



GCSE

3310U20–1

THURSDAY, 7 NOVEMBER 2024 – MORNING

MATHEMATICS – NUMERACY

UNIT 2: CALCULATOR – ALLOWED

FOUNDATION TIER

**1 hour 30 minutes plus your additional
time allowance**

**A CALCULATOR WILL BE REQUIRED
FOR THIS PAPER**

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	8	
2.	7	
3.	9	
4.	8	
5.	4	
6.	4	
7.	4	
8.	8	
9.	4	
10.	4	
11.	5	
Total	65	

ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

ITEMS INCLUDED WITH QUESTION PAPER

A separate Formula List.

A separate Diagram Booklet.

Models for Question 8.

The Diagram Booklet MUST be handed in to the invigilators and sent for marking.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball – point pen, black felt tip or your usual method.

Write your name, centre number and candidate number in the spaces on the front cover.

Answer ALL questions.

Write your answers in the spaces provided. If you run out of space, use the additional page(s) at the back of this booklet, taking care to number the question(s) correctly.

Take π as $3 \cdot 14$ or use the π button on your calculator.

(Turn over)

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part – question.

In question 1, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

- 1. IN THIS QUESTION, YOU WILL BE ASSESSED ON THE QUALITY OF YOUR ORGANISATION, COMMUNICATION AND ACCURACY IN WRITING.**

Miss Michael is putting on a school show over 3 evenings:

Wednesday, Thursday, and Friday.

The total cost of putting on the show is £2370

Miss Michael sells tickets for the show. Look at the table for Question 1 in the separate Diagram Booklet.

The number of tickets sold for each evening is shown in the table.

continued on the next page . . .

(Turn over)

Question 1 continued

Each ticket costs £6

Miss Michael pays the cost of putting on the show from the ticket money.

She then gives half of the remaining money to a local charity.

How much money does Miss Michael give to the local charity?

You must show all your working.

(Turn over)

[illegible]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

2.

Hannah's School of Driving**First lesson: £45****All other lessons: £28 each lesson**

- (a) Jamie has 5 lessons with
Hannah's School of Driving.
Work out the total cost of
these lessons.**

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (b) Lynne also had lessons with Hannah's School of Driving to prepare for her driving test. The total cost of Lynne's lessons was £521**
- How many lessons did Lynne have?**
- You must show all your working.**

[3 marks]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (c) Look at the diagrams for Question 2 (c) in the separate Diagram Booklet. There are four diagrams showing a car parked by a pavement.**

During her test, the examiner asked Lynne to park the car parallel to the pavement.

**Which diagram shows a car parked parallel to a pavement?
Circle your answer.**

Diagram 1
Diagram 2
Diagram 3
Diagram 4

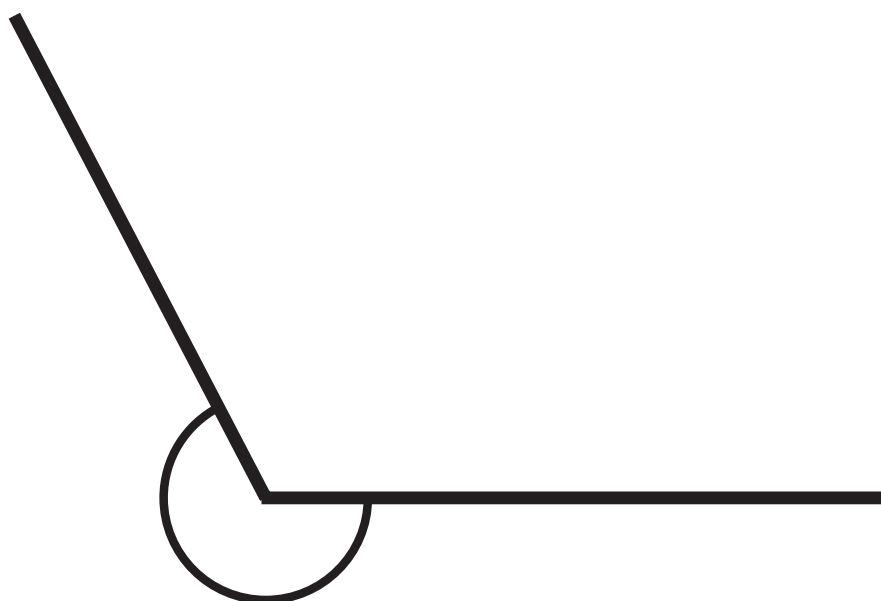
[1 mark]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (d) During the test, Lynne had to reverse around a corner. The angle of the corner is shown below.**



**What is the name for this angle?
Circle your answer.**

Acute angle
Right angle
Obtuse angle
Straight line
Reflex angle

**[1 mark]
(Turn over)**

3. Dafydd plays football for his local team.

(a) Dafydd is working on his fitness. Look at the formula for Question 3 in the separate Diagram Booklet. Dafydd uses this formula to calculate his Body Mass Index (BMI).

