



GCSE

3300U30 – 1

MONDAY, 11 NOVEMBER 2024 – MORNING

MATHEMATICS

UNIT 1: NON – CALCULATOR

INTERMEDIATE 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.	5	
2.	2	
3.	6	
4.	5	
5.	6	
6.	4	
7.	6	
8.	4	
9.	3	
10.	3	
11.	4	
12.	5	
13.	6	
14.	2	
15.	5	
16.	7	
17.	3	
18.	4	
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.

Model for Question 5.

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 $3 \cdot 14$

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

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

The diagram shows a number machine.

Complete the table below.

INPUT	OUTPUT
-7	
	-100
$2 \cdot 5$	
n	

Space for working:

(Turn over)

5

[5 marks]

(Turn over)

2. **ESTIMATE** the value of 33×7940

You must show your approximations in your working.

[2 marks]

(Turn over)

3. (a) Simplify the expression $7s - 8t - 4s + 3t$

[2 marks]

(b) Use the formula $F = 5T + 4R$ to find the
VALUE OF R when $F = 23$ and $T = 3$

[3 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

3. (c) Look at the diagram for Question 3 (c) in the separate Diagram Booklet. The diagram shows a grid with five lines drawn on it, **A**, **B**, **C**, **D** and **E**.

Which of the lines is represented by the equation $y = 2$?

Circle your answer.

Line A
Line B
Line C
Line D
Line E

[1 mark]

(Turn over)

Question 4 (a) continued

Bethan = _____ years old

Andrew = _____ years old

Richard = _____ years old

[2 marks]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (b) (i) Write down the ratio of Andrew's age to Richard's age when Andrew is 27
Write the ratio in its simplest form.

Ratio of Andrew's age to Richard's age

= _____ : _____

[2 marks]

4. (b) (ii) Explain why the ratio of Andrew's age to Richard's age can never be 1 : 1

[1 mark]

(Turn over)

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

Ask for the model for Question 5. It is a model of a solid.

The model is NOT to scale.

The top surface of the solid is labelled *ABCDEF*.

The height of the solid is 2 cm.

Look at the diagram for Question 5 in the separate Diagram Booklet. The diagram is NOT drawn to scale.

The diagram shows the top surface of the solid and is labelled *ABCDEF*.

In the diagram:

$$AB = 12 \text{ cm}$$

$$BC = 12 \text{ cm}$$

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

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

Angles *ABC*, *BCD*, *DEF*, *EFA* and *FAB* are right angles.

continued on the next page . . .

(Turn over)

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

The diagram shows a coordinate grid.

Three of the four vertices of a parallelogram have the following coordinates.

$(4, 3)$ $(5, -1)$ $(8, 3)$

Plot these points on the coordinate grid.

Then, plot ALL THREE possible points for the fourth vertex.

Write down the coordinates of these three points.

The THREE possible points for the fourth vertex are

(_____ , _____)

(_____ , _____)

(_____ , _____)

[4 marks]

(Turn over)

[4 marks]

9. Look at the diagram for Question 9 in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows a trapezium labelled ***ABCD***.

In the diagram:

$$AB = 8 \text{ cm}$$

$$BC = 9 \text{ cm}$$

$$CD = 10 \text{ cm}$$

$$DA = 15 \text{ cm}$$

AD is parallel to ***BC***.

Angle ***DAB*** is a right angle.

Calculate the area of the trapezium shown.

You must give the units of your answer.

[3 marks]

(Turn over)

11. The table below shows some of the values of $y = 2x^2 + x + 3$ for values of x from -2 to 3

x	$y = 2x^2 + x + 3$
-2	
-1	4
0	3
1	6
2	
3	24

- (a) Complete the table by finding the values of y for $x = -2$ and for $x = 2$

[2 marks]

continued on the next page . . .

(Turn over)

Question 11 continued

11. (b) On the graph paper provided for Question 11 (b) in the separate Diagram Booklet, draw the graph of $y = 2x^2 + x + 3$ for values of x from -2 to 3

[2 marks]

(Turn over)

First, the cyclist travels for 2 hours at an average speed of _____ miles per hour.

Then, she travels for a further 3 hours at an average speed of _____ miles per hour.

[6 marks]

(Turn over)

14. Look at the diagrams for Question 14 in the separate Diagram Booklet. The diagrams are NOT drawn to scale.

There are two diagrams: **Shape 1** and **Shape 2**
The two shapes are mathematically similar.

In **Shape 1**:

$$AB = 9 \text{ cm}$$

$$BC = 18 \cdot 9 \text{ cm}$$

In **Shape 2**:

$$DE = 6 \text{ cm}$$

$$EF = w \text{ cm}$$

Calculate the value of w .

(Turn over)

[2 marks]

15. Evan and Jane each shoot one arrow at a target.

The probability that Evan hits the centre of the target is 0.4

The probability that Jane hits the centre of the target is 0.45

(a) Look at the diagram for Question 15 (a) in the separate Diagram Booklet. The diagram shows an incomplete tree diagram.

Complete the tree diagram.

[3 marks]

(b) Find the probability that Evan and Jane both hit the centre of the target.

[2 marks]

16. A rectangle has length $(x + 5)$ cm and width $(x + 3)$ cm.

The area of the rectangle is 120 cm^2

(a) Show that $x^2 + 8x - 105 = 0$

[2 marks]

continued on the next page . . .

(Turn over)

Question 16 continued

16. (b) Factorise $x^2 + 8x - 105$ and hence solve
 $x^2 + 8x - 105 = 0$

[3 marks]

continued on the next page . . .

(Turn over)

Question 16 continued

16. (c) Use your solutions from part (b) to find the dimensions of the rectangle.

You must justify any decisions that you make.

