



GCSE

3310U50 – 1

THURSDAY, 8 MAY 2025 – MORNING

**MATHEMATICS – NUMERACY
UNIT 1: NON – CALCULATOR
HIGHER TIER**

**1 hour 45 minutes plus your additional
time allowance**

**THE USE OF A CALCULATOR IS NOT
PERMITTED IN THIS EXAMINATION**

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	3	
2.	6	
3.	4	
4.	6	
5.	5	
6.	4	
7.	6	
8.	3	
9.	5	
10.	7	
11.	4	
12.	12	
13.	15	
Total	80	

ADDITIONAL MATERIALS

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

ITEMS INCLUDED WITH QUESTION PAPER

A separate Formula List.

A separate Diagram Booklet.

Models for Question 8, Question 13 (b) and Question 13 (c).

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

(Turn over)

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 in the spaces provided.

If you run out of space, use the additional page(s) at the back of this booklet.

Question numbers must be given for all work written on the additional page(s).

Take π as $3 \cdot 14$

(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 2, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Look at the diagram for Question 1 in the separate Diagram Booklet.

The diagram IS drawn to scale.

The scale drawing shows a plan of a stage in a theatre.

The stage measures 20 metres by 12 metres.

The scale used is

1 cm REPRESENTS 1 metre.

An 'X' will be marked on the stage where a microphone is to be placed.

continued on the next page . . .

(Turn over)

Question 1 continued

The 'X' must be:

- **equidistant from the front of the stage and the right wing**
- **4 metres from the front of the stage.**

Draw suitable lines on the plan and show where the 'X' will be marked.

[3 marks]

(Turn over)

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

Nadya borrowed £500 from a loan company.

The loan company told her that she would pay more than 100% interest.

Nadya paid off the loan and interest completely by paying back £55 each month for 2 years.

continued on the next page . . .

(Turn over)

Question 2 continued

What percentage interest did Nadya actually pay?

You must show all your working.

(Turn over)

[4 marks + 2 marks OCW]

3. Look at the table for Question 3 in the separate Diagram Booklet.

Last year, Jade's total income before tax was €20 000

The table shows the tax bands, taxable income and tax rates last year.

Calculate Jade's TOTAL tax bill last year.

You must show all your working.

(Turn over)

[4 marks]

(Turn over)

4. When Hassan has a bath, he fills it with 30 gallons of water.

When Hassan has a shower, water flows from his shower at a rate of 0.2 litres per second.

Hassan uses the same amount of water whether he has a bath or a shower.

How long does he spend in the shower?

Give your answer in minutes and seconds.

You must show all your working.

Use: 1 gallon $\approx$ 4.5 litres
--

[illegible]

(Turn over)

Time in the shower

is _____ minutes _____ seconds
[6 marks]

(Turn over)

5. Dafydd and Mia both play musical instruments.

(a) Dafydd and his mum share the cost of buying a saxophone in the ratio 3 : 7

His mum's share of the cost is £280

How much will this saxophone cost to buy?

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 5 continued

- 5. (b) Mia takes her violin to be valued every year.**

This year, it is valued at £660

The violin has increased in value by 20% from last year.

Calculate how much Mia's violin was worth last year.

(Turn over)

18

[2 marks]

(Turn over)

6. Kendrick Nurseries grow tomatoes to sell to supermarkets.

They grow three varieties: Sungold, Roma and San Marzano.

The head gardener recorded the mass of tomatoes from each of 500 plants for each of the three varieties.

Look at the diagram for Question 6 in the separate Diagram Booklet.

The diagram shows three box – and – whisker diagrams. The box – and – whisker diagrams show the masses of the tomatoes for Sungold, Roma and San Marzano.

continued on the next page . . .

(Turn over)

Question 6 continued

- 6. (a) What is the range of the masses
for the Sungold tomato plants?**

Range is _____ kg

[1 mark]

continued on the next page . . .

(Turn over)

Question 6 continued

**6. (b) How many of the Roma plants
produced 25 kg or less of
tomatoes?**

_____ plants

[2 marks]

continued on the next page . . .

(Turn over)

Question 6 continued

- 6. (c) The box – and – whisker diagrams show that two of the varieties have the same lower quartile mass.**

Which one of these two varieties produces tomatoes that seem to have a more consistent mass?

Variety of tomato is _____

continued on the next page . . .

(Turn over)

Question 6 (c) continued

**Which one of these measures
could you use to help you decide?
Circle your answer.**

Mode
Median
Mean
Interquartile range
Greatest mass

[1 mark]

(Turn over)

7. Look at the diagram for Question 7 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram represents Davina's garden labelled *ABCD*.

In the diagram:

***AB* = 600 cm**

***AD* = 400 cm**

***DC* = 900 cm**

***AB* is parallel to *DC*.**

Angle *ADC* is a right angle.

continued on the next page . . .

(Turn over)

Question 7 continued

- 7. (a) Davina wants to put a 5 cm layer of topsoil on her garden.**

What volume of topsoil will Davina need for her garden?

Give your answer in cm^3 in STANDARD FORM.

(Turn over)

[5 marks]

continued on the next page . . .

(Turn over)

Question 7 continued

- 7. (b) Topsoil is sold in $1.5 \times 10^4 \text{ cm}^3$ bags.**

Calculate the number of bags of topsoil that Davina needs to buy. You must show all your working.

[1 mark]

(Turn over)

- 8. A solid triangular prism is placed along the bottom of a door to stop draughts.**

Ask for the model for Question 8.

The model is NOT made to scale.

The model represents the solid triangular prism with the end face labelled *ABC*.

Look at the diagram for Question 8 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows the end face of the prism.

continued on the next page . . .

(Turn over)

Question 8 continued

In the diagram:

$$AB = 4 \text{ cm}$$

$$BC = 3 \text{ cm}$$

$$AC = 5 \text{ cm}$$

Angle ABC is a right angle.

The length of the triangular prism is equal to the width of the door.

The volume of the triangular prism is 546 cm^3

Calculate the width of the door.

You must show all your working.

(Turn over)

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.

[3 marks]

(Turn over)

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

The diagram is a cumulative frequency diagram.

Aled is a gardener.

In April, he records how many minutes he spends working in each of his customers' gardens.

He draws this cumulative frequency diagram to display the findings.

(a) Find the median time that Aled spends working in he garden for these customers.

Median is _____ minutes

[1 mark]

continued on the next page . . . (Turn over)

Question 9 continued

- 9. (b) For how many customers did Aled spend between 10 and 30 minutes working in their garden?**

_____ customers

[1 mark]

continued on the next page . . .

(Turn over)

Question 9 continued

- 9. (c) For 70% of his customers, Aled thinks that he spends less than 40 minutes working in their garden.**

Is Aled correct?

You must show all your working.

Aled is correct

☐

Aled is not correct

☐

(Turn over)

35

[3 marks]

(Turn over)

10. (a) In 2020, red squirrels were introduced into a woodland in Wales.

The following formula is used to calculate how many red squirrels there are in the woodland,

$$R = 200 \times 1.1^t$$

where:

- R is the number of red squirrels in the woodland
- t is the number of years after the red squirrels were introduced.

continued on the next page . . .

(Turn over)

Question 10 (a) continued

10. (a) (i) How many red squirrels were introduced in 2020?

[1 mark]

continued on the next page . . .

(Turn over)

Question 10 (a) continued

10. (a) (ii) Calculate the PERCENTAGE increase in the number of red squirrels 2 years after they were introduced.

[3 marks]

continued on the next page . . .

(Turn over)

Question 10 continued

10. (b) Workers are making a new area of woodland.

4 workers planted 15 000 trees in 3 days.

How many workers will be needed to plant another 17 500 trees in 2 days?

You can assume that all workers plant trees at the same rate.

(Turn over)

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.

(Turn over)

42

[3 marks]

(Turn over)

11. Harri and Alys are learning about diluting liquids.

They mix 300 ml of water with 200 ml of acetic acid to make 500 ml of diluted acetic acid.

Water has a density of 1 g/ml.

Acetic acid has a density of 1.05 g/ml.