Football players should have a BMI between 18 and 24.9

Dafydd's mass is 79 kg and his height is 1.8 metres.

continued on the next page . . .

(Turn over)

Question 3 (a) continued

Calculate Dafydd's BMI.

[2 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

3. (b) Dafydd's first game of football was on Saturday.

The match started at 3 p.m.

- **The playing time of the match was $1\frac{1}{2}$ hours.**
- **Half time was 15 minutes long.**
- **After the game, the players completed cool-down exercises and stretching for 20 minutes.**
- **Dafydd took 25 minutes to shower and change.**
- **The journey home took 45 minutes.**

continued on the next page . . .

(Turn over)

Question 3 (b) continued

**At what time did Dafydd
arrive home?**

You must show all your working.

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

- 3. (c) The list below shows the number of goals that Dafydd's football team scored in each of their last 7 games.**

3 1 6 3 1 1 2

The football coach looks at this data.

- (i) The coach says,**

“The median number of goals scored per game is three.”

Show that the coach is not correct.

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

Question 3 (c) continued

3. (c) (ii) What is the mode of the number of goals scored per game for the team?

[1 mark]

(iii) Calculate the range of the number of goals scored per game.

[1 mark]

(Turn over)

4. Look at the diagram for Question 4 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.
The diagram shows a rectangular playground, labelled $ABCD$. Within the playground is a rectangular grass lawn, labelled $EFGH$.

In the diagram:

$$AB = 19 \cdot 4 \text{ metres}$$

$$AD = 10 \cdot 6 \text{ metres}$$

$$EF = 6 \text{ metres}$$

$$EH = 3 \cdot 5 \text{ metres}$$

James lays soft flooring over all the playground except the grass lawn.

continued on the next page . . .

(Turn over)

Question 4 continued

- 4. (a) What is the area of playground that James covers with soft flooring?
State the units of your answer.**

[4 marks]

continued on the next page . . .

(Turn over)

Question 4 continued

- 4. (b) James lays an edging strip around the outer perimeter of the playground.**

**The edging strip costs
£2.95 per metre.**

**What is the total cost of the
edging strip for the outer
perimeter of the playground?**

(Turn over)

25

[4 marks]

(Turn over)

- 5. Look at the diagram for Question 5 in the separate Diagram Booklet.**

The diagram shows a graph.

Yesterday, Jemila cycled along a straight track from home to the beach and back.

- (a) For how many minutes was Jemila 17.5 km from home?**

_____ minutes

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 continued

- 5. (b) At what time did Jemila first start cycling in the direction of home?
Circle your answer.**

13:30	14:15	15:00	15:30	16:00
--------------	--------------	--------------	--------------	--------------

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 continued

- 5. (c) By 15:30, how many kilometres in total had Jemila cycled?**

 km

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 continued

- 5. (d) Jemila was due to get home
at 16:30**

She arrived home early.

**Approximately how many minutes
early was she?**

_____ minutes

[1 mark]

(Turn over)

6. Lewis buys an annual discount card to use in a sports shop.

He pays £9.95 for the discount card.

For one year, Lewis gets 15% off anything he buys in this sports shop when he shows his discount card.

During the year, Lewis buys the following three items.

Full price BEFORE discount		
Trainers £55	Tennis racket £18	T – shirt £12

continued on the next page . . .

(Turn over)

Question 6 continued

How much did Lewis save during the year by using his discount card?

Remember that Lewis had to buy his discount card.

You must show all your working.

(Turn over)

[4 marks]

continued on the next page . . .

(Turn over)

- 7. Look at the diagram for Question 7 in the separate Diagram Booklet.**
- The diagram is a Venn diagram.**
- A music teacher asked all Year 7 students to choose which musical instruments they would like to be able to play.**
- They could choose from three instruments: guitar, drums and violin.**
- The students could choose as many of these instruments as they wished.**
- The Venn diagram shows the results.**

(a) How many students did not choose an instrument?

_____ students

[1 mark]

continued on the next page . . .

(Turn over)

Question 7 continued

**7. (b) How many students chose
all 3 instruments?**

_____ students

[1 mark]

continued on the next page . . .

(Turn over)

Question 7 continued

**7. (c) How many Year 7 students
were there?**

_____ **students**

[1 mark]

**(d) How many students chose 2 or
more instruments?**

_____ **students**

[1 mark]

(Turn over)

**8. Ask for the models for Question 8.
The models are NOT made to scale.
PressiePacs is a company that
designs and makes presentation
boxes.**

**(a) The models represent two
designs, small and large.**

**The small presentation box has
the following dimensions:**

Length = 10 cm

Width = 10 cm

Height = 10 cm

**The large presentation box has the
following dimensions:**

Length = 12•5 cm

Width = 12•5 cm

continued on the next page . . .

