Real-life graphs

Year 9 | Key Stage 3 | 13 questions, 41 marks

KS3 Maths topic practice

Scan for the solutions

Name: _____ **Date:** _____ **Score:** _____ **/ 41**

1 A graph shows the total cost of hiring a ladder plotted against the number of days of hire.

The graph is a straight line with gradient 6.

Interpret what the gradient tells you about the cost of hiring the ladder.

Cost is measured in pounds and hire time in days.

(1 mark)

Answer _____

2 Water is poured into a tank at a steady rate.

The graph of depth of water, in cm, against time is a straight line that crosses the vertical axis at 20.

Interpret the value 20.

(1 mark)

Answer _____

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3 Zara leaves home at 09:00 and walks to her friend Amaya's house. She stays there for a while, then walks on to the library. From the library she cycles straight home.

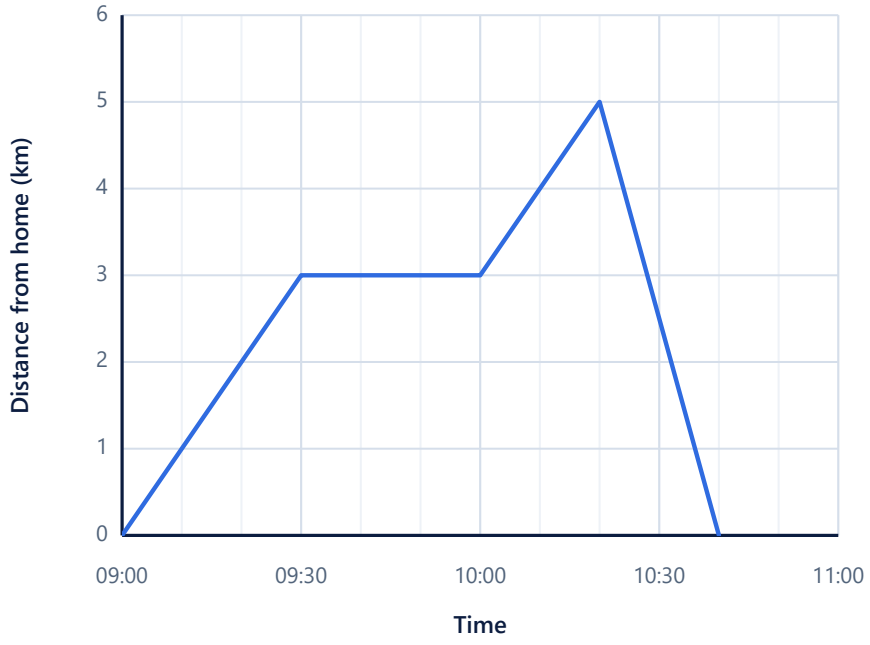
The distance-time graph shows her journey.

a. How far is Amaya's house from Zara's home?

b. How long does Zara stay at Amaya's house?

c. Work out Zara's speed, in km/h, from Amaya's house to the library.

d. Work out Zara's speed, in km/h, as she cycles home.



(4 marks)

Answer

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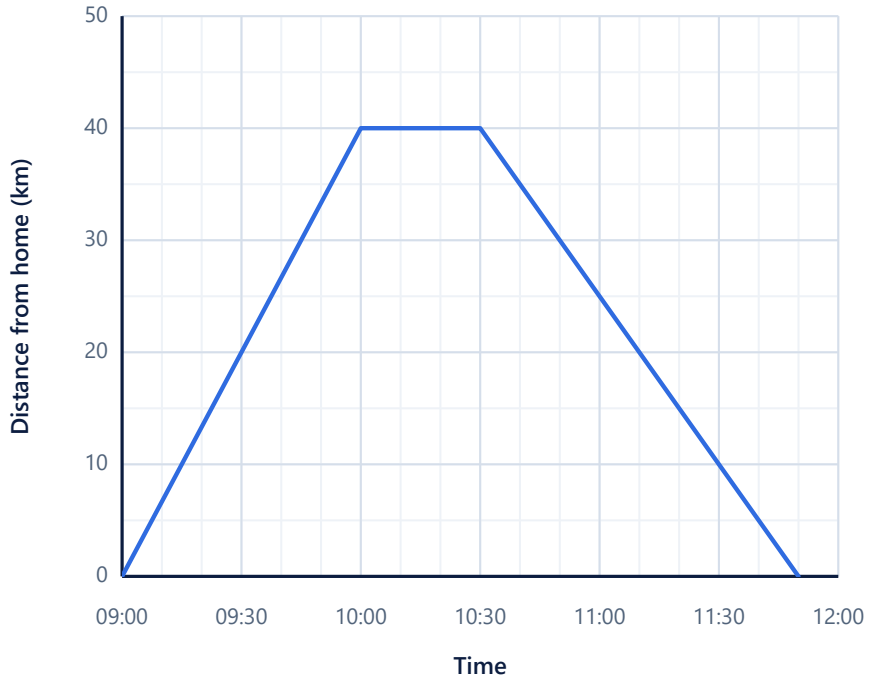
4 The distance-time graph shows Marek's car journey from home to a garden centre and back.