Calculate the density of the diluted acetic acid that Harri and Alys have made.

Give your answer as a decimal.

(Turn over)

[illegible]

(Turn over)

Density of the diluted acetic acid

is _____ g / ml

[4 marks]

(Turn over)

12. Afan is an online company that employs 400 staff in four different job types.

(a) Look at the table for Question 12 (a) in the separate Diagram Booklet.

The table shows the total number of staff in each job type.

Afan wants to carry out a survey of its staff to find out about staff well – being.

The survey will be given to a sample of 100 staff.

continued on the next page . . .

(Turn over)

Question 12 (a) continued

**Use stratified sampling to
calculate the number of staff
from each job type who should be
asked to complete the survey.
You must show all your working.**

(Turn over)

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.

(Turn over)

Job type	Number in sample
Management	
Office	
Warehouse	
Delivery	

[4 marks]

continued on the next page . . .

(Turn over)

Question 12 continued

- 12. (b) The youngest member of staff is aged 20, and the oldest member of staff is aged 69**

Look at the diagram for

Question 12 (b) in the separate

Diagram Booklet. The diagram is a

histogram. The histogram shows

the ages of some of Afan's staff.

This histogram below shows the

ages of some of Afan's staff.

- (i) How many staff does the histogram currently show?**

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

Question 12 (b) continued

12. (b) (ii) Afan employs a total of 400 staff.

The bar for the group $45 \leq \text{age} < 55$ is missing from the histogram.

Complete the histogram.

[2 marks]

continued on the next page . . .

(Turn over)

Question 12 (b) continued

12. (b) (iii) Use the histogram to calculate an estimate of the lower quartile of the ages of Afan's staff.

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 12 (b) continued

**12. (b) (iv) Sunila is a member of
Afan's staff.**

Sunila says,

**“I am 27 years old. I think
I'm in the lowest 25% of
the ages of Afan's staff.”**

**Is Sunila's age in the
lowest 25%?**

Yes

☐

No

☐

Can't tell

☐

continued on the next page . . .

(Turn over)

Question 12 (b) (iv) continued

Give a reason for your answer.

[1 mark]

(Turn over)

13. Pizza – Rea is a company that makes outdoor pizza ovens.

(a) Look at the diagrams for Question 13 (a) in the separate Diagram Booklet. There are three diagrams. Diagram 1 and Diagram 2 are NOT drawn to scale.

Diagram 1 shows the design for the metal front plate of Pizza – Rea’s latest pizza oven.

The front of the oven is symmetrical.

It has a rectangular hole, through which pizzas are placed in the oven.

continued on the next page . . .

(Turn over)

Question 13 (a) continued

Pizza – Rea wants to calculate an estimate of the area of the metal used for this front plate.

Diagram 2 is a sketch of the front plate of the pizza oven drawn on coordinate axes.

Diagram 3 represents an accurate drawing, on graph paper, of ONE of the symmetrical halves of the front plate.

continued on the next page . . .

(Turn over)

Question 13 (a) continued

**Using 5 strips of equal width,
calculate an estimate of the area of
metal shown in the graph.**

**Hence calculate the total area of
metal in the COMPLETE front
plate.**

(Turn over)

60

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.

[5 marks]

continued on the next page . . .

(Turn over)

Question 13 continued

13. (b) Ask for the model for Question 13 (b). The model is NOT made to scale. The model represents the inner part of a pizza oven.

Pizzas are cooked in the inner part of the pizza oven.

The inner part is in the shape of a half – cylinder.

A hole is needed in the top of the oven to let hot air out.

continued on the next page . . .

(Turn over)

Question 13 (b) continued

Look at the diagrams for Question 13 (b) in the separate Diagram Booklet. The diagrams are NOT drawn to scale.

Diagram 1 shows a side view of the oven.

The diagram shows the relative positions of points *A*, *B* and *C* on the model.

Diagram 2 shows a front view of the oven.

The diagram shows the relative positions of points *B* and *C* at the front of the oven.

continued on the next page . . .

(Turn over)

Question 13 (b) continued

The straight – line distance from the centre of the hole at the top of the oven to either of the front bottom corners of the oven should be less than 50 cm.

The line, *AB*, represents one of these straight – line distances.

Show that the distance from *A* to *B* is less than 50 cm.

(Turn over)

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.

[4 marks]

continued on the next page . . .

(Turn over)

Question 13 continued

13. (c) Pizza – Rea supplies spiked legs for the pizza oven.

Ask for the model for

Question 13 (c). The model is NOT made to scale. The model represents a spiked leg for the pizza oven.

Each leg is made by connecting a cuboid to a pyramid.

The perpendicular height of the pyramid is 42 cm.

continued on the next page . . .

(Turn over)

Question 13 (c) continued

Look at the diagram for Question 13 (c) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows the side view of the spiked leg.

In the diagram:

$$AB = \frac{x}{2}$$

$$AD = 16 \text{ cm}$$

The perpendicular height of the pyramid = 42 cm.

continued on the next page . . .

(Turn over)

Question 13 (c) continued

The volume of each leg is 750 cm^3

Calculate the length x .

Give your answer in the form

$a\sqrt{b}$, where a and b are integers

and b is as small as possible.

(Turn over)

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.

[6 marks]

END OF PAPER
TOTAL 80 MARKS

(Turn over)

[illegible]

(Turn over)

[illegible]

(Turn over)

[illegible]