Length of rectangle = _____ cm

Width of rectangle = _____ cm

[2 marks]

(Turn over)

$3 \cdot 2 \times 10^4$ metres is _____ miles
[3 marks]

18. Look at the diagram for Question 18 in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows points A , B , C and D on the circumference of a circle with centre O .

(a) Calculate the value of X .

Circle your answer.

55°	70°	110°	125°	135°
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[1 mark]

(b) Calculate the value of y .

(Turn over)

[3 marks]

END OF PAPER

TOTAL 80 MARKS

(Turn over)



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**The Diagram Booklet MUST be handed in
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Diagram Booklet

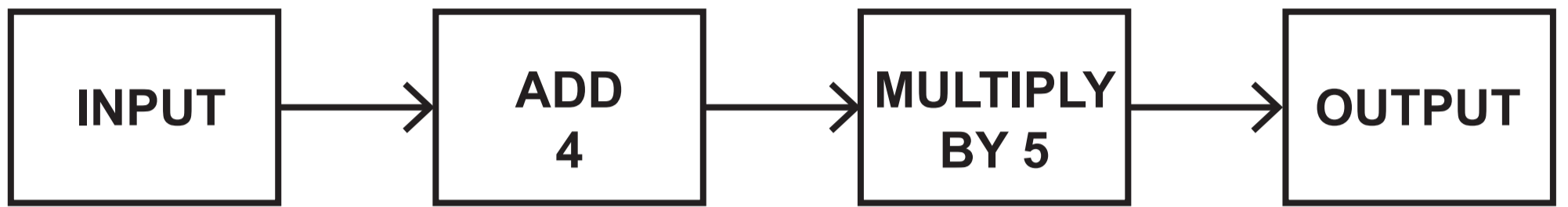
Surname: _____

First name(s): _____

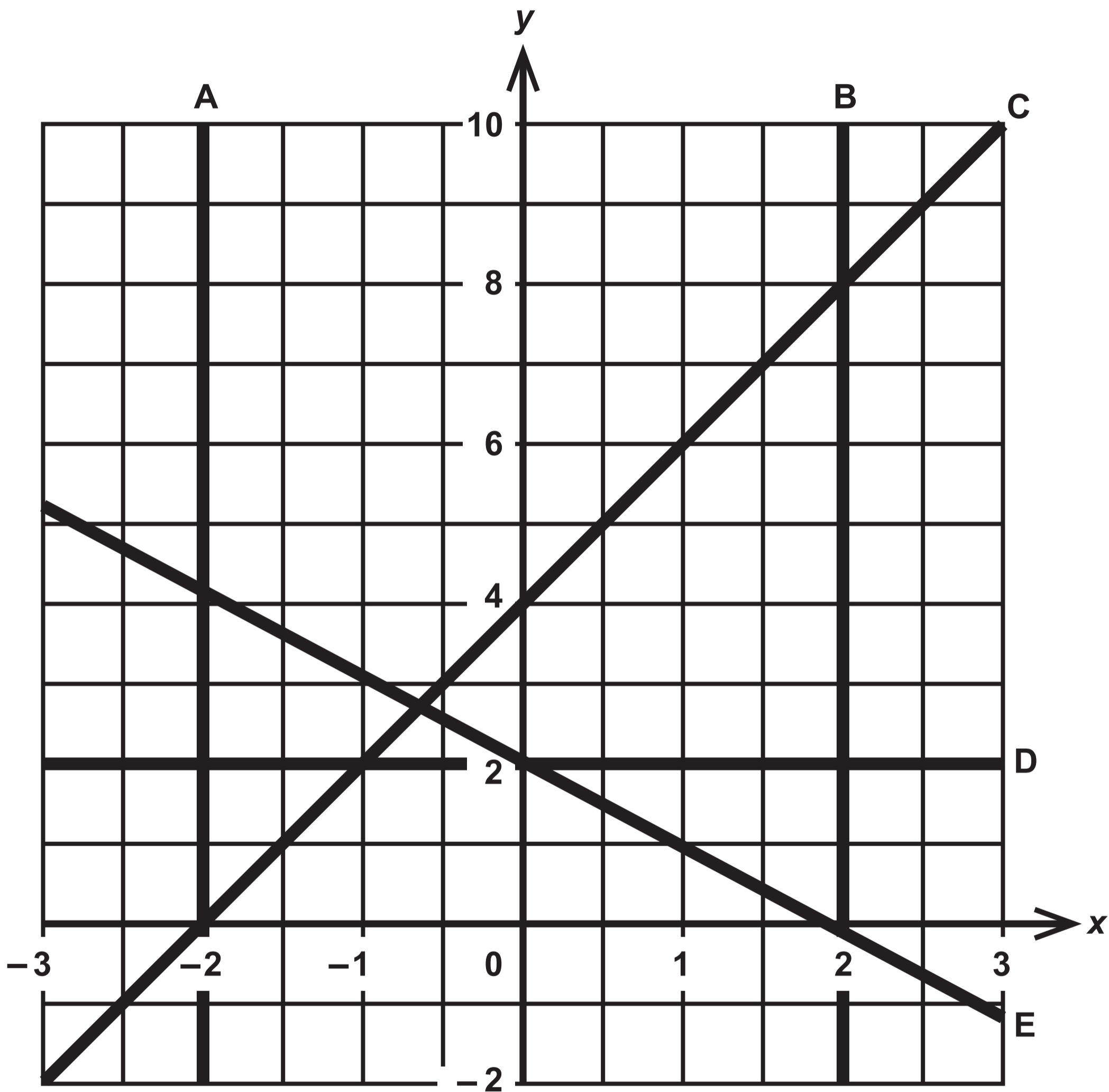
Centre Number: _____

Candidate Number: 0 _____

Question 1

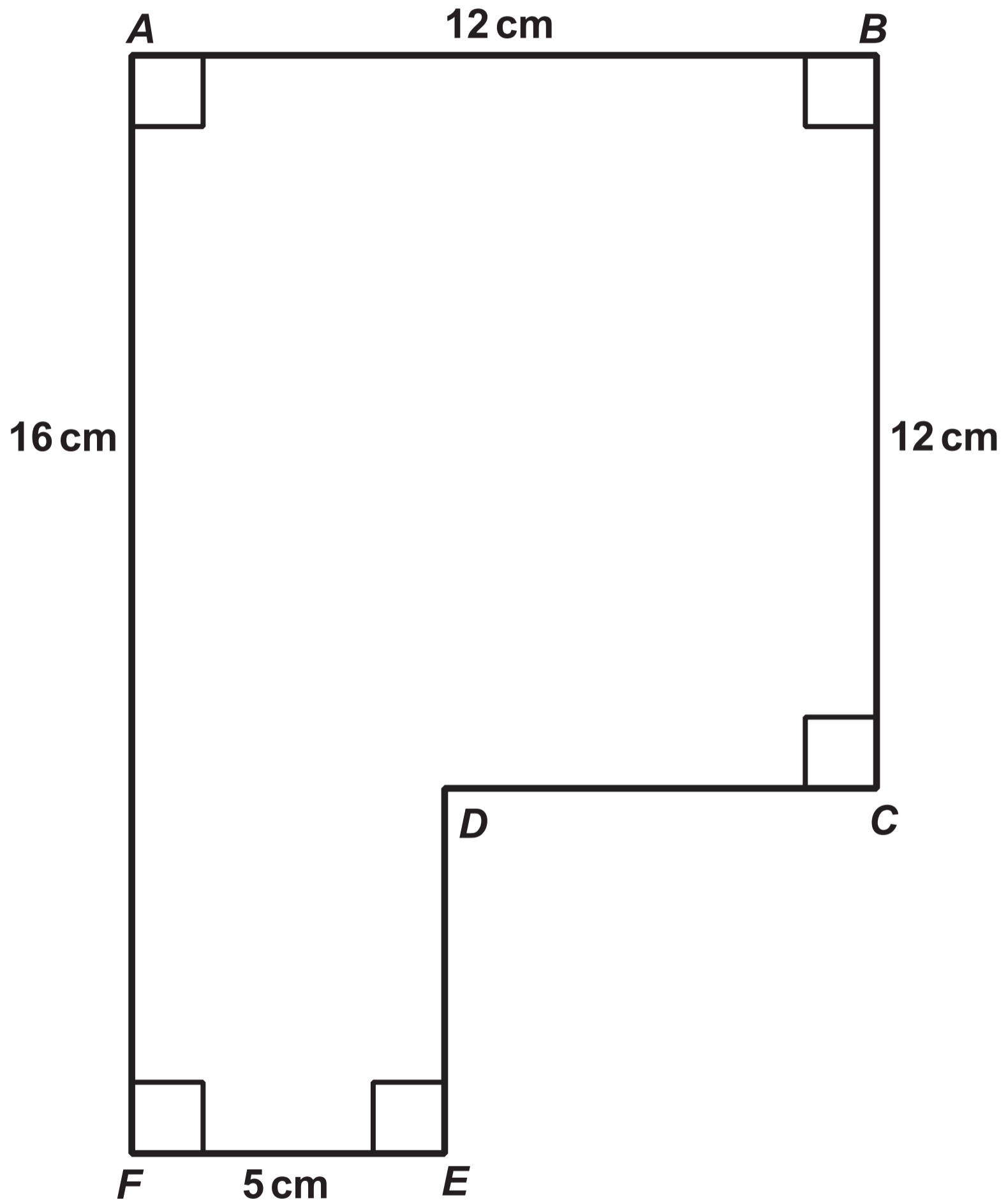


Question 3 (c)

