IGCSE · Cambridge (CIE) · Maths

33 mins 10 questions

Non-Calculator Questions

Compound Measures (Speed, Density, Pressure)

Compound Measures / Speed, Density & Pressure

Easy (4 questions)	/13
Medium (3 questions)	/10
Hard (3 questions)	/10
Total Marks	**/33**

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Easy Questions

1 The mass of a solid metal cuboid is 4kg. The volume of the cuboid is 600cm^3.

Calculate the density of the metal, giving your answer in **g/cm^3**.

[Density = mass ÷ volume]

..... g/cm^3

(2 marks)

2 (a) Peter goes for a walk.
He walks 15 miles in 6 hours.

Work out Peter's average speed.
Give your answer in miles per hour.

(2 marks)

(b) 5 miles = 8 km.
Sunita says that Peter walked more than 20 km.

Is Sunita right?
You must show all your working.

(2 marks)

3 (a) Gary drove from London to Sheffield.
It took him 3 hours at an average speed of 80km/h

Lyn drove from London to Sheffield. She took 5 hours.
Assuming that Lyn

drove along the same roads as Gary
and did not take a break,

work out Lyn's average speed from London to Sheffield.

(3 marks)

(b) If Lyn did **not** drive along the same roads as Gary, explain how this could affect your answer to part (a).

(1 mark)

4

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A box is put on a table.

The face of the box in contact with the table is in the shape of a rectangle, $2\ \text{m}$ by $1.25\ \text{m}$.
The pressure on the table due to the box is $42\ \text{newtons}/\text{m}^2$

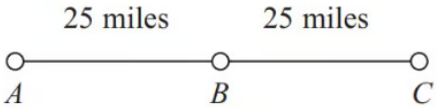
Work out the force exerted by the box on the table.

..... newtons

(3 marks)

Medium Questions

1



A, B and *C* are 3 service stations on a motorway.

AB = 25 miles
BC = 25 miles

Aysha drives along the motorway from *A* to *C*.

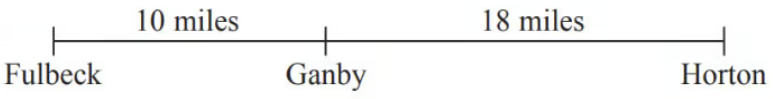
Aysha drives at an average speed of 50 mph from *A* to *B*.
She drives at an average speed of 60 mph from *B* to *C*.

Work out the difference in the time Aysha takes to drive from *A* to *B* and the time Aysha takes to drive from *B* to *C*.

Give your answer in minutes.

(3 marks)

2 The distance from Fulbeck to Ganby is 10 miles. The distance from Ganby to Horton is 18 miles.



Raksha is going to drive from Fulbeck to Ganby.
Then she will drive from Ganby to Horton.

Raksha leaves Fulbeck at 10 00
She drives from Fulbeck to Ganby at an average speed of 40 mph.

Raksha wants to get to Horton at 10 35

Work out the average speed Raksha must drive at from Ganby to Horton.

(3 marks)

3 Sean drives from Manchester to Gretna Green.

He drives at an average speed of 50 mph for the first 3 hours of his journey

He then has 150 miles to drive to get to Gretna Green.
Sean drives these 150 miles at an average speed of 30 mph.

Sean says,

"My average speed from Manchester to Gretna Green was 40 mph."

Is Sean right?
You must show how you get your answer.

(4 marks)

Hard Questions

1 A model train is 61 cm long and travels at a speed of 18 cm/s.
It takes 4 seconds for the whole of the train to cross a bridge.

Calculate the length of the bridge.

..... cm

(2 marks)

2 Carol walks 12 km at x km/h and then a further 6 km at $(x-1)$ km/h.
The total time taken is 5 hours.
Write an equation, in terms of x, and show that it simplifies to $5x^2 - 23x + 12 = 0$.

(3 marks)

3 James and Peter cycled along the same 50km route.

James took $2\frac{1}{2}$ hours to cycle the 50km.

Peter started to cycle 5 minutes after James started to cycle. Peter caught up with James when they had both cycled 15 km.

James and Peter both cycled at constant speeds.

Work out Peter's speed.

(5 marks)