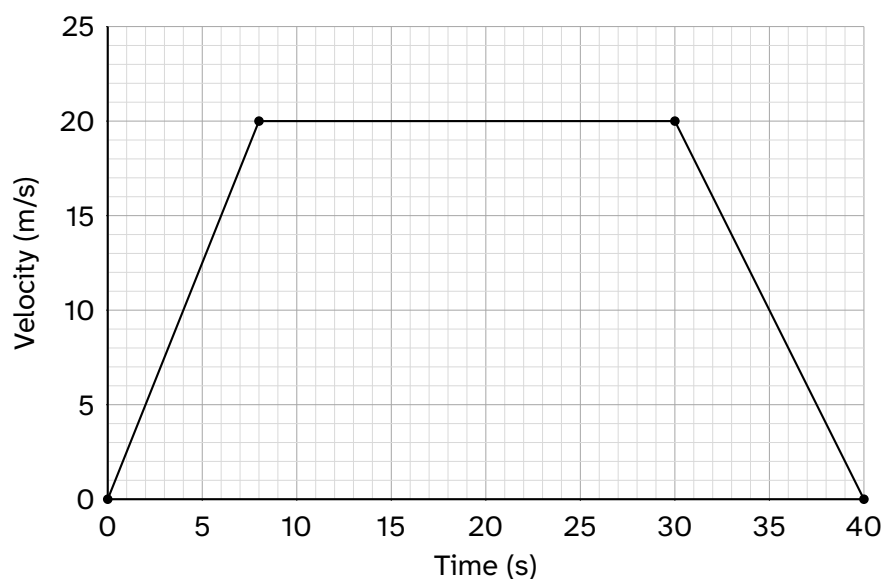
For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **28**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** The velocity-time graph shows a car journey of 40 seconds.



- (a) Describe the motion of the car between 8 seconds and 30 seconds.

[1 mark]

- (b) Work out the acceleration during the first 8 seconds.

[2 marks]

Answer _____ m/s²

- (c) Work out the deceleration during the last 10 seconds.

[1 mark]

Answer _____ m/s^2

- (d) Work out the total distance travelled.

[3 marks]

Answer _____ m

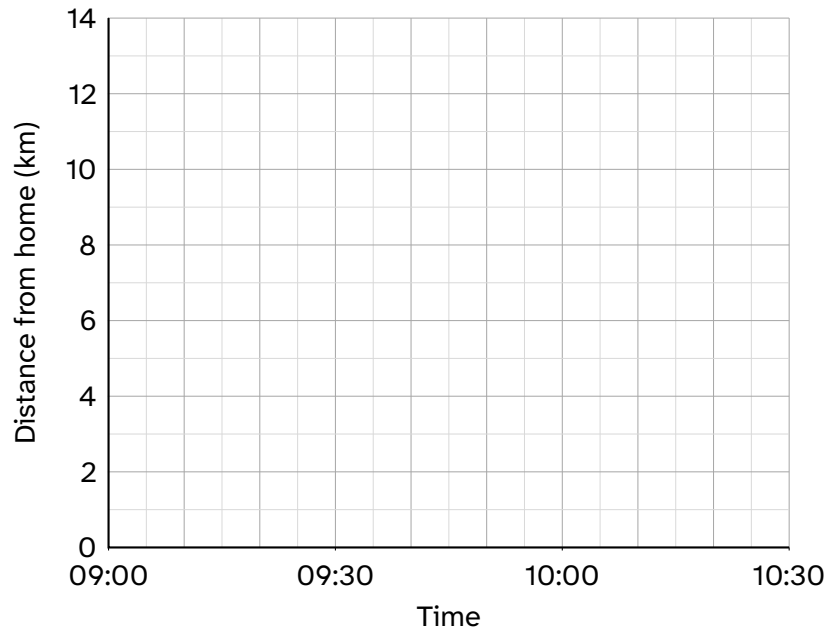
- (e) Work out the average speed for the 40 seconds.

