Autumn 2017 Paper 3 Q21

1 A gold bar has a mass of 12.5 kg.

The density of gold is 19.3 g/cm^3

Work out the volume of the gold bar.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 1 is 3 marks)

Summer 2018 Paper 2 Q9

2 Emily drives 186 miles in 3 hours.

(a) What is her average speed?

..... mph

(2)

Sarah drives at an average speed of 58 mph for 4 hours.

(b) How many miles does Sarah drive?

..... miles

(2)

(Total for Question 2 is 4 marks)

Autumn 2021 Paper 3 Q11

3 (a) Write 196 minutes in hours and minutes.

..... hours ..... minutes

(2)

A train travels x miles in 2 hours.

(b) Write down an expression, in terms of x, for the average speed of the train.

..... miles per hour

(1)

(Total for Question 3 is 3 marks)

Autumn 2022 Paper 1 Q14

4 Jenny drives from London to Swindon at an average speed of 54 miles per hour.

She drives for $1\frac{1}{2}$ hours.

(a) Work out the distance from London to Swindon.

..... miles

(2)

Aleksy is using a map.

The map has a scale of 1 : 25 000

On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

..... kilometres

(3)

(Total for Question 4 is 5 marks)

Summer 2022 Paper 1 Q16

5 Savio leaves his home at 07 30 to drive to work.

He drives a distance of 50 miles.

Savio thinks he drives at an average speed of 40 miles per hour.

(a) If Savio is correct, at what time will he arrive at work?

.....

(3)

In fact, Savio's average speed was greater than 40 miles per hour.

(b) How does this affect your answer to part (a)?

.....

.....

.....

(1)

(Total for Question 5 is 4 marks)

Summer 2019 Paper 1 Q9

6 Ruth left her home at 9 am and walked to the library.
She got to the library at 10 30 am.
Ruth walked at a speed of 4 mph.

(a) Work out the distance Ruth walked.

..... miles

(2)

Ruth got to the library at 10 30 am.
She stayed at the library for 50 minutes.
Then she walked home.
Ruth took $1\frac{1}{4}$ hours to walk home.

(b) At what time did Ruth get home?

.....

(2)

(Total for Question 6 is 4 marks)

Summer 2017 Paper 2 Q20

7 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.

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

..... km/h

(4)

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.

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

.....

.....

(1)

(Total for Question 7 is 5 marks)

Summer 2017 Paper 3 Q20

8 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.

..... g/cm^3

(Total for Question 8 is 4 marks)

Autumn 2018 Paper 1 Q24

9 A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

..... seconds

(3)

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

.....

.....

(1)

(Total for Question 9 is 4 marks)

Autumn 2018 Paper 3 Q24

10 Lara is a skier.

She completed a ski race in 1 minute 54 seconds.
The race was 475 m in length.

Lara assumes that her average speed is the same for each race.

(a) Using this assumption, work out how long Lara should take to complete a 700 m race.
Give your answer in minutes and seconds.

..... minutes ..... seconds

(3)

Lara's average speed actually increases the further she goes.

(b) How does this affect your answer to part (a)?

.....

.....

(1)

(Total for Question 10 is 4 marks)

Summer 2018 Paper 1 Q22

11 A cycle race across America is 3069.25 miles in length.

Juan knows his average speed for his previous races is 15.12 miles per hour.
For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

.....

(3)

Juan trains for the race.
The average speed he can cycle at increases.
It is now 16.27 miles per hour.

(b) How does this affect your answer to part (a)?

.....

.....