GCSE

3310U50 – 1

THURSDAY, 8 MAY 2025 – MORNING

**MATHEMATICS – NUMERACY
UNIT 1: NON – CALCULATOR
HIGHER TIER**

Diagram Booklet

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

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1

Scale: 1 cm represents 1 metre

Front

Left wing

Right wing

Back

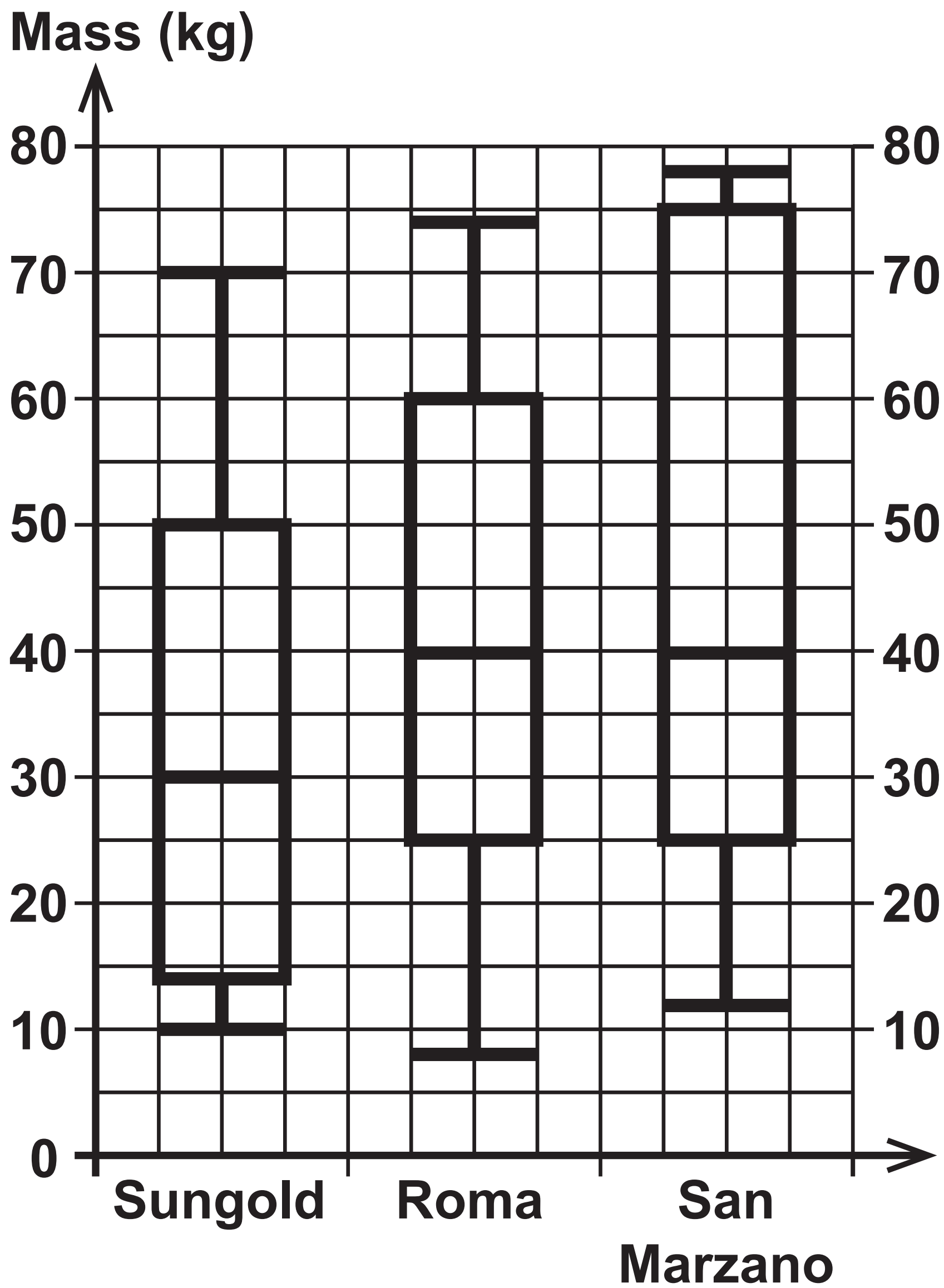


Question 3

Table

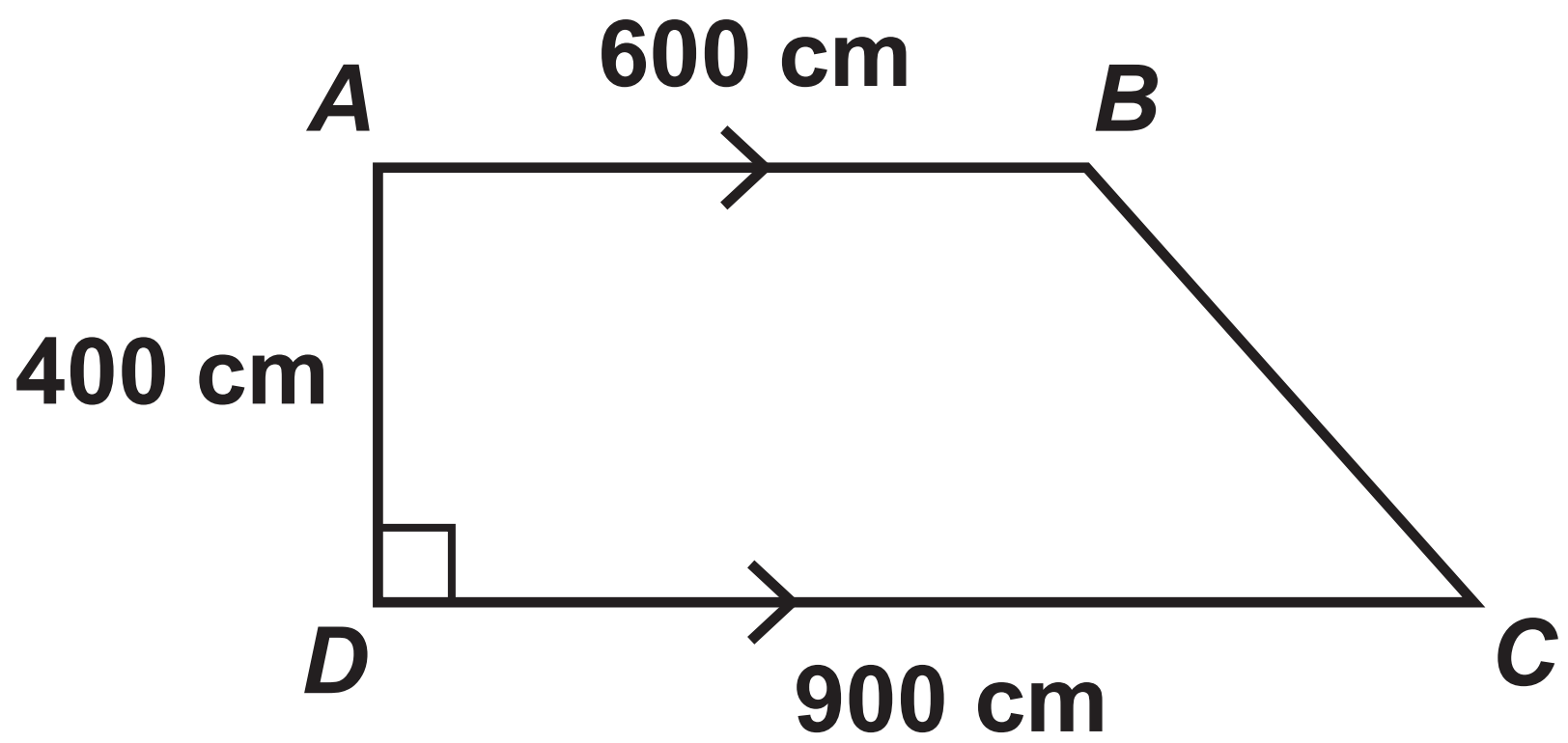
Band	Taxable income	Tax rate
Personal allowance	Up to €10 000	0%
Basic rate	€10 000 to €18 000	10%
Higher rate	over €18 000	20%