[2 marks]

Answer _____ m/s

- 2** Lowri leaves home at 09:00 and cycles to a park.
She cycles at a constant speed of 18 km/h for 40 minutes to reach the park.
She stays at the park for 30 minutes.
She then cycles home at a constant speed and arrives home at 10:30

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



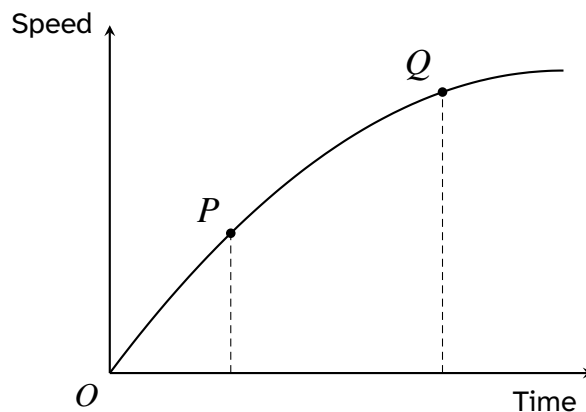
[3 marks]

(b) Work out her speed on the way home.

[1 mark]

Answer _____ km/h

- 3 Here is a sketch of a speed-time graph for a cyclist.



- (a) Which of these represents the acceleration at P ?
Tick **one** box.

[1 mark]

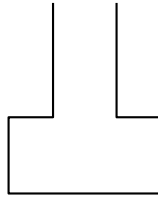
- ☐ The gradient of the chord from O to P
- ☐ The gradient of the tangent at P
- ☐ The area under the graph from O to P
- ☐ The speed at P divided by the time at P

- (b) Which of these is represented by the area under the graph between P and Q ?
Tick **one** box.

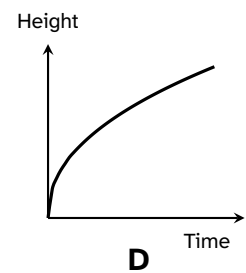
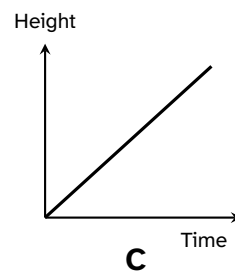
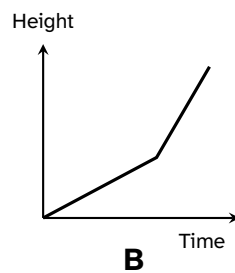
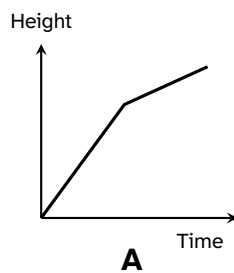
[1 mark]

- ☐ The acceleration between P and Q
- ☐ The average speed between P and Q
- ☐ The distance travelled between P and Q
- ☐ The time taken between P and Q

- 4 Water flows at a constant rate into this empty container.



- (a) Which graph shows how the height of the water changes as the container fills?
Circle the letter of the correct graph.



[1 mark]

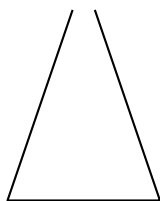
A

B

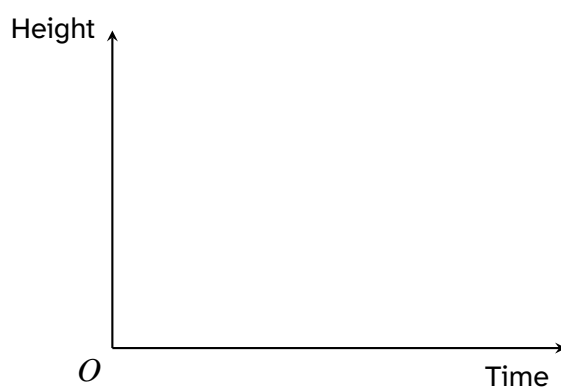
C

D

- (b) Water flows at a constant rate into a different empty container, shown below.