a. For how many minutes does Marek stay at the garden centre?

b. Work out his speed, in km/h, on the way to the garden centre.

c. Work out his speed, in km/h, on the way home.



(3 marks)

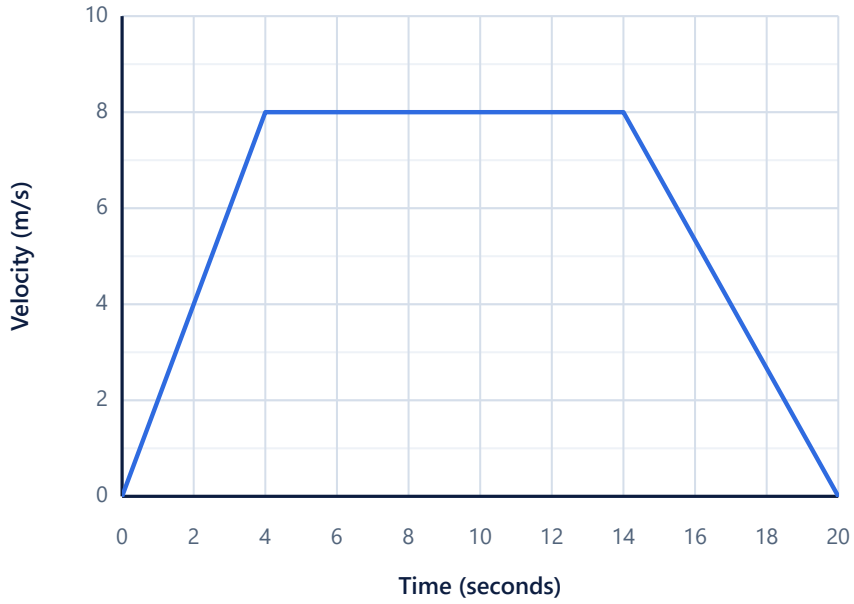
Answer _____

5 The velocity-time graph shows the first 20 seconds of a cycle race for Tomasz.

a. Write down Tomasz's velocity after 10 seconds.

b. Describe how Tomasz is moving between 4 seconds and 14 seconds.

c. For how many seconds is Tomasz slowing down?



(3 marks)

