Standard & Compound Units

Question Paper

Course	Edexcel IGCSE Maths
Section	4. Geometry & Trigonometry
Topic	Standard & Compound Units
Difficulty	Hard

Time allowed: 70

Score: /56

Percentage: /100

Question 1

Henry is thinking of having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter

A charge of £28.20 per year

plus

91.22p for every cubic metre of water used

1 cubie metre = 1000 litres

No Water Meter

A charge of £107 per year

Henry uses an average of 180 litres of water each day.

Use this information to determine whether or not Henry should have a water meter.

[5 marks]

Question 2

Sumeet has a pond in the shape of a prism.
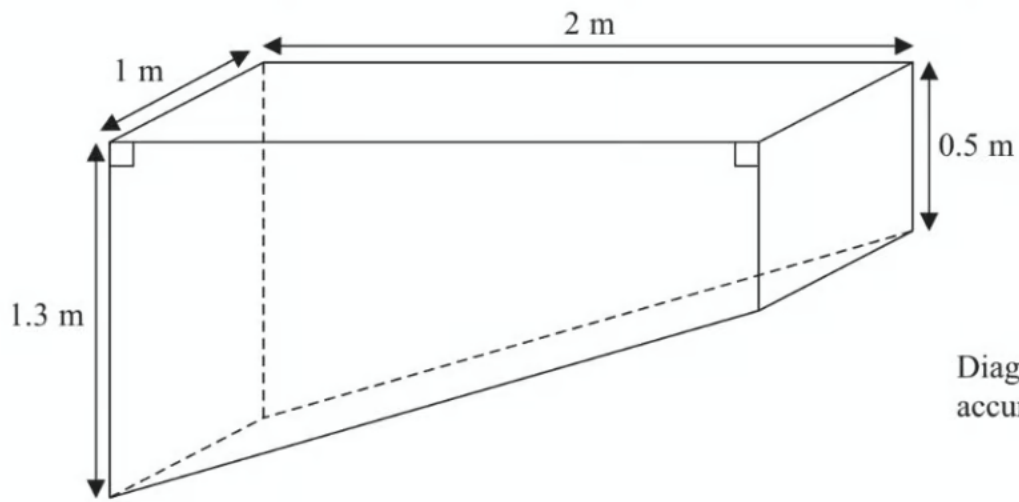

2 m

1 m

0.5 m

1.3 m

Diagram **NOT**
accurately drawn

The pond is completely full of water.
Sumeet wants to empty the pond so he can clean it.
Sumeet uses a pump to empty the pond.

The volume of water in the pond decreases at a constant rate.
The level of the water in the pond goes down by 20 cm in the first 30 minutes.
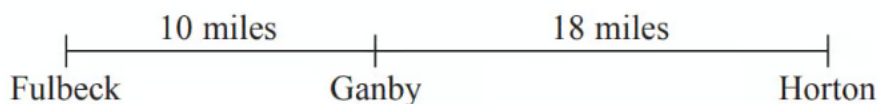
Work out how much more time Sumeet has to wait for the pump to empty the pond completely.

[6 marks]

Question 3

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

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        |———— 10 miles ————|———————— 18 miles ————————|
     Fulbeck             Ganby                      Horton
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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]

Question 4

Liquid A has a density of 0.7 g/cm^3.
Liquid B has a density of 1.6 g/cm^3.

140 g of liquid A and 128 g of liquid B are mixed to make liquid C.

Work out the density of liquid C.

[4 marks]

Question 5

Ibrar mixes 74 g of lead and 126 g of tin to make 200 g of an alloy.

Lead has a density of 11.34 g/cm^3.
Tin has a density of 7.31 g/cm^3.

Work out the density of the alloy.
Give your answer correct to 1 decimal place.

[3 marks]

Question 6a

Olly drove 56 km from Liverpool to Manchester.
He then drove 61 km from Manchester to Sheffield.

Olly's average speed from Liverpool to Manchester was 70 km/h.
Olly took 75 minutes to drive from Manchester to Sheffield.

Work out Olly's average speed for his total drive from Liverpool to Sheffield.

[4 marks]

Question 6b

Janie drove from Barnsley to York.

Janie's average speed from Barnsley to Leeds was 80 km/h.
Her average speed from Leeds to York was 60 km/h.

Janie says that the average speed from Barnsley to York can be found by working out the mean of 80 km/h and 60 km/h.

If Janie is correct, what does this tell you about the two parts of Janie's journey?

[1 mark]

Question 7

The density of apple juice is 1.05 grams per cm^3.

The density of fruit syrup is 1.4 grams per cm^3.

The density of carbonated water is 0.99 grams per cm^3.

25 cm^3 of apple juice are mixed with 15 cm^3 of fruit syrup and
280 cm^3 of carbonated water to make a drink with a volume of 320 cm^3.

Work out the density of the drink.
Give your answer correct to 2 decimal places.

[4 marks]

Question 8

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]

Question 9

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]

Question 10

Zahra mixes 150g of metal A and 150g of metal B to make 300g of an alloy.

Metal A has a density of 19.3 g/cm^3.
Metal B has a density of 8.9g/cm^3.

Work out the density of the alloy.

[4 marks]

Question 11a

In May 2019, the distance between Earth and Mars was 3.9×10^7 km.

In May 2019, a signal was sent from Earth to Mars.
Assuming that the signal sent from Earth to Mars travelled at a speed of 3×10^5 km per second,

how long did the signal take to get to Mars?

....seconds

[2 marks]

Question 11b

The speed of the signal sent from Earth to Mars in May 2019 was actually less than 3×10^5 km per second.

How will this affect your answer to part (a)?

[1 mark]

Question 12

The density of ethanol is 1.09 g/cm^3
The density of propylene is 0.97 g/cm^3

60 litres of ethanol are mixed with 128 litres of propylene to make 188 litres of antifreeze.

Work out the density of the antifreeze.
Give your answer correct to 2 decimal places.

....g/cm^3

[4 marks]

Question 13

A truck is used to transport some wood panels.
Each wood panel is a cuboid measuring 2.4 m by 1.2 m by 1.8 **cm**.
The density of each wood panel is 750 kg/m^3
.
The truck can carry 15 tonnes of these wood panels.

Calculate the maximum number of wood panels that the truck can carry.
Show how you decide.

[6 marks]