(1)

(Total for Question 11 is 4 marks)

Summer 2018 Paper 2 Q25

12 A force of 70 newtons acts on an area of 20 cm^2

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

The force is increased by 10 newtons.
The area is increased by 10 cm^2

Helen says,

"The pressure decreases by less than 20%"

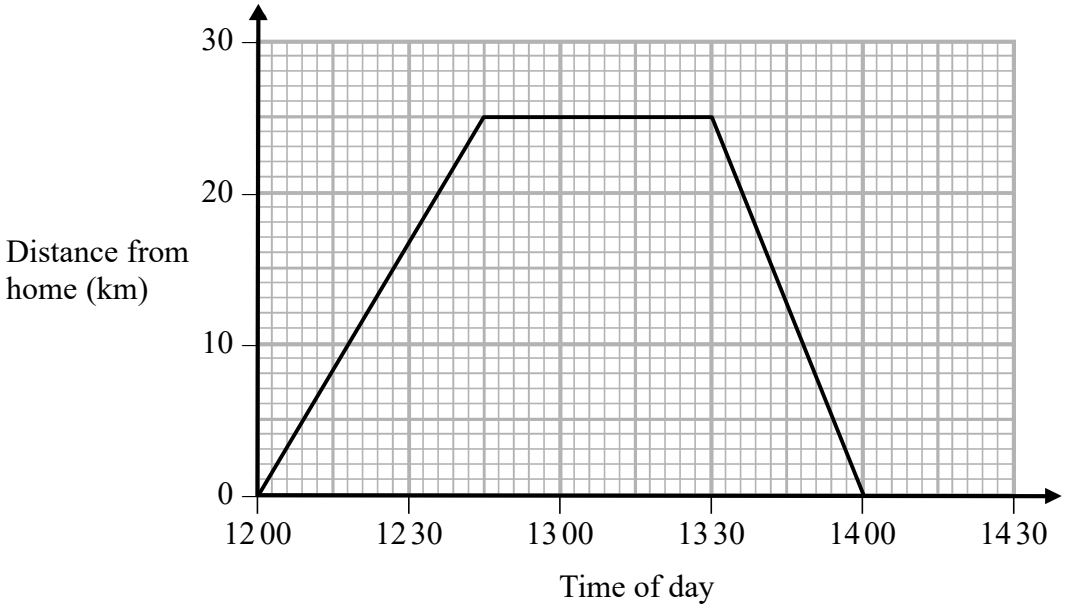
Is Helen correct?
You must show how you get your answer.

(Total for Question 12 is 3 marks)

Autumn 2019 Paper 1 Q16

13 Steve drove from his home to his friend's house.
He stayed at his friend's house and then drove home.

Here is Steve's travel graph.



(a) For how many minutes did Steve stay at his friend's house?

..... minutes

(1)

(b) What was Steve's average speed on his journey home?

..... km/h

(2)

(Total for Question 13 is 3 marks)

Summer 2020 Paper 3 Q24

14 Andy cycles a distance of 30 km at an average speed of 24 km/h.
He then runs a distance of 12 km at an average speed of 8 km/h.

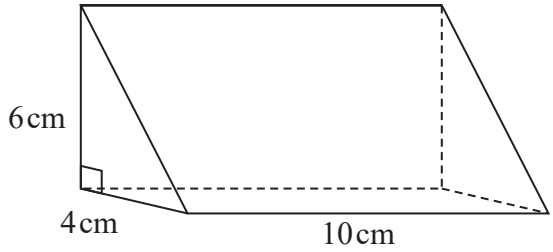
Work out the total time Andy takes.
Give your answer in hours and minutes.

..... hours ..... minutes

(Total for Question 14 is 3 marks)

