

Speed and Density

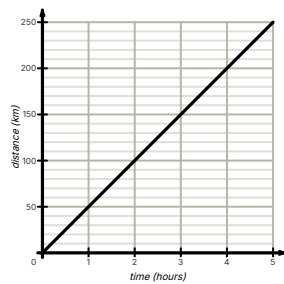
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NAME _____

DATE _____

- 1 A lorry travels along a motorway at a steady speed.

 EITHER PAPER 4 MARKS



- (a) Calculate the speed of the lorry. Give your answer in kilometres per hour.
(b) The lorry keeps going at the same speed.

Work out how long it takes the lorry to travel 350 km.

- 2 Two solids, J and K, have the same density.

 EITHER PAPER 3 MARKS

	J	K
Mass	108	
Volume	12	2
Density		

Complete the table. Include units in your answers.

3 No real values are given in this question.

 EITHER PAPER 2 MARKS

- (a) The distance of journey A is 9 times the distance of journey B , and its time is 12 times the time of journey B .

Complete the sentence. The average speed of journey A is _____ times the average speed of journey B .

- (b) For a journey, the distance is multiplied by 5 and the time is divided by 4.

What happens to the average speed? Circle your answer.

multiplied by $5/4$

multiplied by 20

multiplied by $4/5$

divided by 20

no change

-
- 4 A cuboid of copper has length 14 cm, width 4 cm and height 8 cm.
The copper has a density of 9 g/cm^3 .

 EITHER PAPER 3 MARKS

Find the mass of the cuboid in grams.

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- 5 A lorry travels 54 km at an average speed of 30 km/h.

 EITHER PAPER 3 MARKS

Calculate how long the lorry takes to travel this distance.

Give your answer in hours and minutes.

- 6 Sam and Priya are two runners in a 216-metre race.

 EITHER PAPER 3 MARKS

Sam completes the race in 29 seconds.

Priya's average speed for the race is 28.8 kilometres per hour.

Who wins the race? You must show your working.

-
- 7 Ben cycles 144 m in 48 seconds at a constant speed.

 EITHER PAPER 6 MARKS

- (a) On another day, he cycles 4.5 km, assuming the same speed as before.

Calculate how long this takes. Give your answer in minutes.

- (b) In fact, on the second day Ben cycled at a slower speed than on the first day.

Is the time he actually took less than, the same as or greater than the answer to part (a)?

Tick one box.

- ☐ less than the answer to part (a)
- ☐ the same as the answer to part (a)
- ☐ greater than the answer to part (a)
- ☐ not possible to say

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- 8 A car makes a journey of 220 miles in 4 hours 10 minutes.

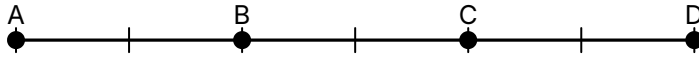
 EITHER PAPER 3 MARKS

For the first 100 miles of the journey the average speed of the car is 60 mph.

Find the average speed of the car for the rest of the journey.

- 9 A, B, C and D are junctions on a motorway, in that order.

EITHER PAPER 4 MARKS



BC = 20 miles; CD = 2 × AB. Not drawn to scale.

Callum drives from A to C. He drives for 30 minutes at an average speed of 60 miles per hour.

Work out the distance AD.

- 10 The first stage of a journey takes 2 hours at an average speed of 75 km/h. The second stage takes 3 hours at an average speed of 45 km/h.

EITHER PAPER 3 MARKS

Work out the average speed for the whole journey.

1	(a) 50 km/h (b) 7 hours	2	Density 9 g/cm ³ (both cells); Block K's missing mass is 18 g
3	(a) 3/4 (b) multiplied by 20	4	4032 g
5	1 hour 48 minutes	6	Priya wins the race - Sam takes 29 s and Priya takes 27 s.
7	(a) 25 minutes (b) greater than the answer to part (a)	8	48 mph
9	50 miles	10	57 km/h