(Turn over)

Question 8 (a) continued

PressiePacs wants the large box to have TWICE the volume of the small box.

Calculate the height of the large box.

(Turn over)

[5 marks]

- 8. (b) Look at the formula for Question 8 (b) in the separate Diagram Booklet.**
- Customers can use the formula shown to calculate the cost of a presentation box.**

Remember: The small presentation box has the following dimensions:

Length = 10 cm

Width = 10 cm

Height = 10 cm

continued on the next page . . .

(Turn over)

Question 8 (b) continued

Calculate the cost of the SMALL presentation box.

Cost of the small presentation box is

£ _____

[3 marks]

(Turn over)

9. Look at the diagram for Question 9 in the separate Diagram Booklet.

The diagram is a pie chart.

72 000 people were asked to state their main way of travelling to work. The results are shown accurately in the pie chart.

The people who said ‘Public transport’ travel to work EITHER by bus OR by train.

For every person who travels to work by bus, there are 4 people who travel by train.

Calculate the number of people who travel to work by TRAIN.

You must show all your working.

(Turn over)

41

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[4 marks]

(Turn over)

10. Look at the diagram for Question 10 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows a plan of a floor labelled *ABC*.

In the diagram:

***AC* = 2•7 metres**

***CB* = 4•3 metres**

Angle *ACB* is a right angle

Alfred has been given the job of varnishing the floor.

One tin of varnish contains enough to cover an area of 1•6 m²

continued on the next page . . .

(Turn over)

Question 10 continued

Alfred says,

**“I only need 3 tins of varnish
to do this job.”**

Is Alfred correct?

Yes

☐

No

☐

You must show all your working.

(Turn over)

[4 marks]

11. Steffan uses 654 kWh of electricity in a three – month period.

Electricity costs £0.30 per kWh.

The standing charge for the three – month period is £54

Steffan has to pay VAT at 5% on the TOTAL cost.

Calculate Steffan's electricity bill.

You must show all your working.

(Turn over)

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(Turn over)

[5 marks]

END OF PAPER
TOTAL 65 MARKS

(Turn over)

Question Number	Additional pages, if required. Write the question number(s) in the left – hand margin.

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**The Diagram Booklet MUST
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and sent for marking.**

Diagram Booklet

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1

Evening	Number of tickets
Wednesday	256
Thursday	278
Friday	312

Question 2 (c)