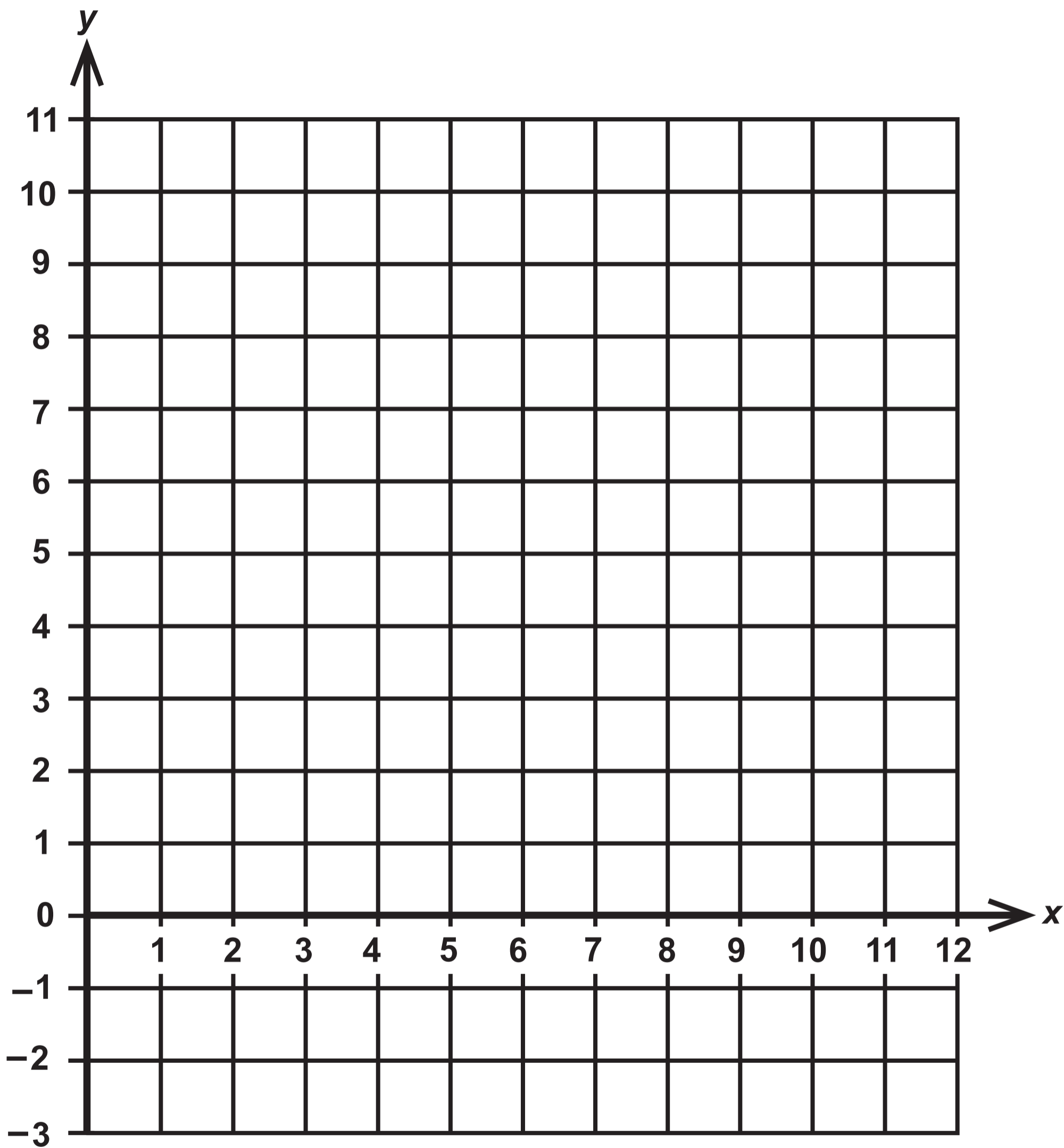


Question 5