Question 6



Question 7

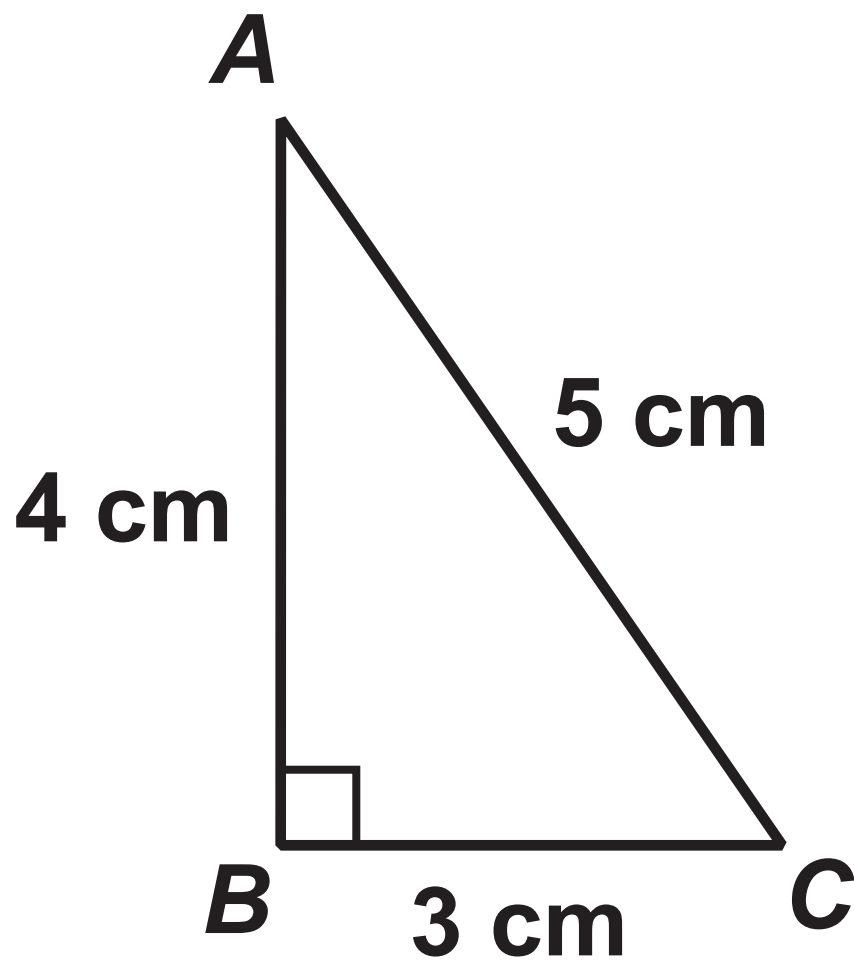
Diagram NOT drawn to scale



Question 8

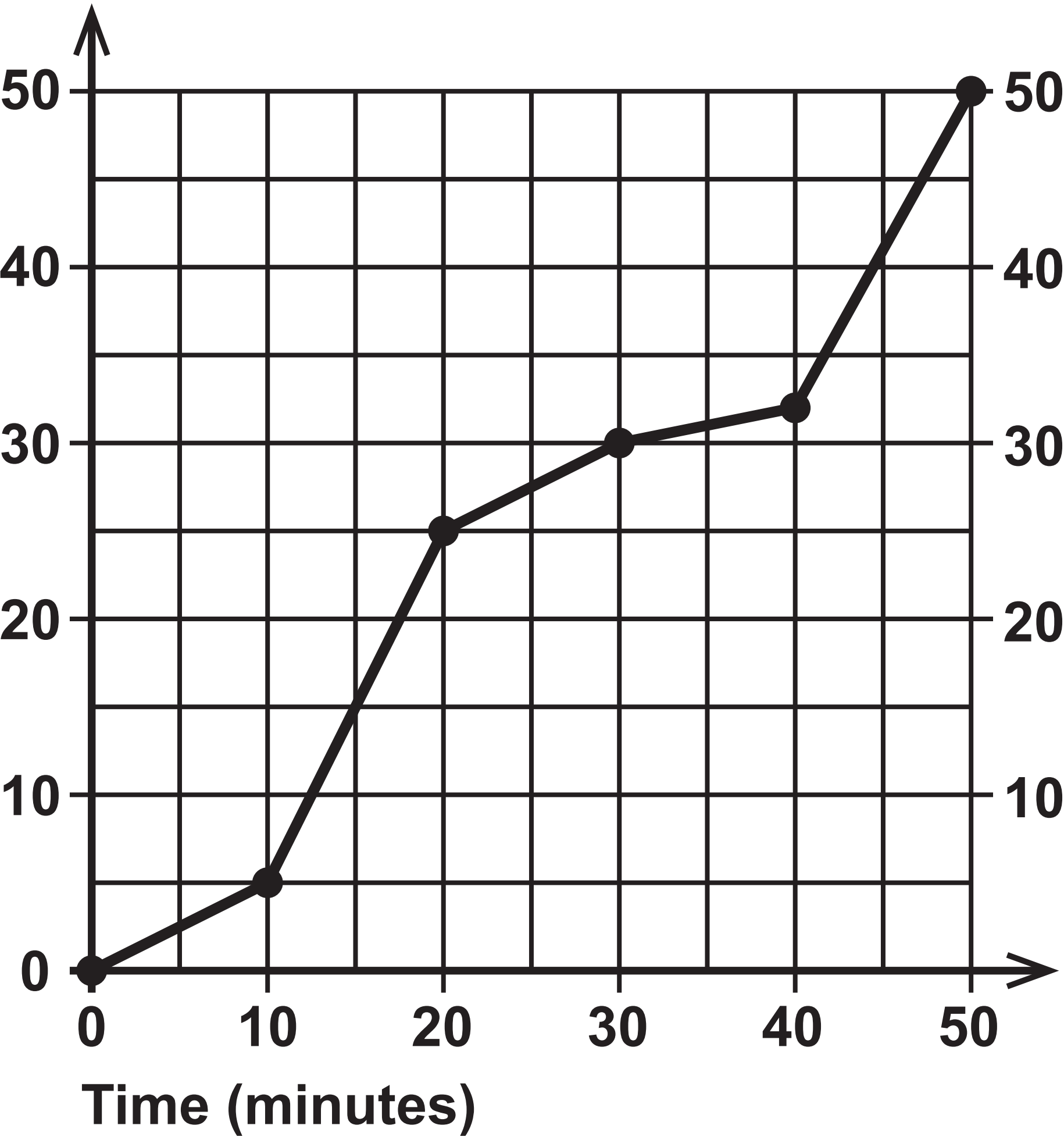
Diagram NOT drawn to scale

End face of the prism



Question 9

Cumulative frequency

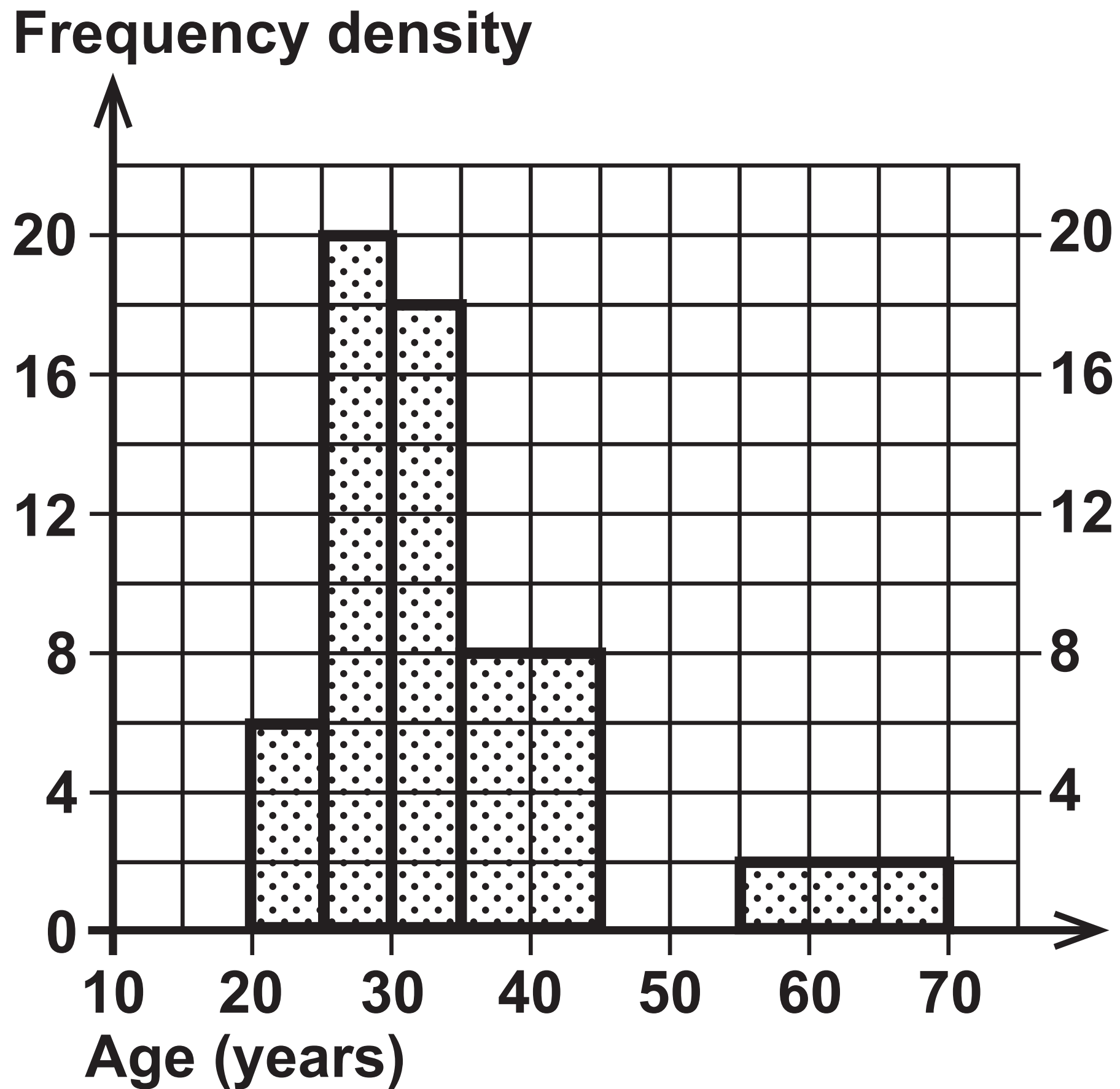


Question 12 (a)

Table

Job Type	Number of staff
Management	39
Office	82
Warehouse	227
Delivery	52

Question 12 (b)