Answer

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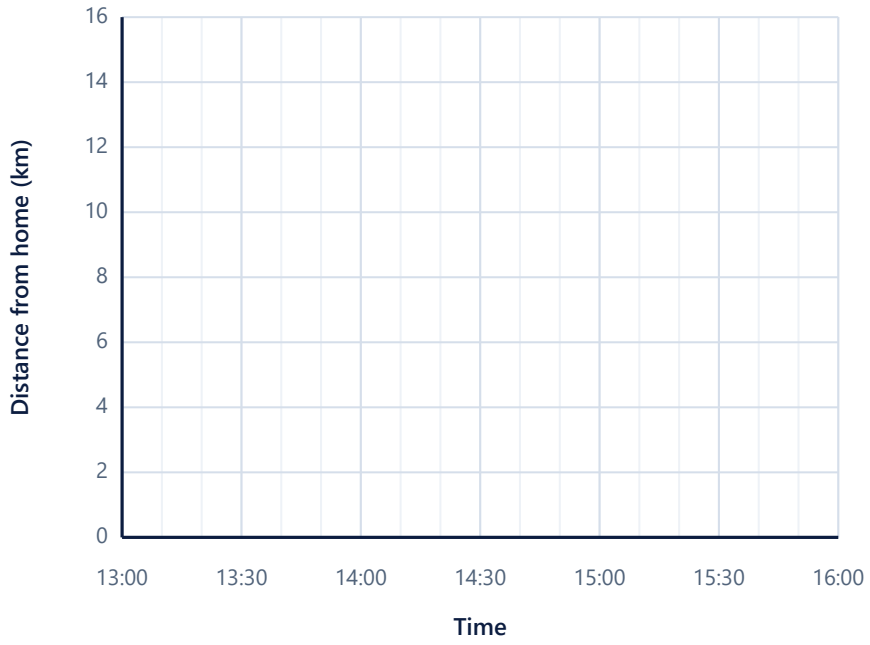
6 Leo leaves home at 13:00 and cycles at a steady speed of 12 km/h for 1 hour.

He then rests for 30 minutes.

He then cycles straight home at a steady speed of 16 km/h.

a. On the grid, draw a distance-time graph for Leo's journey.

b. At what time does Leo get home?



(4 marks)

Answer _____

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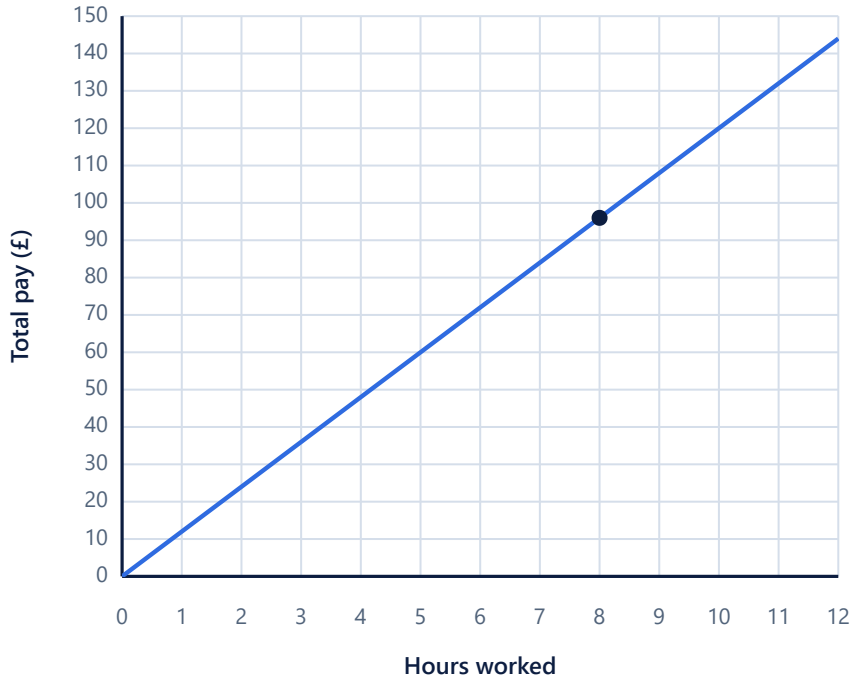
7 A graph shows Kelly's total pay plotted against the number of hours she works.

The graph is a straight line through (0, 0) and through the point (8, 96), where pay is in pounds.

a. Work out Kelly's hourly rate of pay.

b. Work out Kelly's total pay for working 11 hours.



(3 marks)