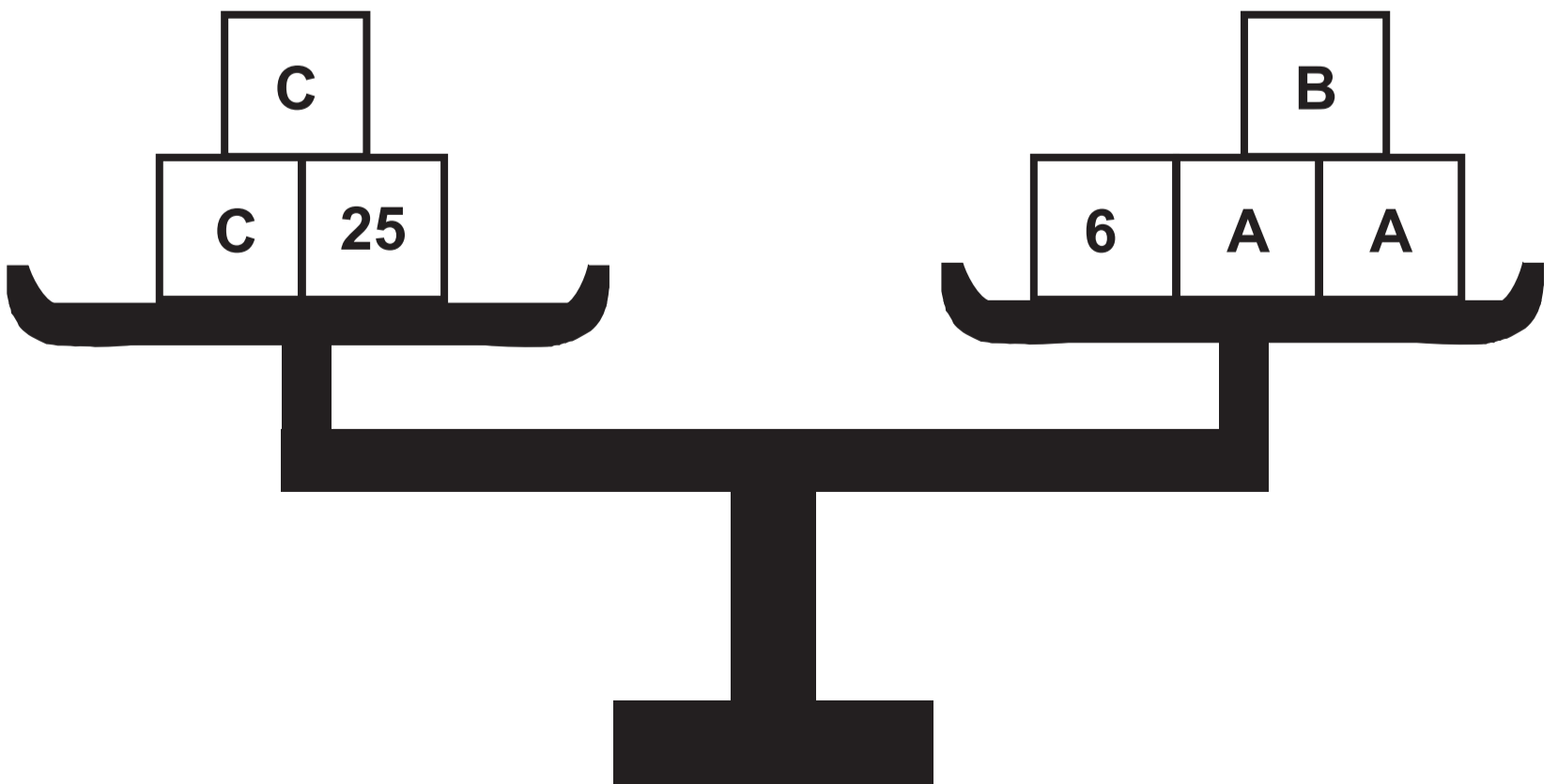
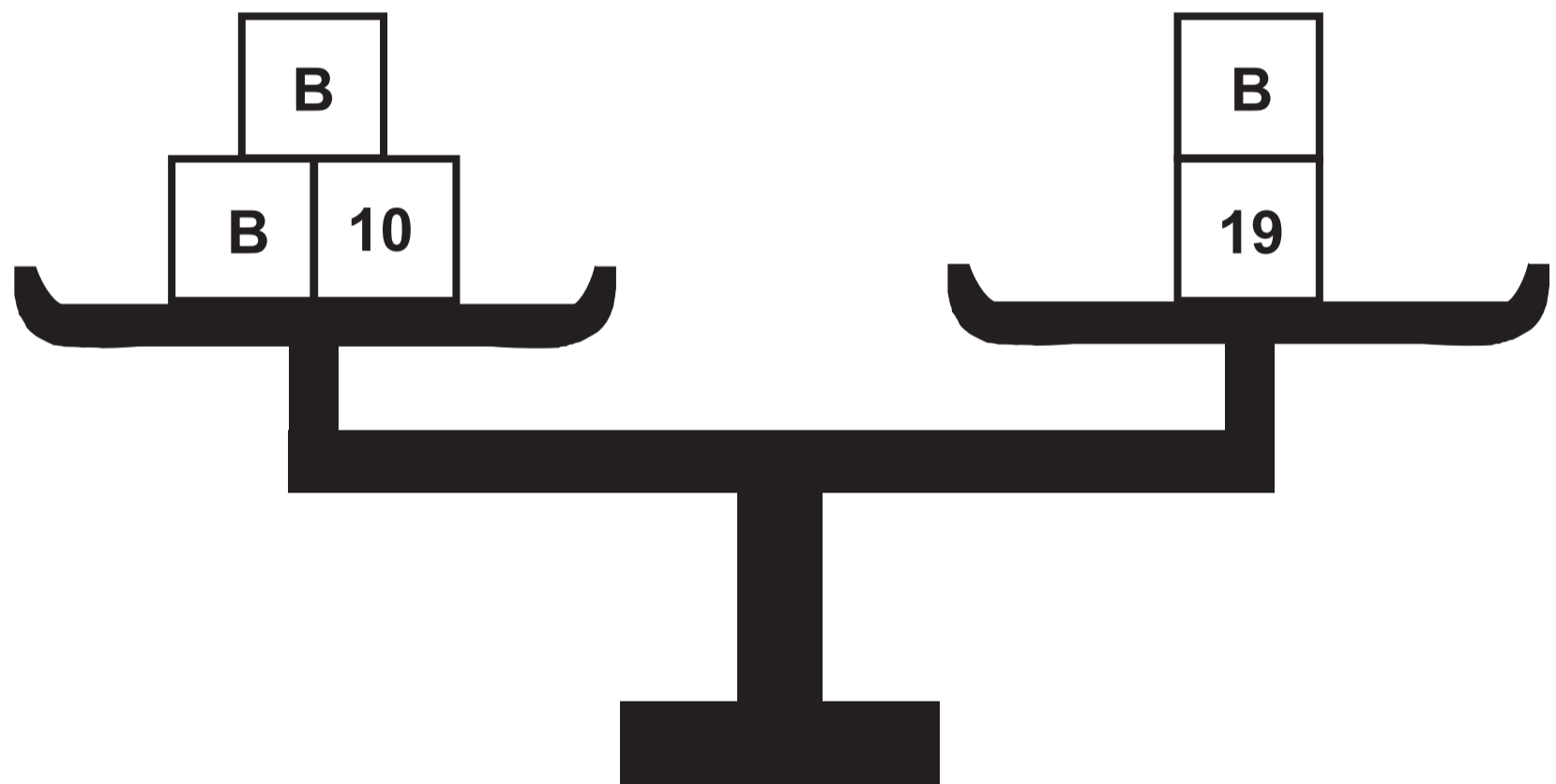