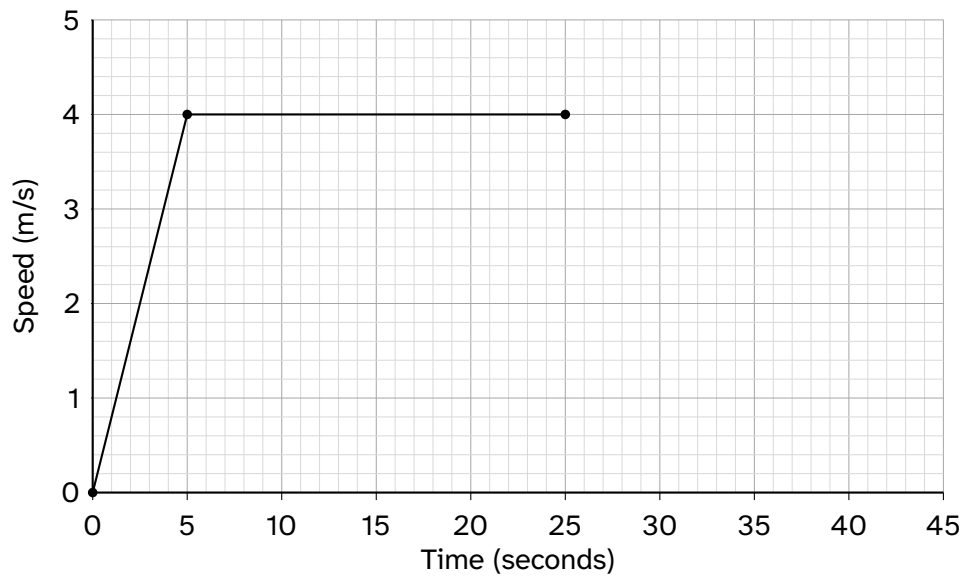


On the axes, sketch a graph to show how the height of the water changes as the container fills.



[2 marks]

- 5 A lift travels 150 metres from the ground floor to the top floor of a tower. The speed-time graph shows the first 25 seconds of the journey.



After 25 seconds, the lift continues at the same speed.
It then slows down at a constant rate and stops at the top floor.
It takes 4 seconds to slow down.

Work out the total time for the journey.

[4 marks]

Answer _____ seconds

- 6** A van is travelling along a straight road.

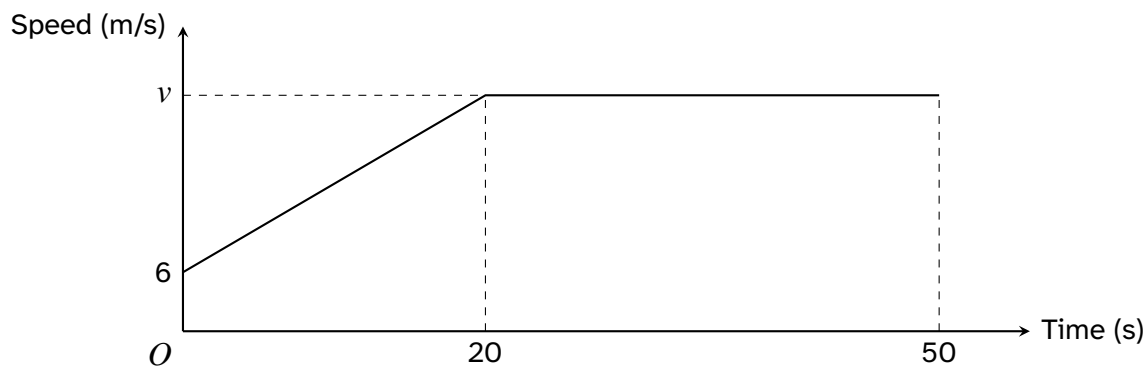
At the start, the speed of the van is 6 m/s

For the first 20 seconds, its speed increases at a constant rate to v m/s

For the next 30 seconds, it travels at a constant speed of v m/s

In the 50 seconds, the van travels 1020 metres.

Here is a sketch of its speed-time graph.



Not drawn accurately

- (a) Work out the value of v .

[4 marks]

$v =$ _____

- (b) Work out the acceleration of the van in the first 20 seconds.
State the units of your answer.

[2 marks]

Answer _____