Answer _____

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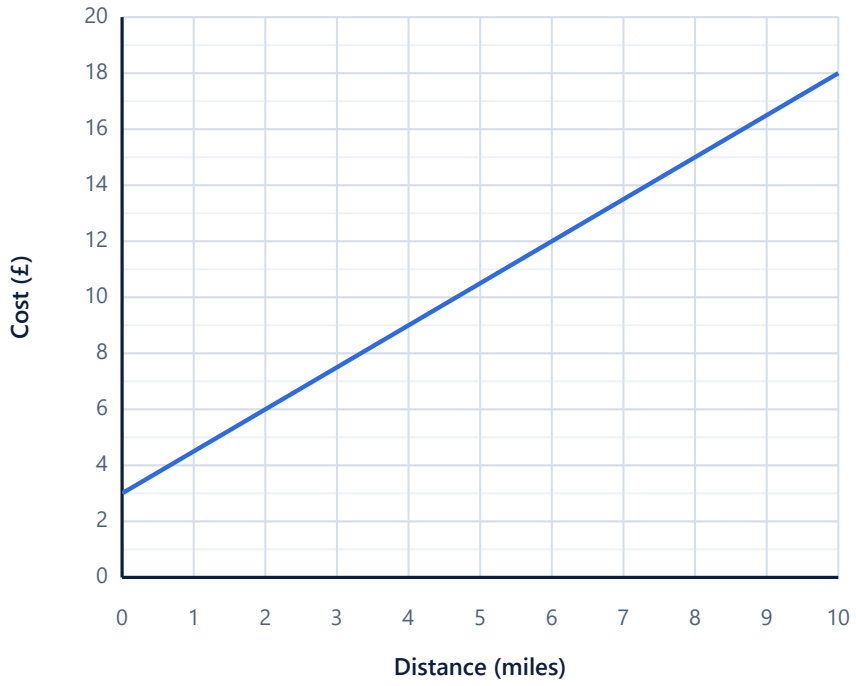
8 A taxi company shows its fares on a graph of cost against distance.

The graph is a straight line through (0, 3) and (10, 18), where cost is in pounds and distance is in miles.

a. Write down the fixed charge for any journey.

b. Work out the cost per mile.

c. Work out the fare for a journey of 6 miles.



(3 marks)

Answer _____

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9 A plumber charges a call-out fee of £40 plus £30 for each hour of work.

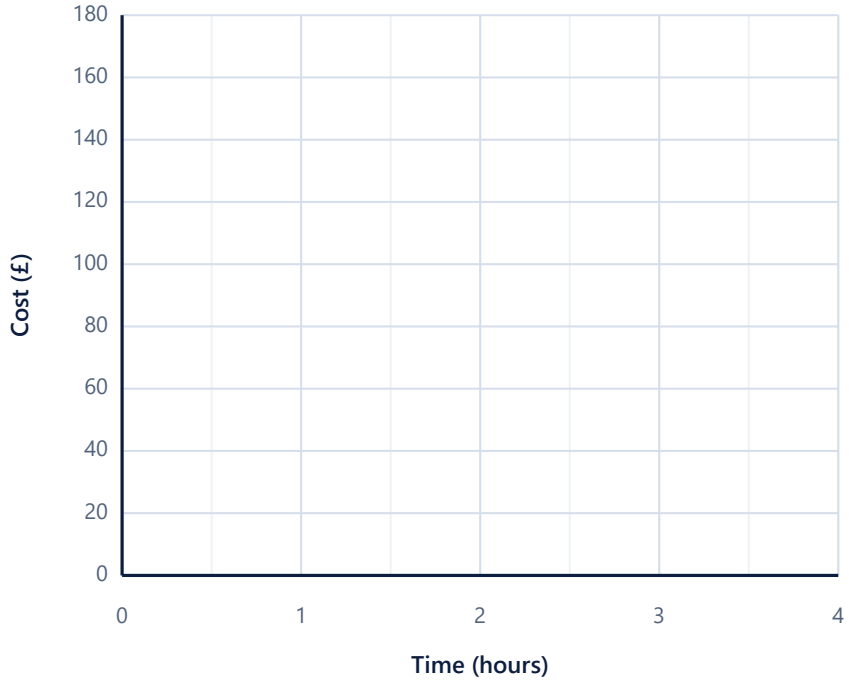
Time (hours)	0	1	2	3	4
Cost (£)	40				

a. Complete the table.

b. On the grid, draw a graph of the cost against the time.

c. A job costs £115. Use your graph to find how long the job took.

d. Is the cost directly proportional to the time? Give a reason.