Question 13 (a)

Diagrams NOT drawn to scale

Diagram 1

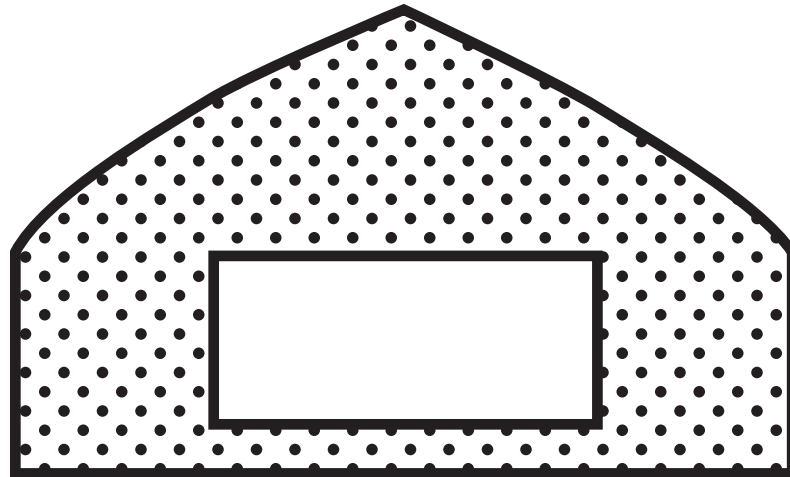
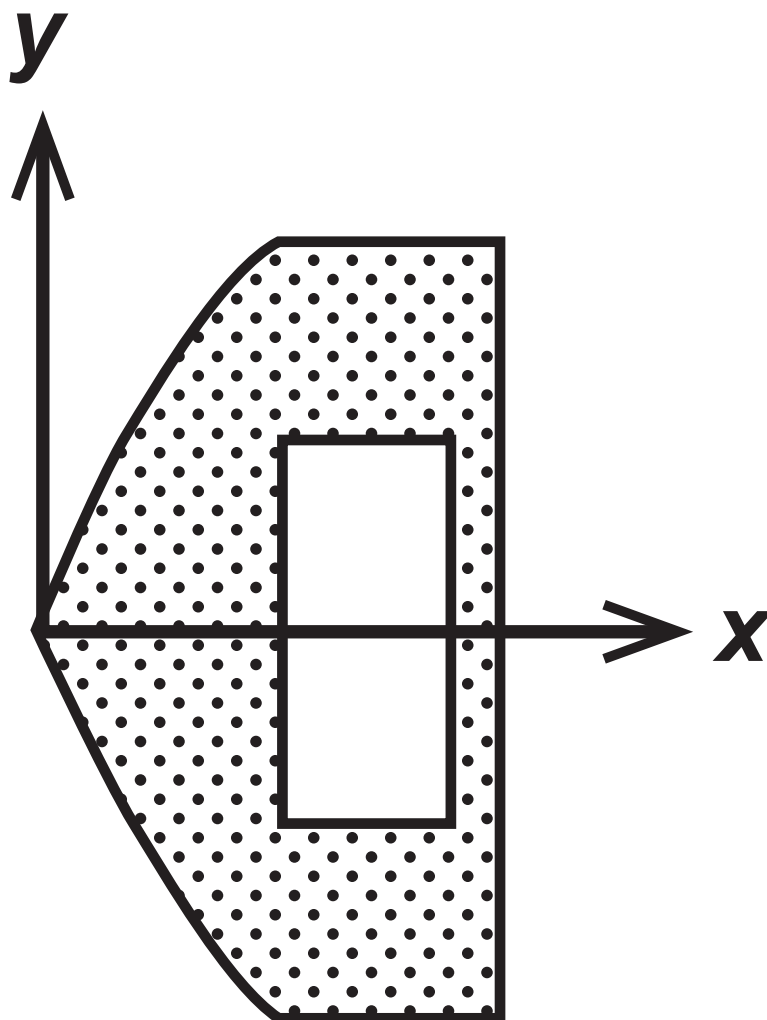


Diagram 2

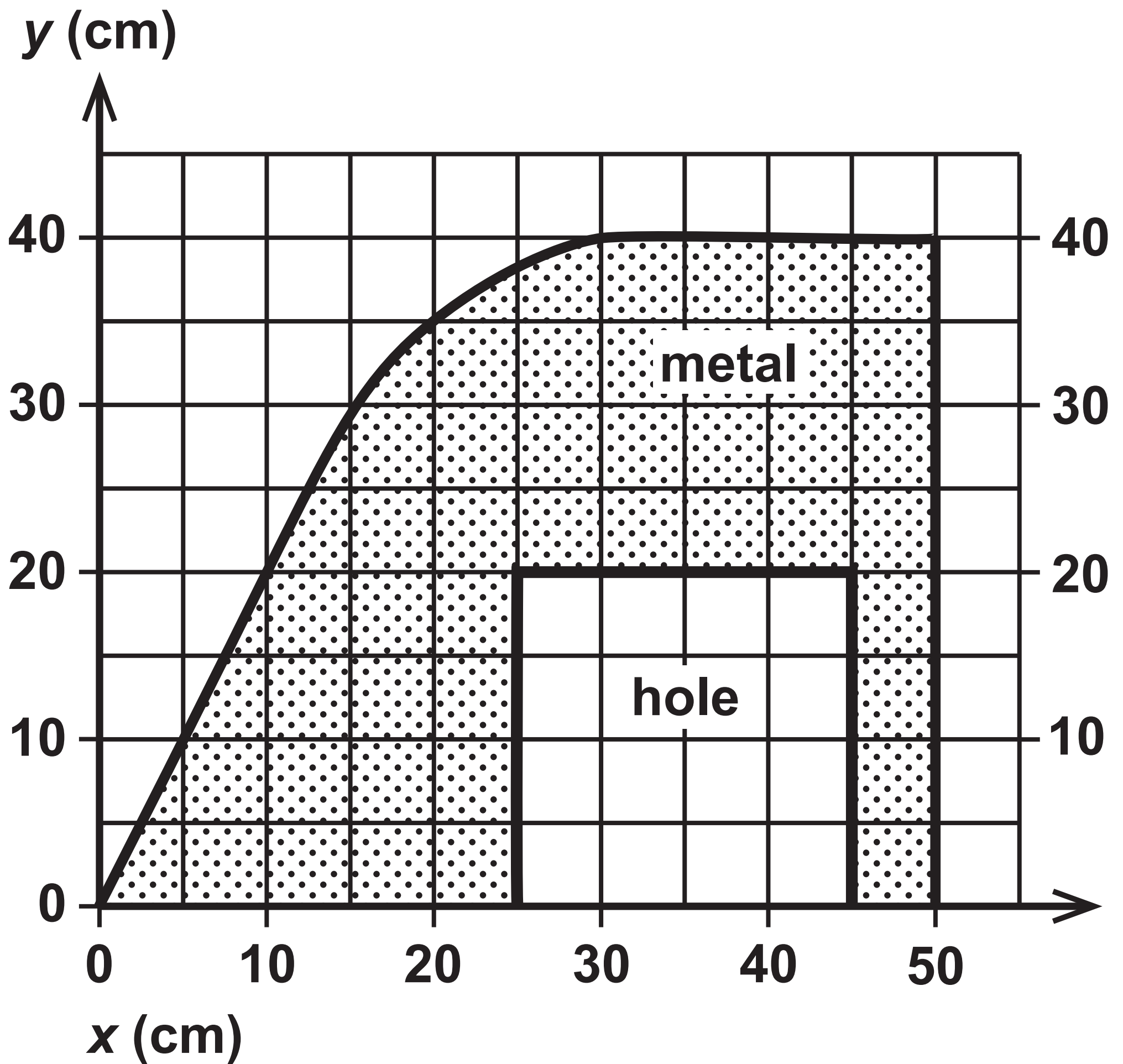


continued on the next page . . .