Key :  Pavement

Diagram 1

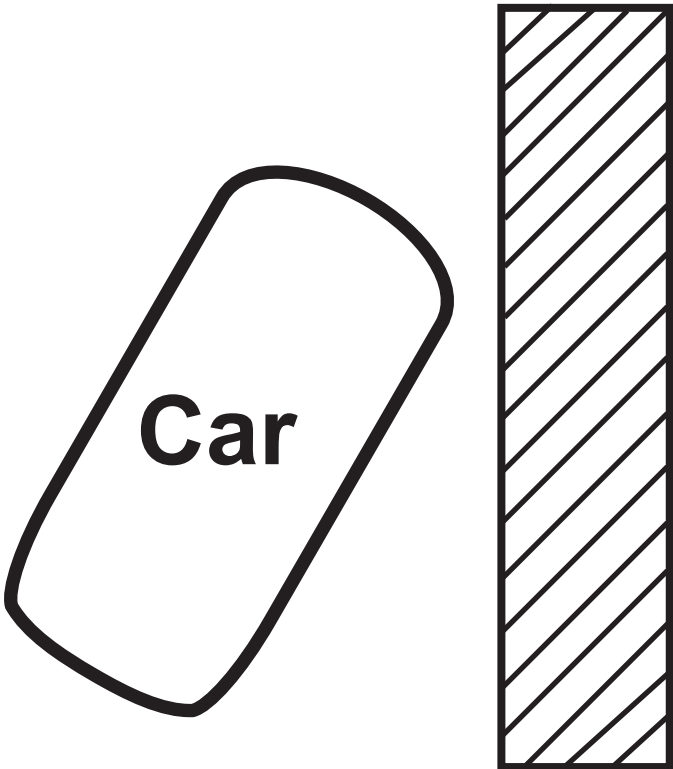


Diagram 2

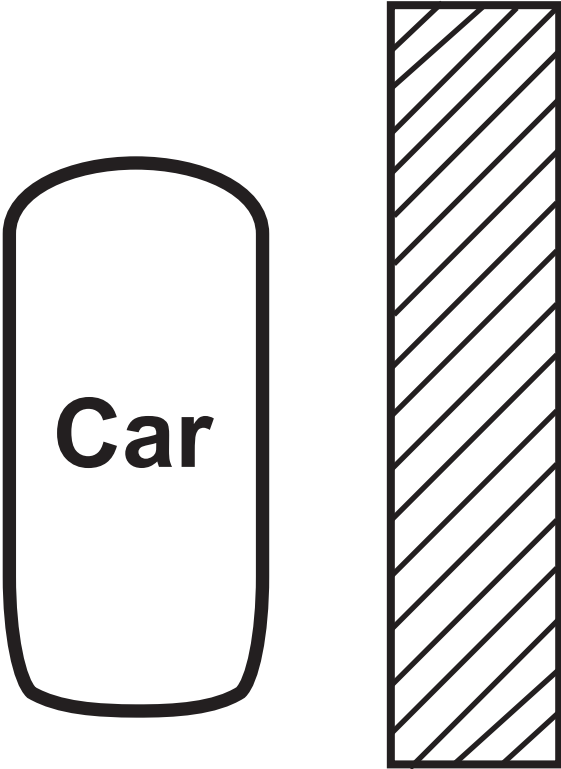


Diagram 3

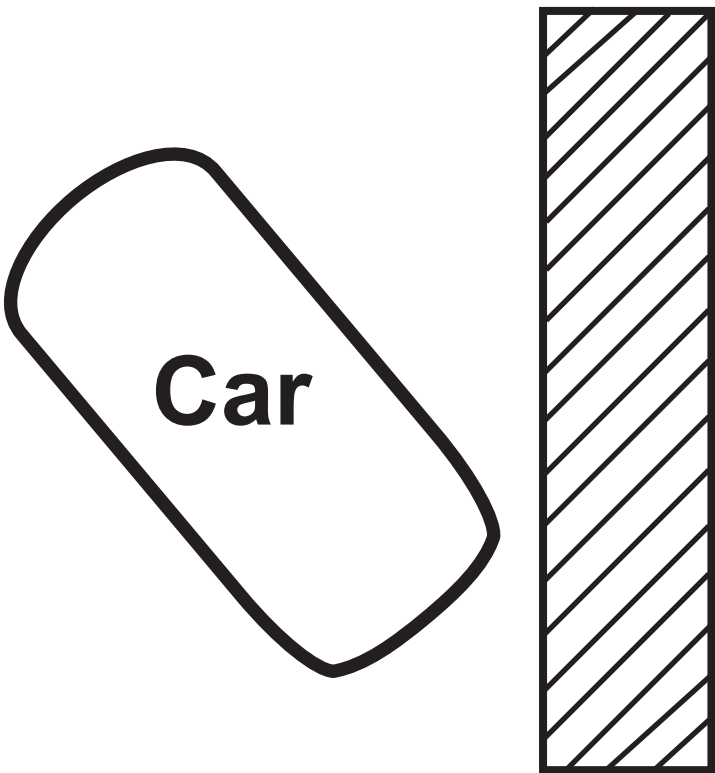
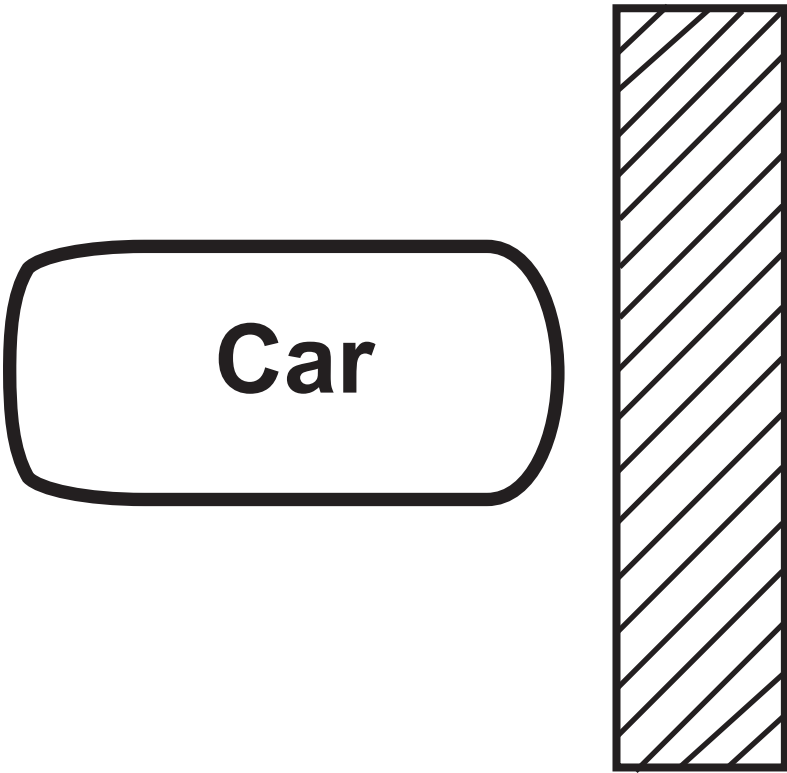