(4 marks)

Answer _____

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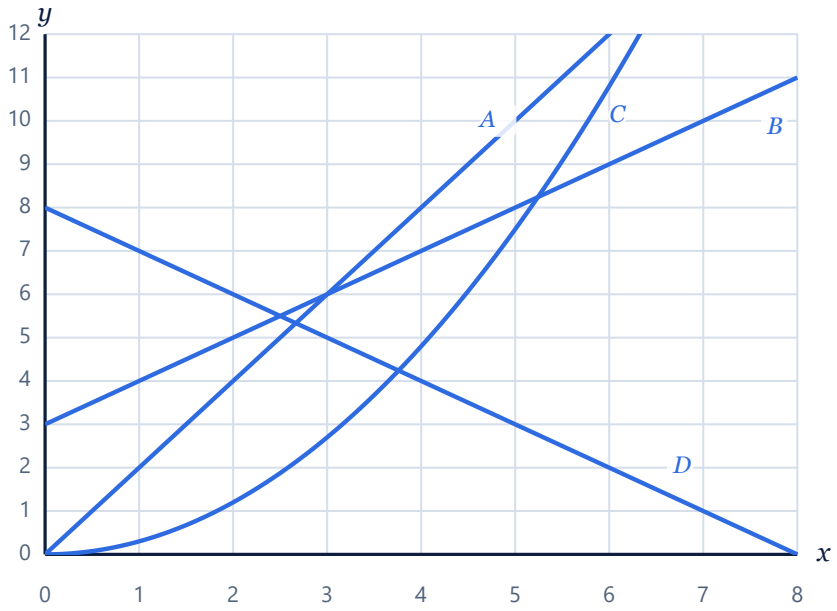
10 The grid shows four graphs, A, B, C and D.

a. Which graph shows y directly proportional to x? Give two reasons.

Petrol at a garage costs the same amount for every litre. Mr Okafor buys 10 litres for £14.50 and Mrs Hughes buys 30 litres for £43.50

b. Show that the cost is directly proportional to the number of litres.

c. Work out the cost of 24 litres.



(4 marks)

Answer _____

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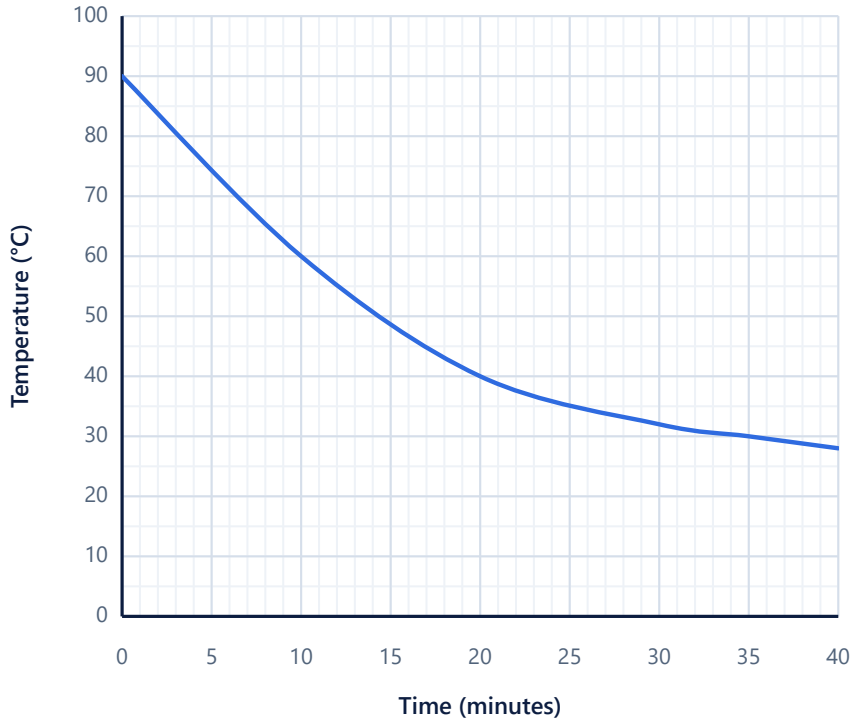
11 The graph shows the temperature of a cup of coffee as it cools.

a. Write down the temperature of the coffee at the start.

b. Find the temperature of the coffee after 20 minutes.

c. Find how long the coffee takes to cool to 30°C.