Question 13 (a) continued

Diagram 3

Diagram IS drawn to scale



Question 13 (b)

Diagrams NOT drawn to scale

Diagram 1 – Side View

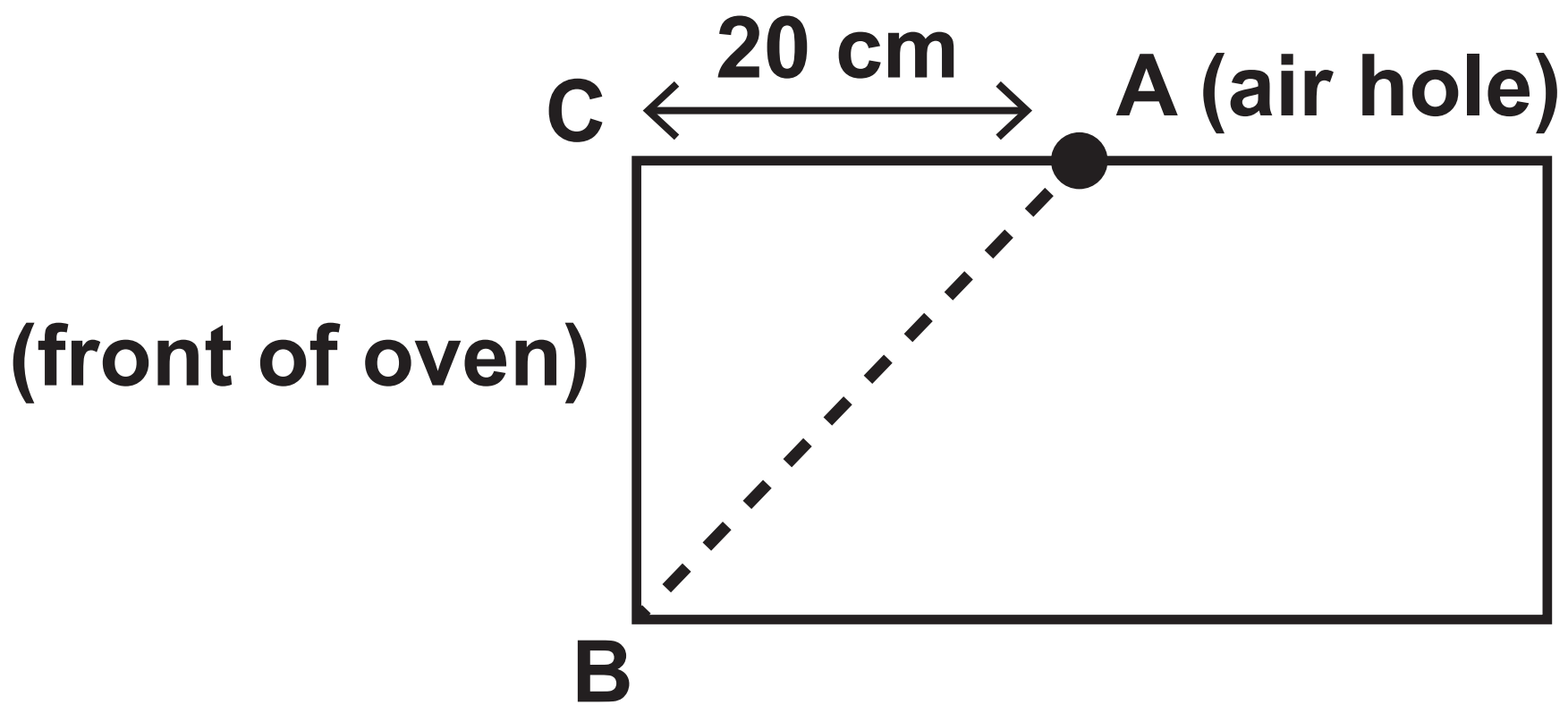
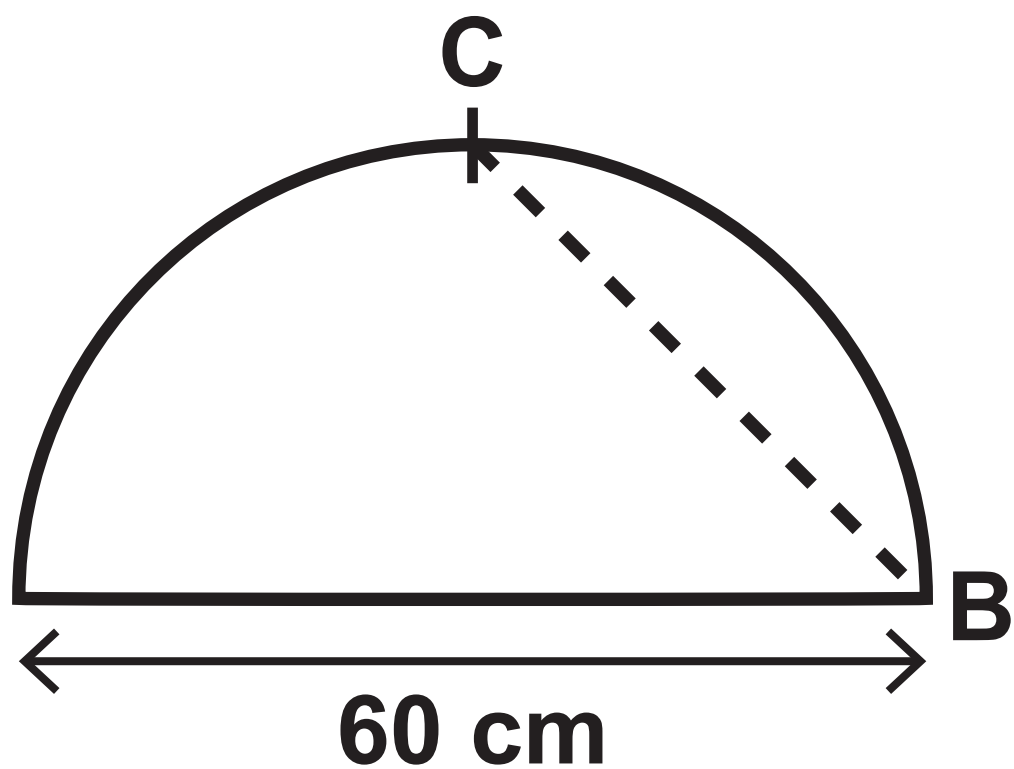