Diagram 4



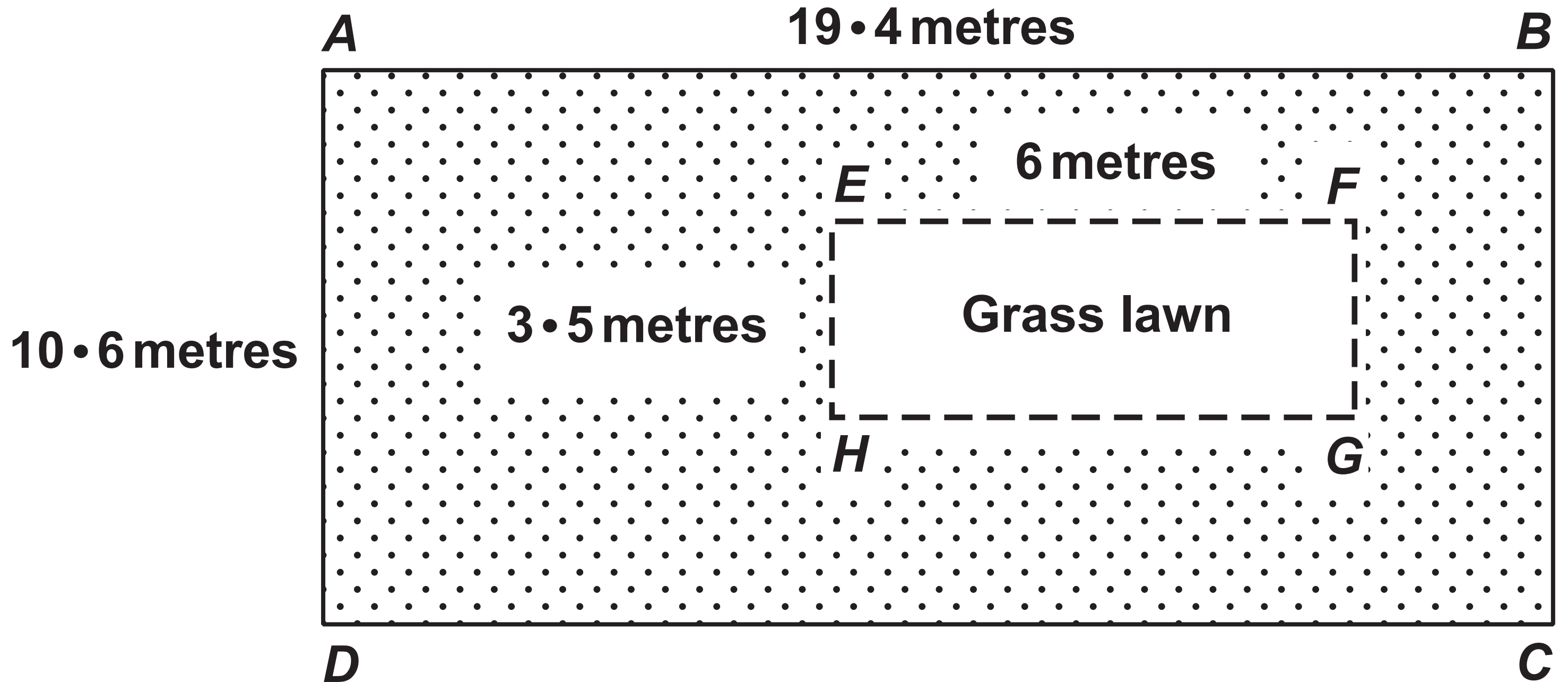
Question 3

$$\text{BMI} = \text{mass} \div \text{height}^2$$

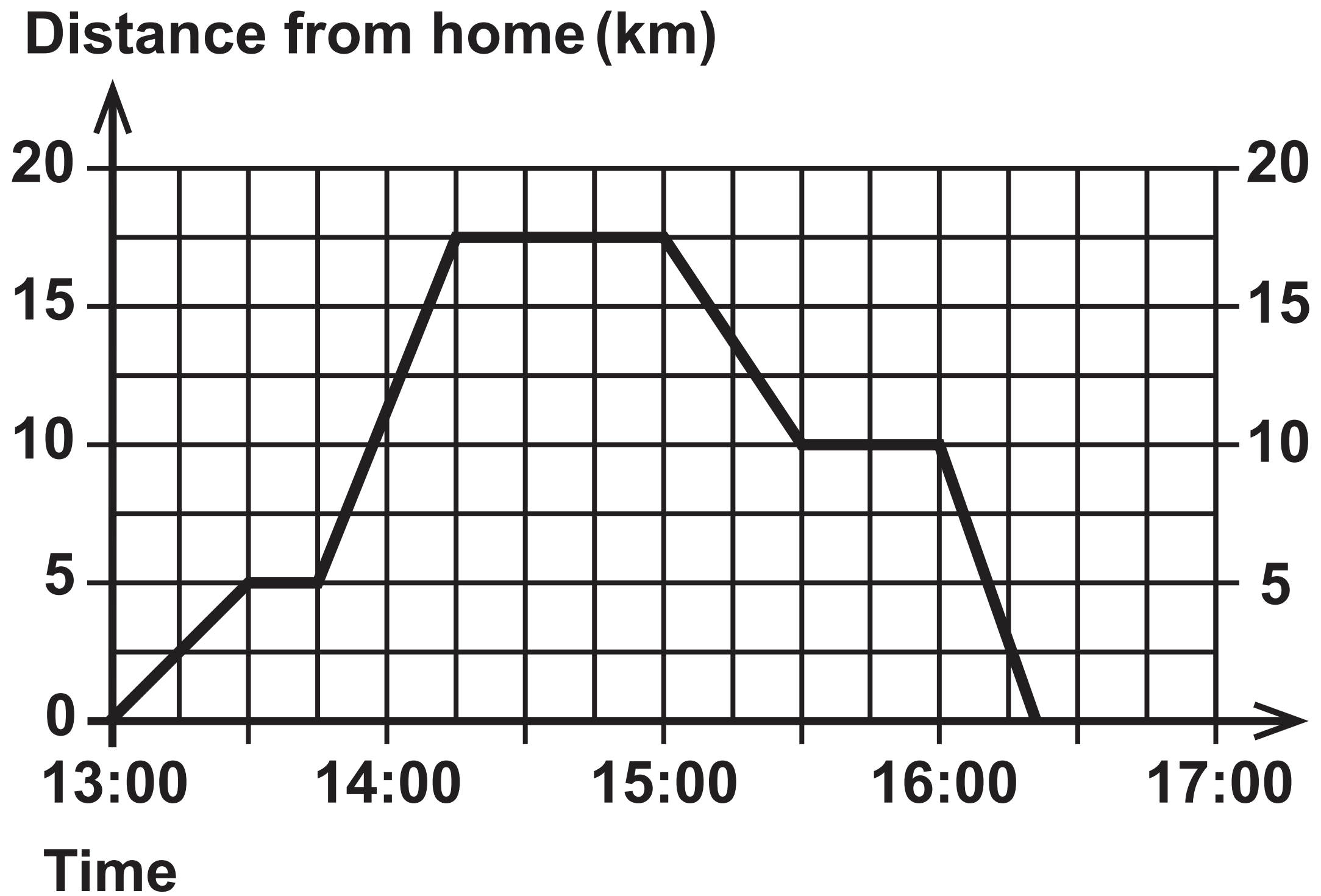
where mass is in kilograms and height is in metres