Summer 2020 Paper 3 Q29

15 The diagram shows a solid triangular prism.



The prism is made from wood with a density of 0.8 g/cm³

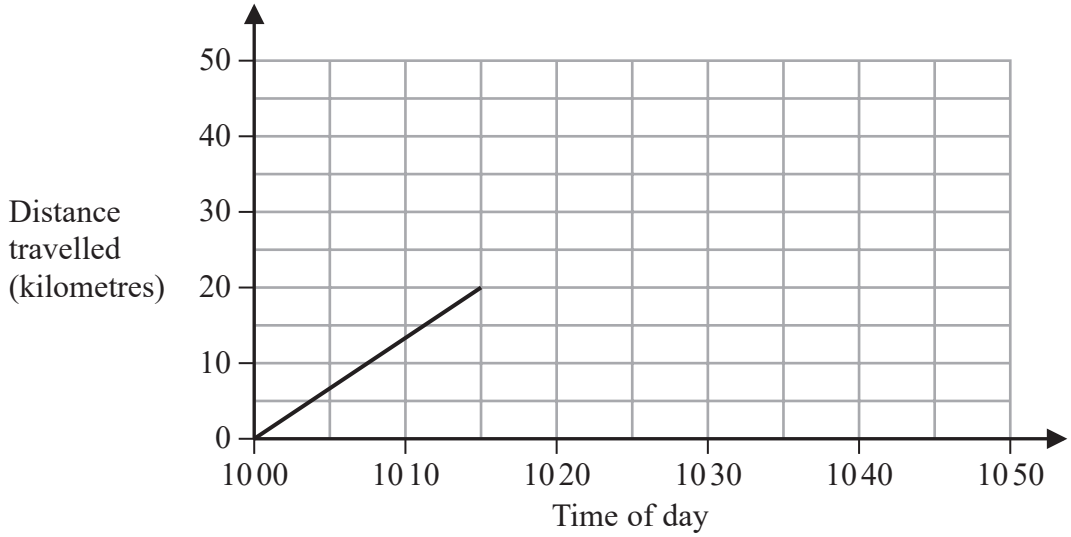
Work out the mass of this prism.

..... g

(Total for Question 15 is 3 marks)

Autumn 2021 Paper 2 Q23

16 Sam drives his car on a journey.
Here is the travel graph for the first 15 minutes of his journey.



(a) Work out Sam's speed, in km/h, for the first 15 minutes of his journey.

..... km/h

(2)

At 10 15 Sam stops for 10 minutes and then drives for 20 minutes at a speed of 75 km/h.

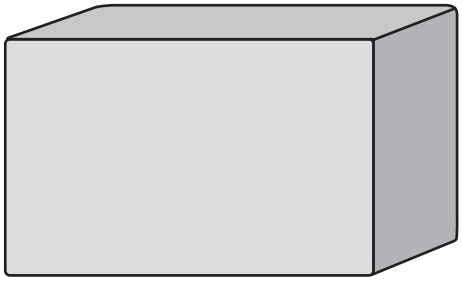
(b) On the grid, complete the travel graph for Sam's journey.

(3)

(Total for Question 16 is 5 marks)

Autumn 2022 Paper 1 Q25

17



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

A storage tank exerts a force of 10 000 newtons on the ground.

The base of the tank in contact with the ground is a 4 m by 2 m rectangle.

Work out the pressure on the ground due to the tank.