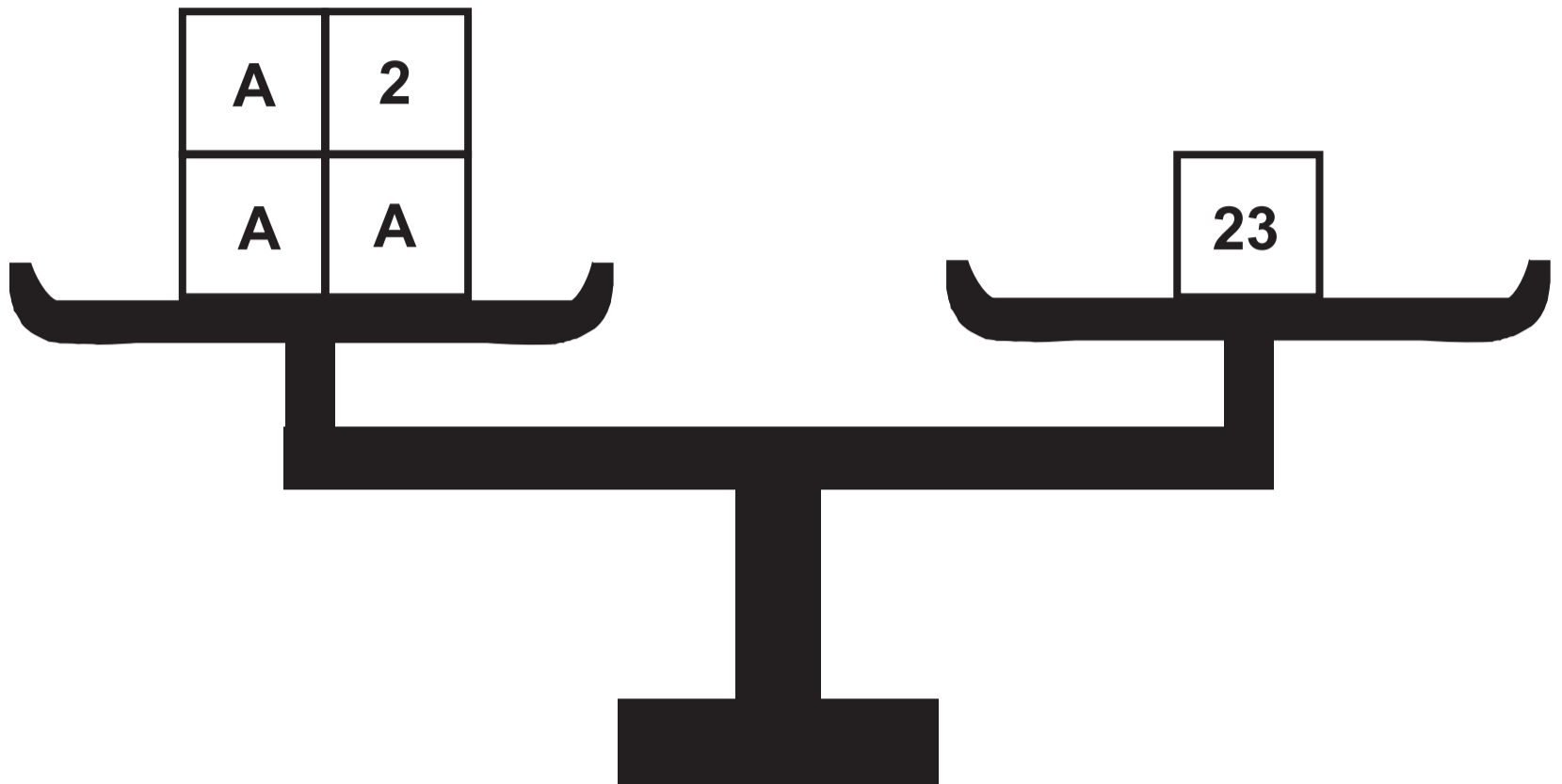
Diagram NOT drawn to scale