Question 4

Diagram NOT drawn to scale

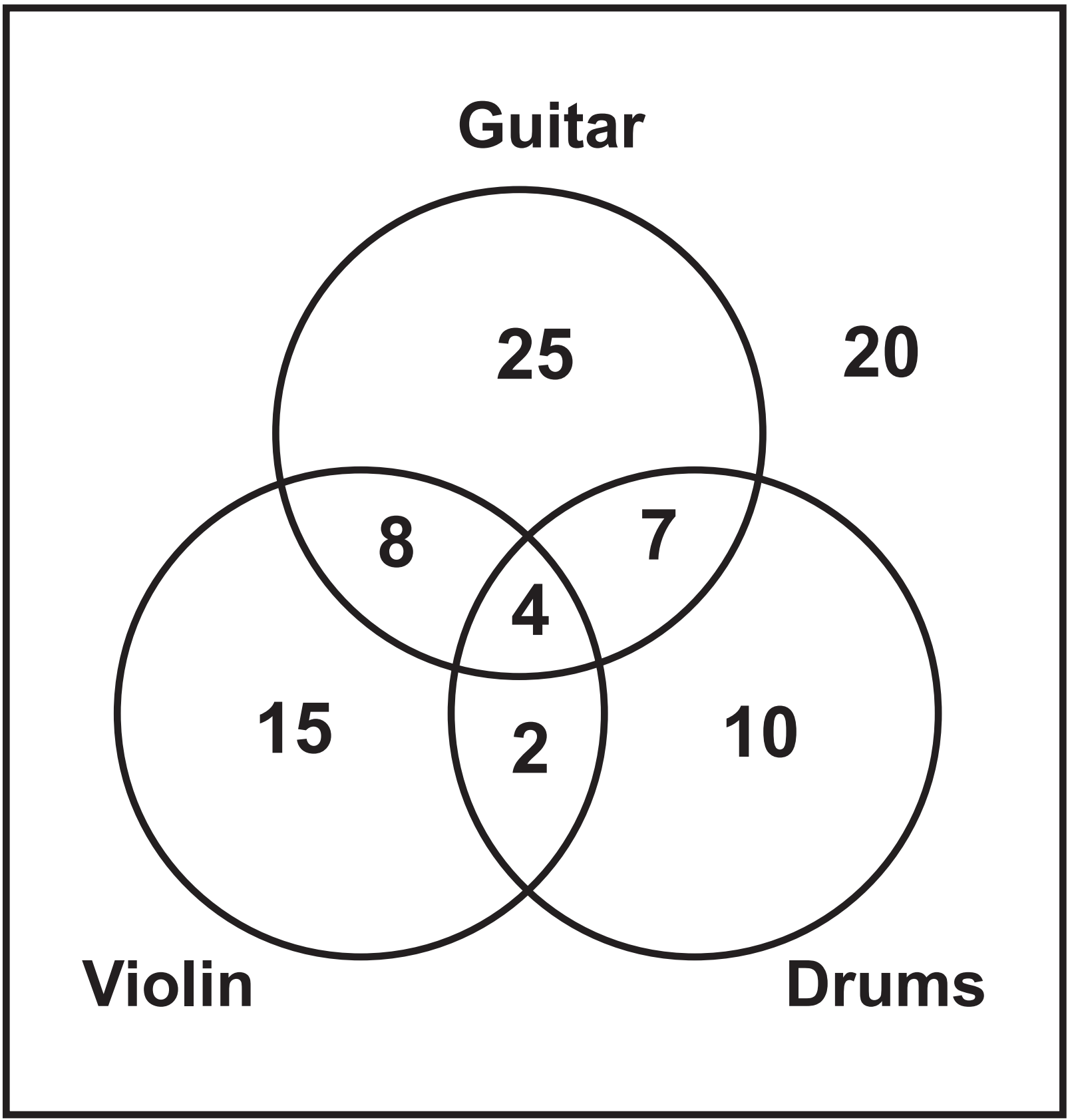