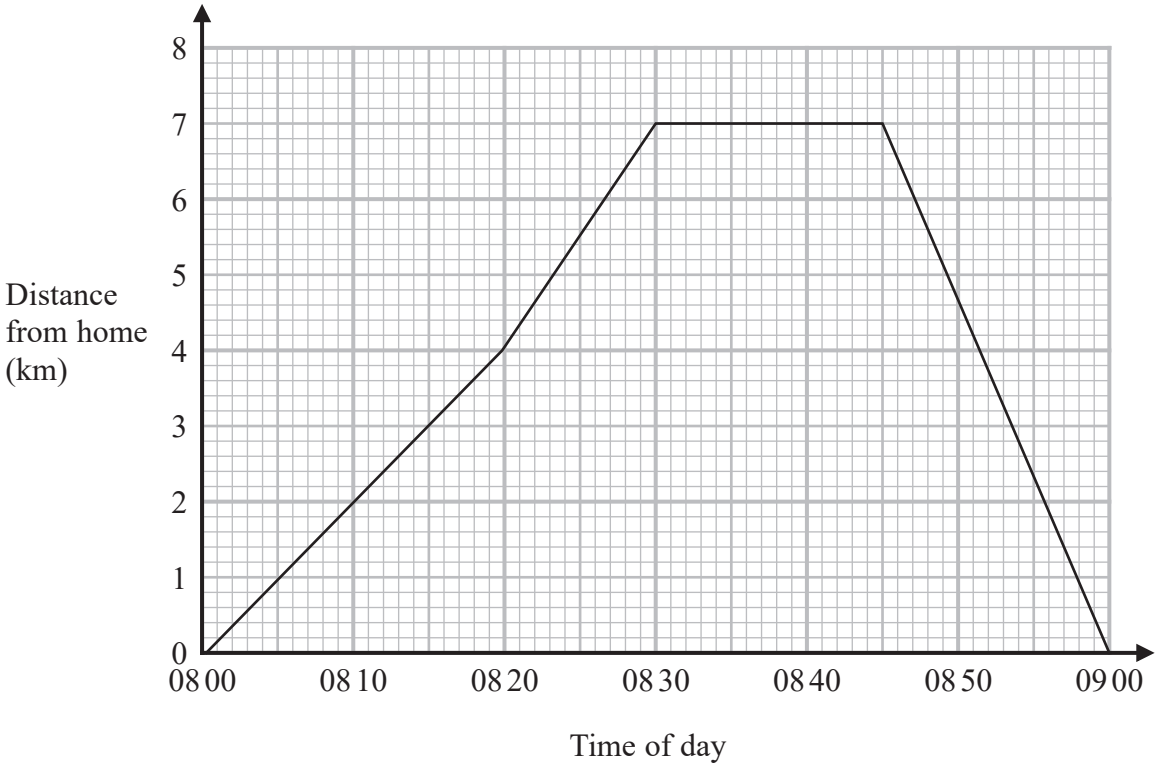
..... newtons / m^2

(Total for Question 17 is 2 marks)

Autumn 2022 Paper 3 Q19

18 Carly cycles to her friend's house.
She stays at her friend's house for a number of minutes.
Then she cycles home.

Here is the travel graph for her journey.



(a) For how many minutes did Carly stay at her friend's house?

..... minutes
(1)

(b) How far is Carly from her home at 08 50?

..... km
(1)

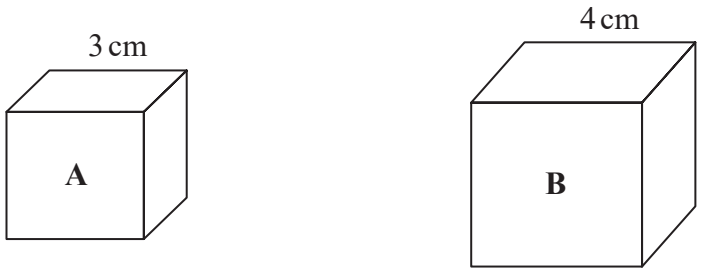
(c) Work out Carly's speed, in km/h, for the first 20 minutes of her journey.

..... km/h
(2)

(Total for Question 18 is 4 marks)

Summer 2022 Paper 1 Q29

19 Here are two cubes, **A** and **B**.



Cube **A** has a mass of 81 g.

Cube **B** has a mass of 128 g.

Work out

the density of cube **A** : the density of cube **B**

Give your answer in the form $a : b$, where a and b are integers.

.....

(Total for Question 19 is 3 marks)

Summer 2022 Paper 3 Q27

20 Jessica runs for 15 minutes at an average speed of 6 miles per hour.
She then runs for 40 minutes at an average speed of 9 miles per hour.

It takes Amy 45 minutes to run the same total distance that Jessica runs.

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

..... miles per hour

(Total for Question 20 is 4 marks)

Autumn 2019 Paper 3 Q27

21 Nimer was driving to a hotel.
He looked at his Sat Nav at 13 30

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

Work out the average speed of the car from 13 30 to 14 48
You must show all your working.

..... mph

(Total for Question 21 is 4 marks)