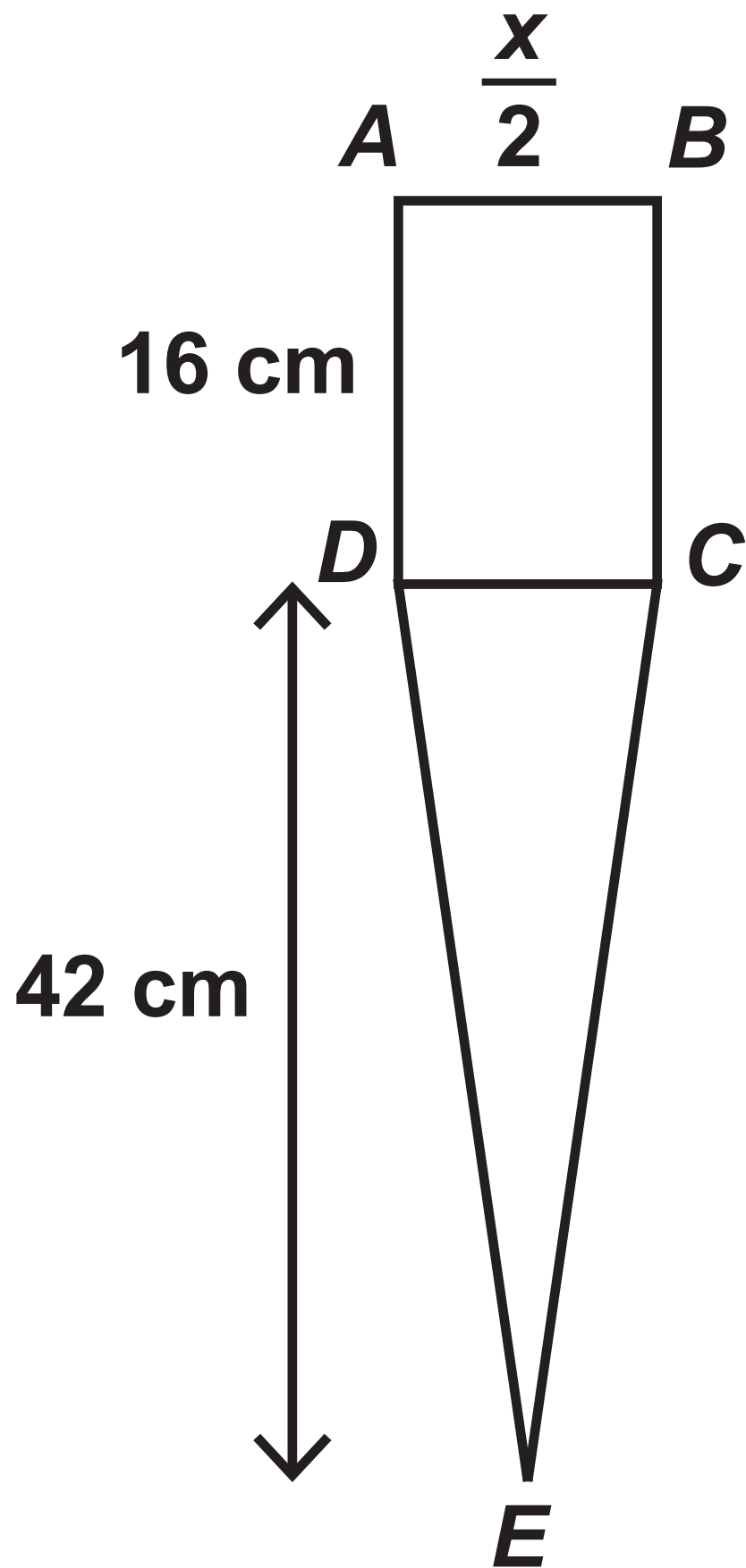
Diagram 2 – Front View



Question 13 (c)