Question 6

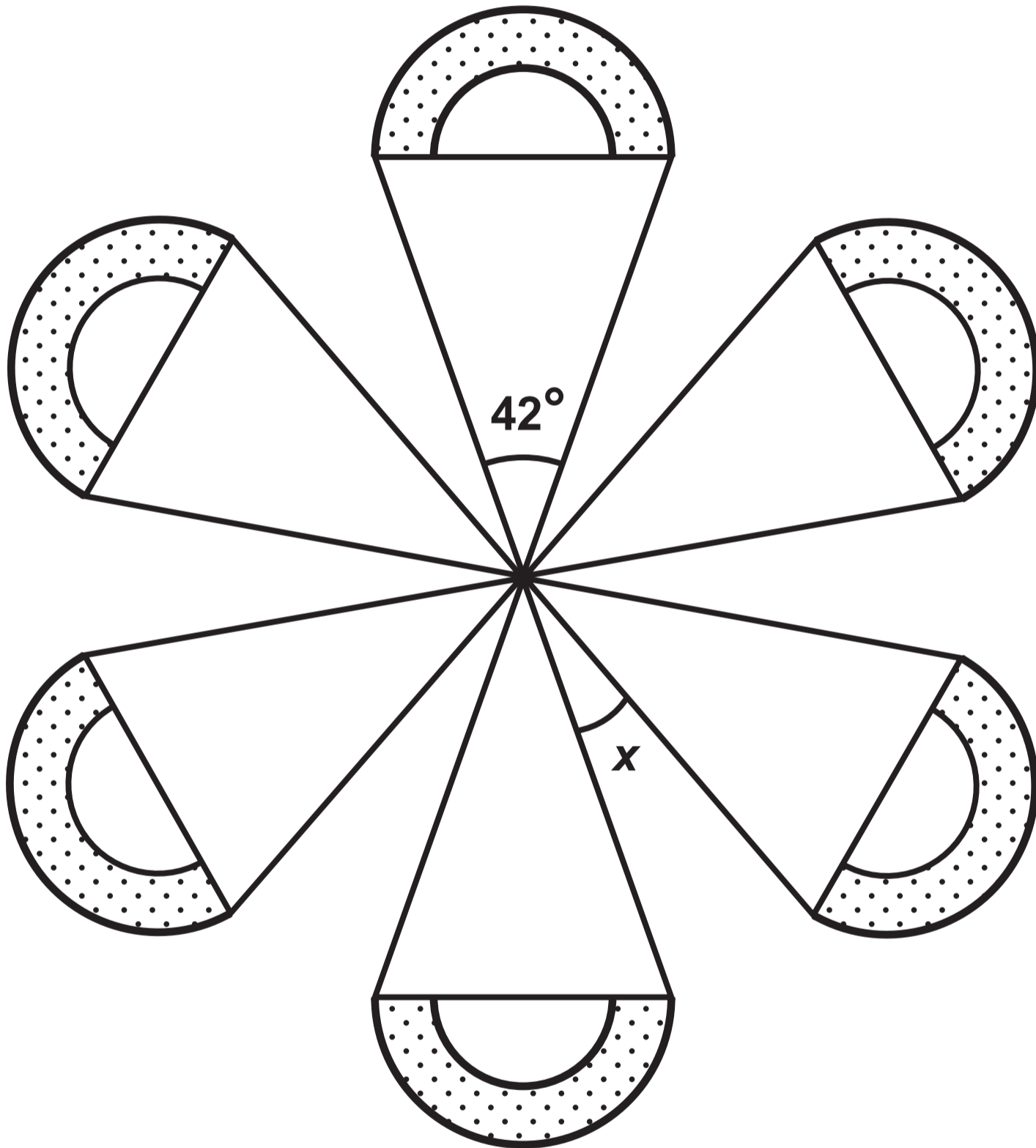


Question 7



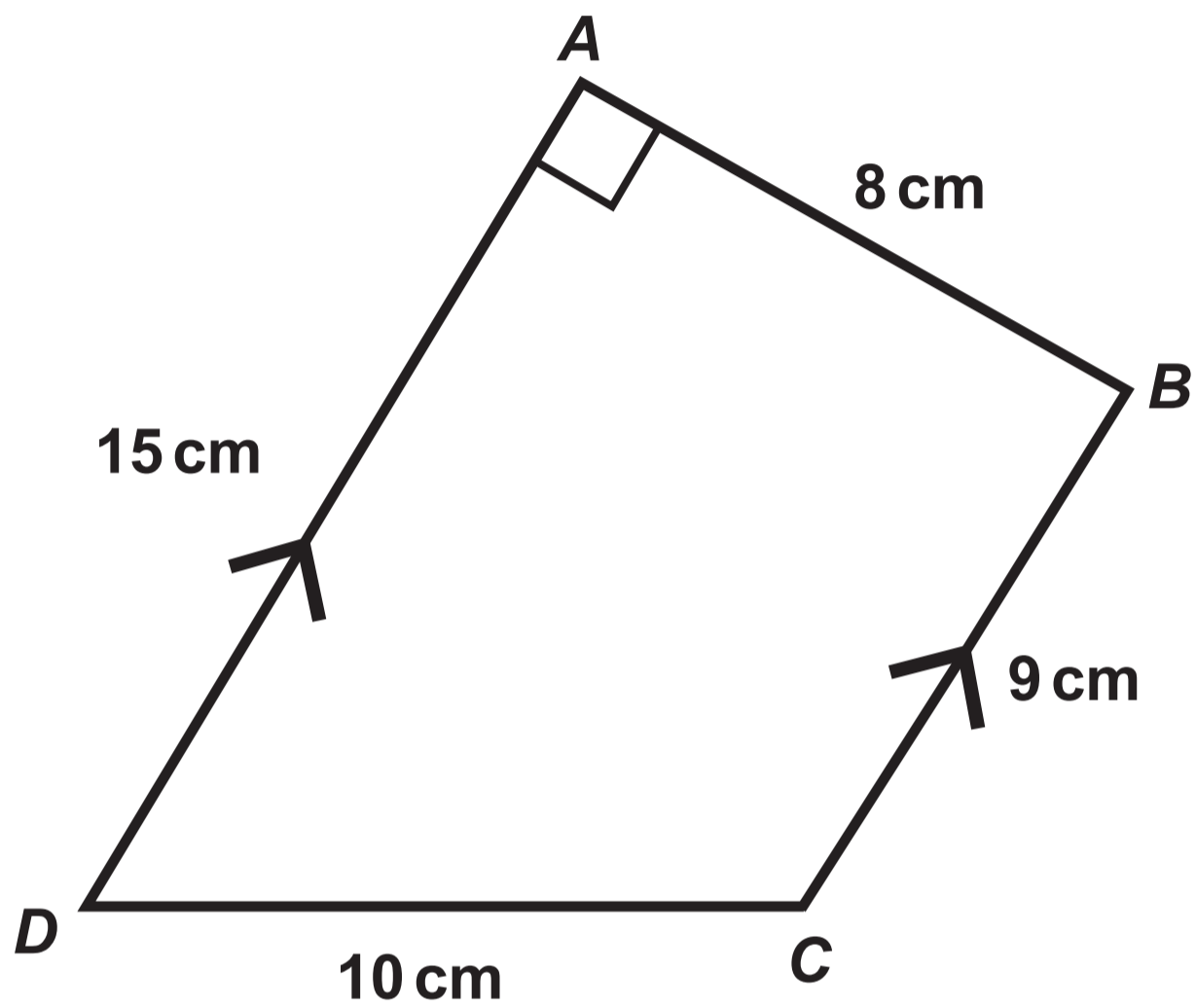
Question 8

Diagram NOT drawn to scale