Question 5



Question 7

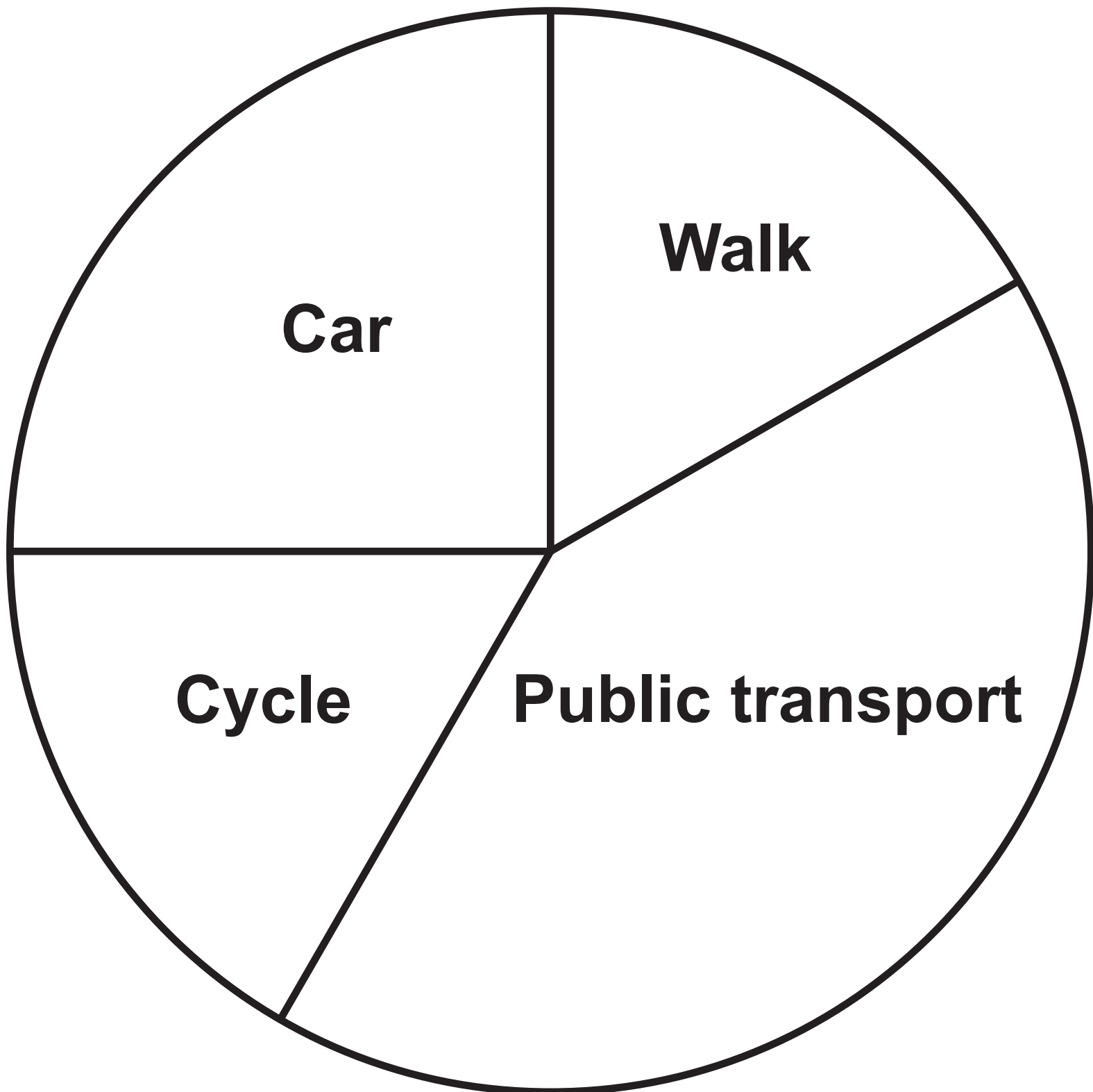
£



Question 8 (b)