Diagram NOT drawn to scale

Side View



**GCSE
MATHEMATICS**

and

GCSE

MATHEMATICS – NUMERACY



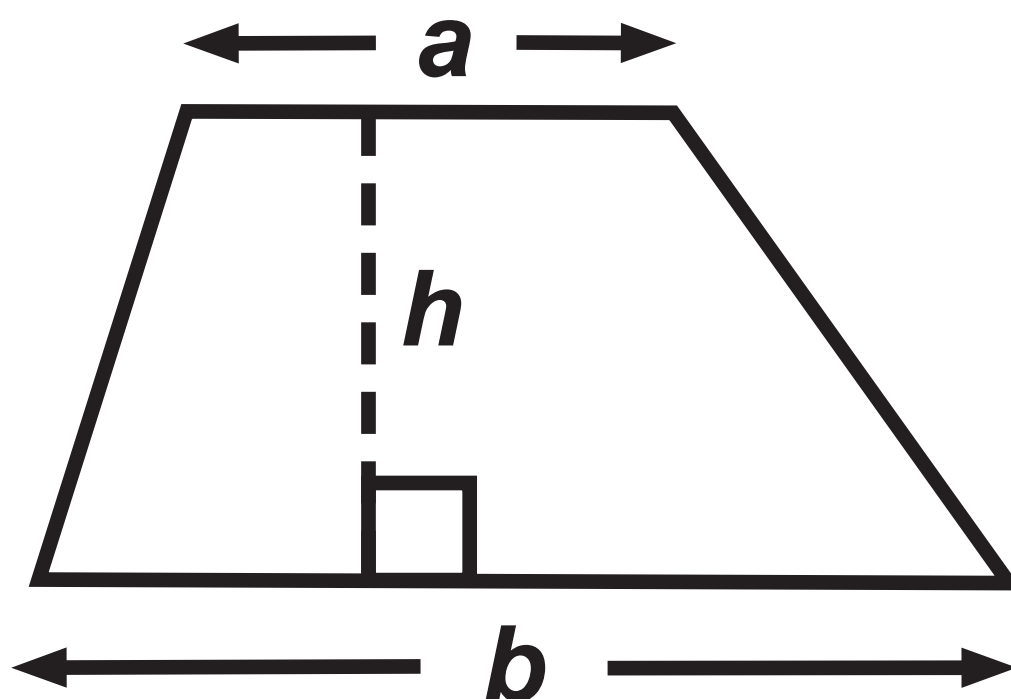
**FORMULA LIST
HIGHER TIER
GCSE**

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

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

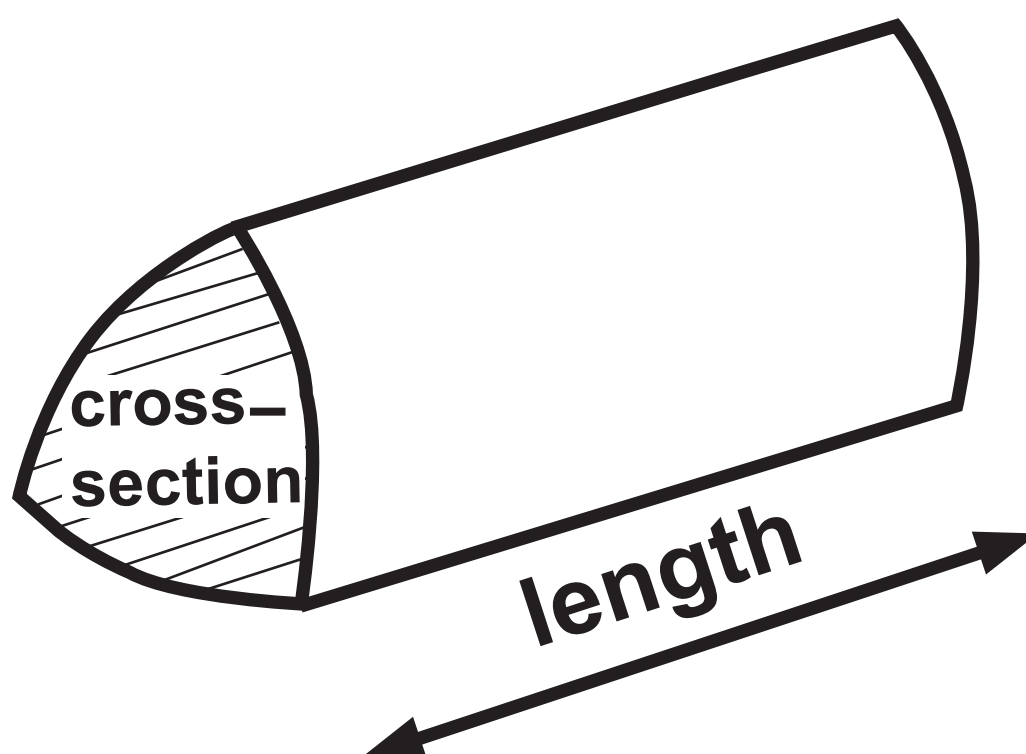
Formula List – Higher Tier

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



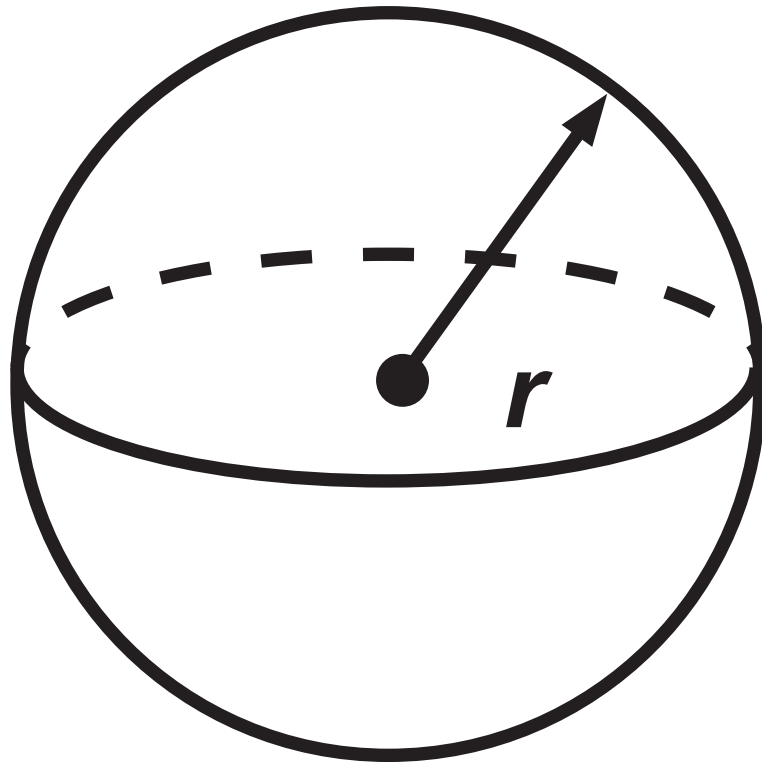
Volume of prism =

area of cross – section $\times$ length



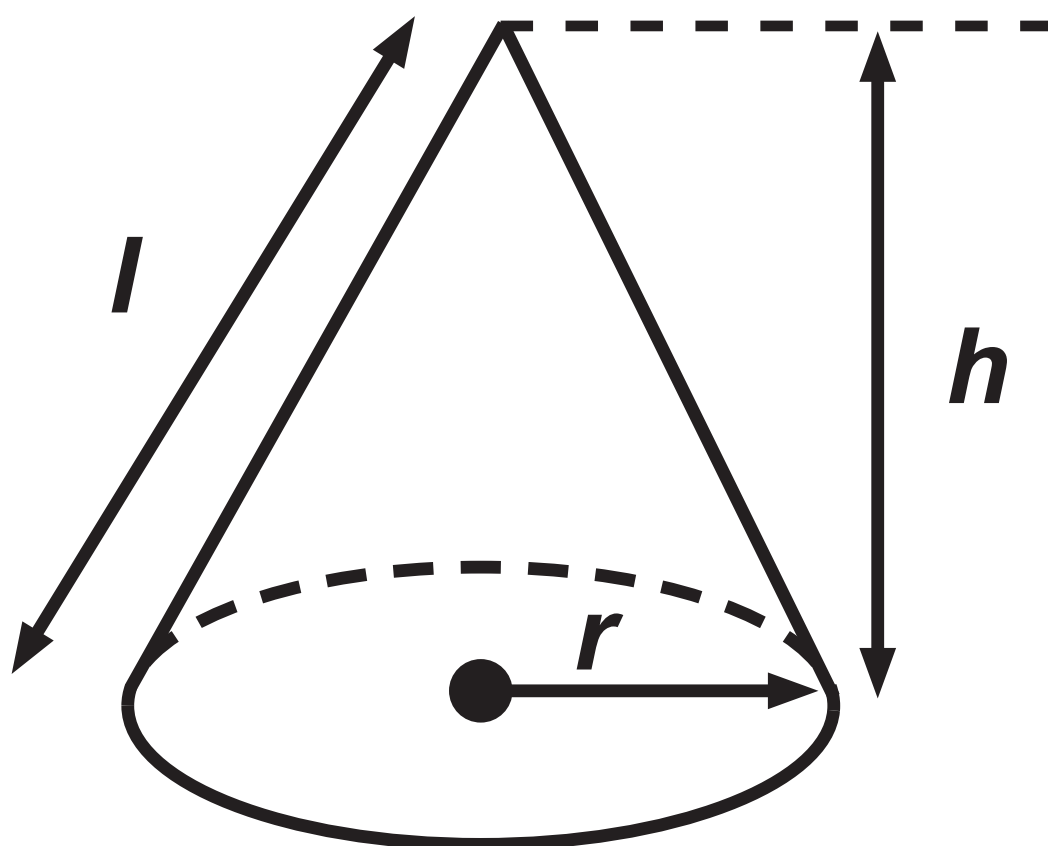
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$

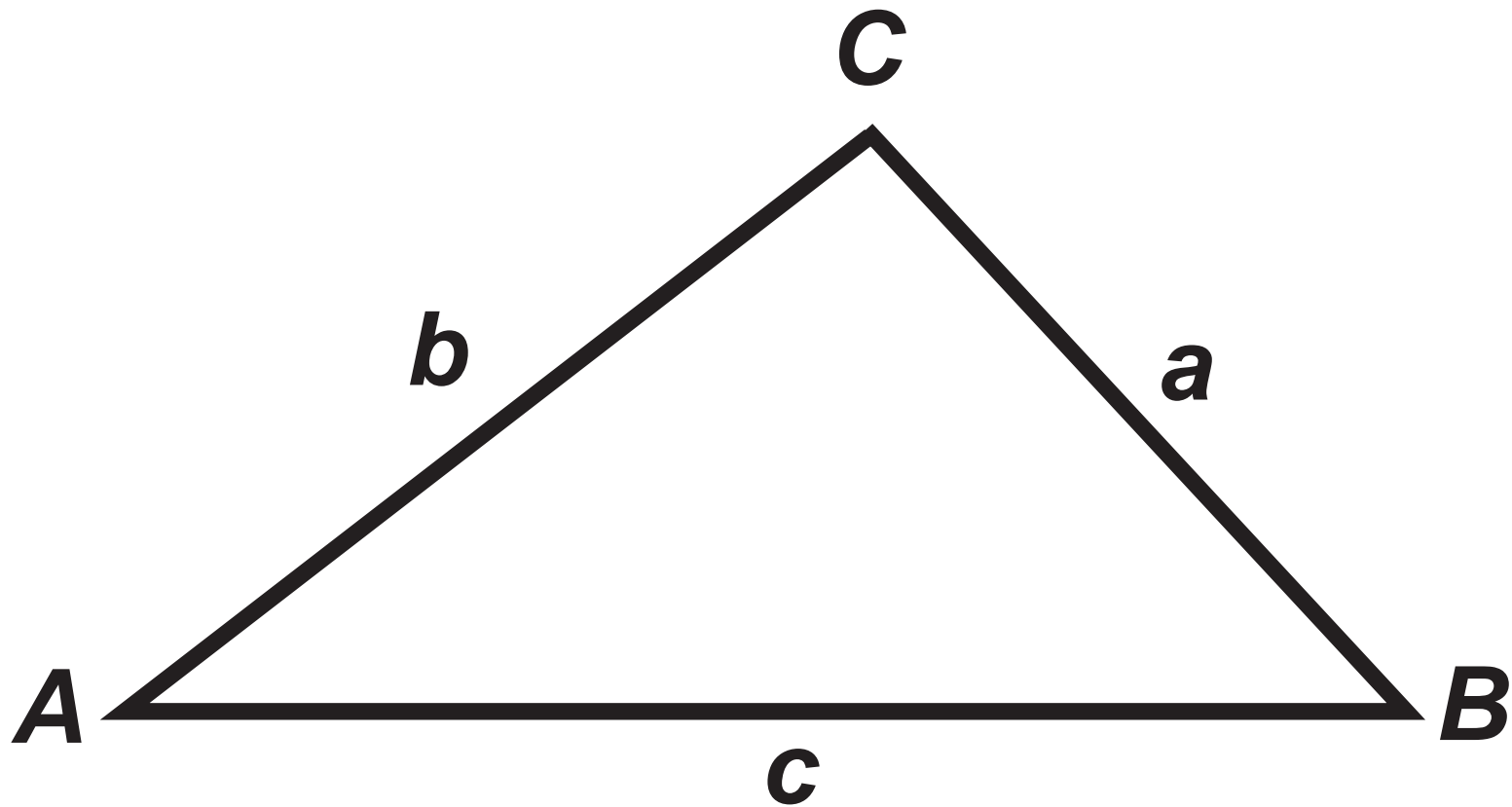


Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of a cone = $\pi r l$



In any triangle ABC



Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle $= \frac{1}{2}ab \sin C$

The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$

where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Annual Equivalent Rate (AER)

AER, as a decimal, is calculated using

the formula $\left(1 + \frac{i}{n}\right)^n - 1$, where i is the

nominal interest rate per annum as a

decimal and n is the number of

compounding periods per annum.