(3 marks)

Answer _____

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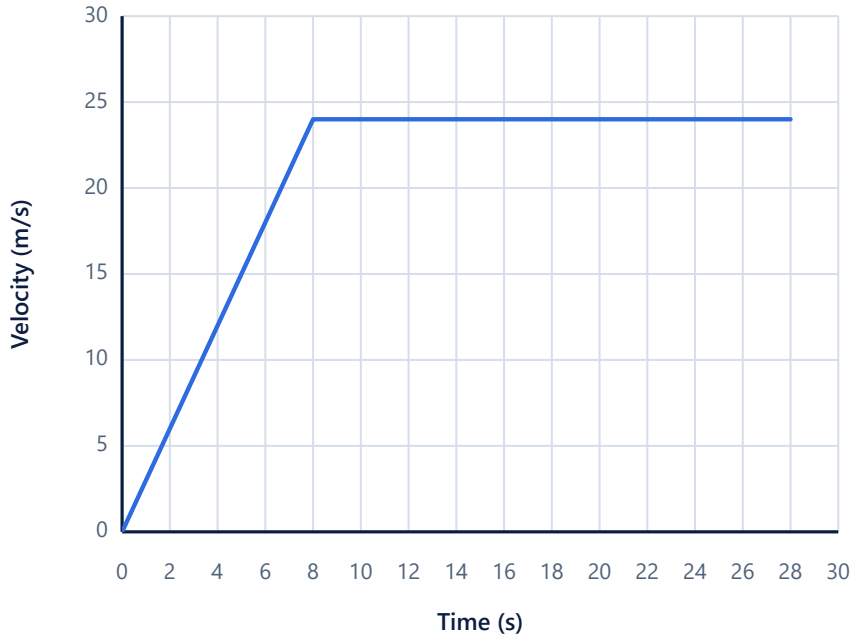
12 A car starts from rest and accelerates uniformly to a velocity of 24 m/s in 8 seconds.
It then travels at a constant velocity of 24 m/s for a further 20 seconds.

a. Work out the acceleration of the car during the first 8 seconds.

b. Work out the total distance travelled by the car in the 28 seconds.



(3 marks)

Answer _____

EXTENSION QUESTIONS

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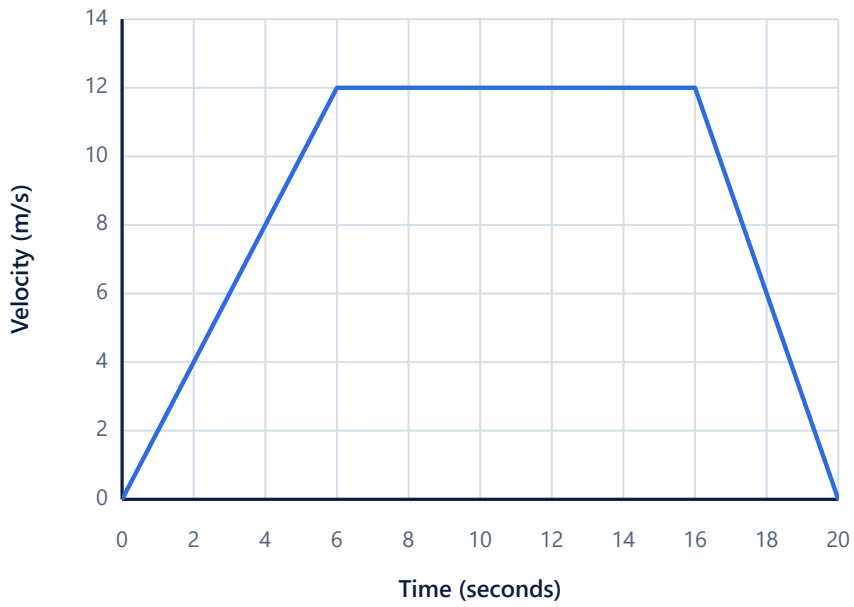
13 The velocity-time graph shows a tram moving between two stops.

a. Work out the acceleration of the tram in the first 6 seconds.

b. Work out the deceleration of the tram in the last 4 seconds.

c. Work out the total distance between the two stops.



(5 marks)

Answer _____

End of questions | Total 41 marks

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