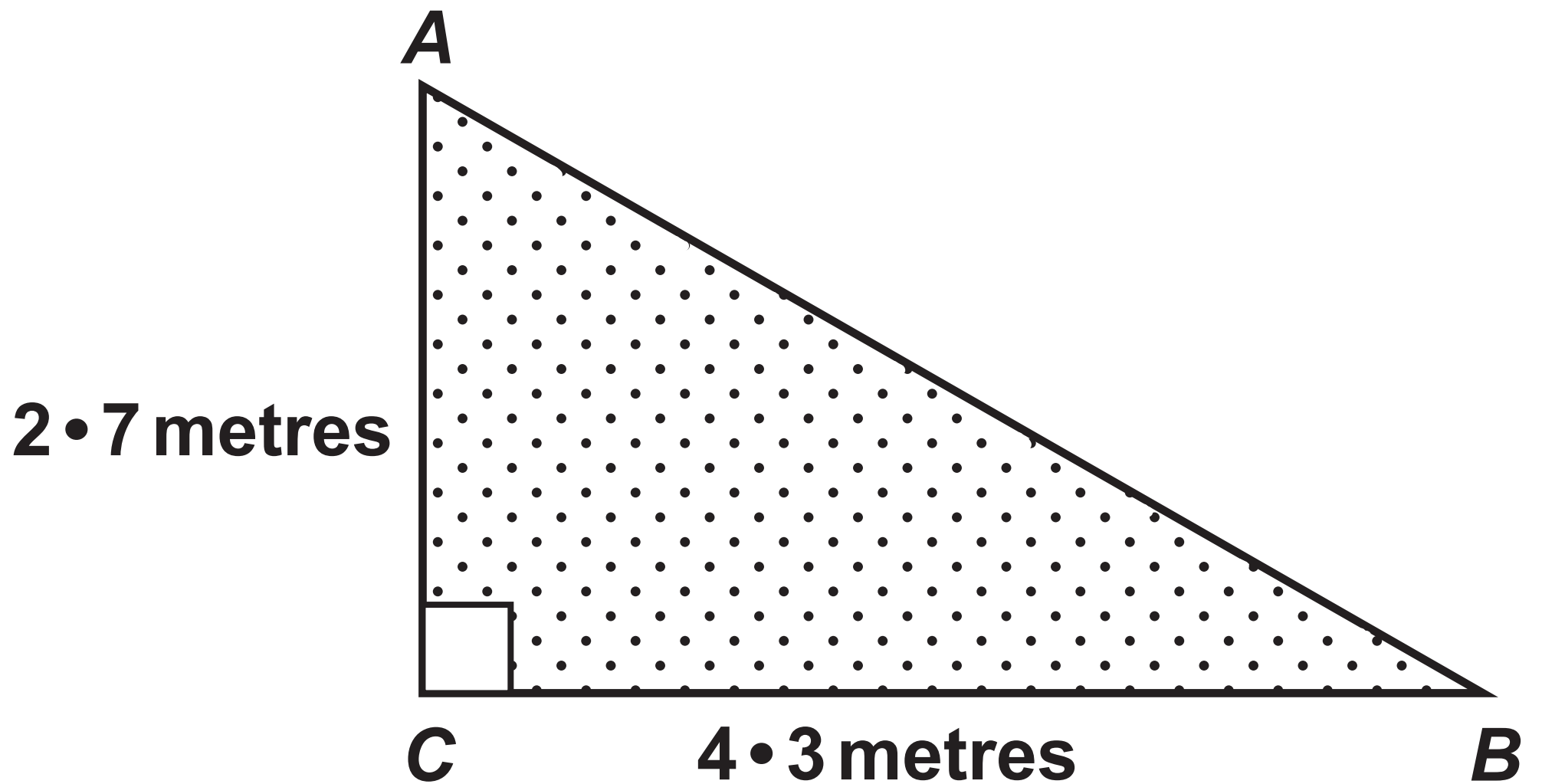
$$\text{Cost in } \pounds = \text{Surface area of the box in cm}^2 \div 240$$

Question 9



Question 10

Diagram NOT drawn to scale



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**FORMULA LIST
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You must not write on these formula pages.

Anything you write on these formula pages will gain NO credit.

Formula List – Foundation Tier

Area of trapezium $= \frac{1}{2} (a + b)h$