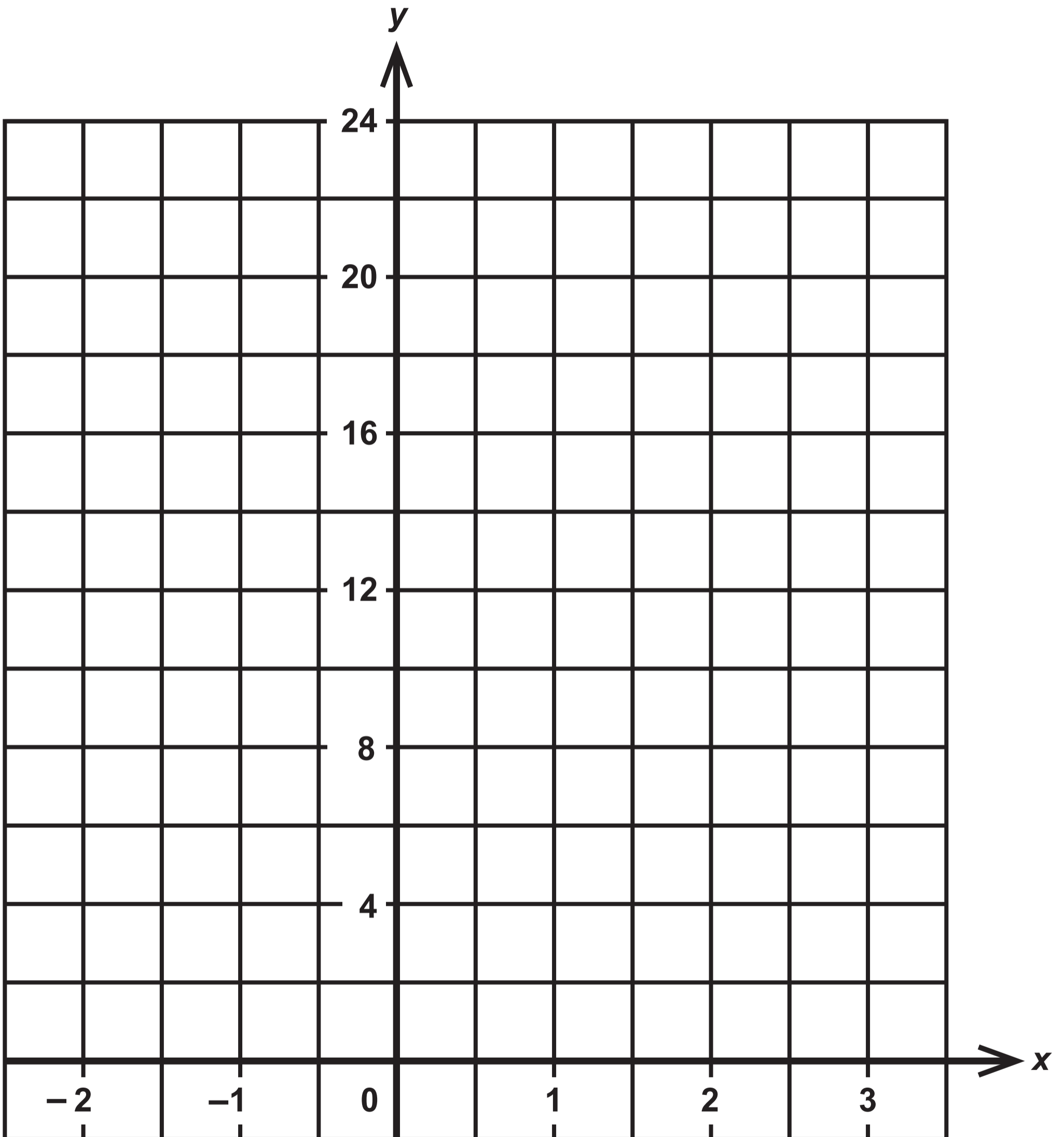


Question 9

Diagram NOT drawn to scale

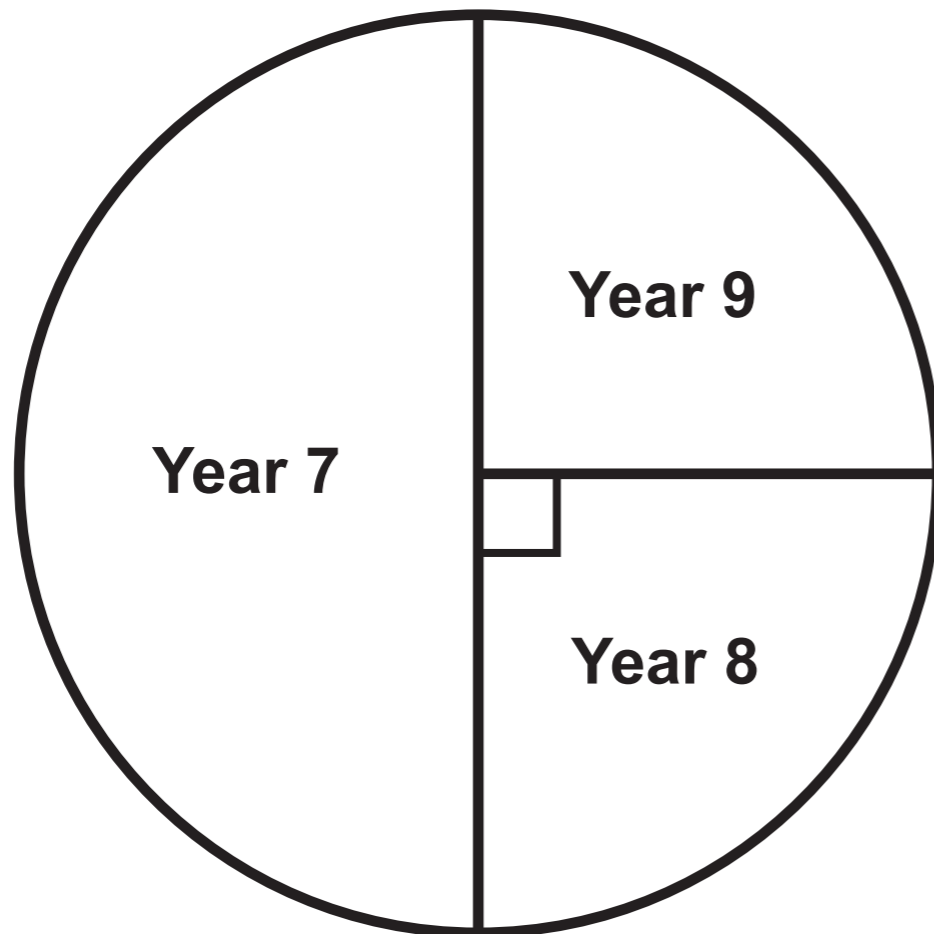


Question 11 (b)

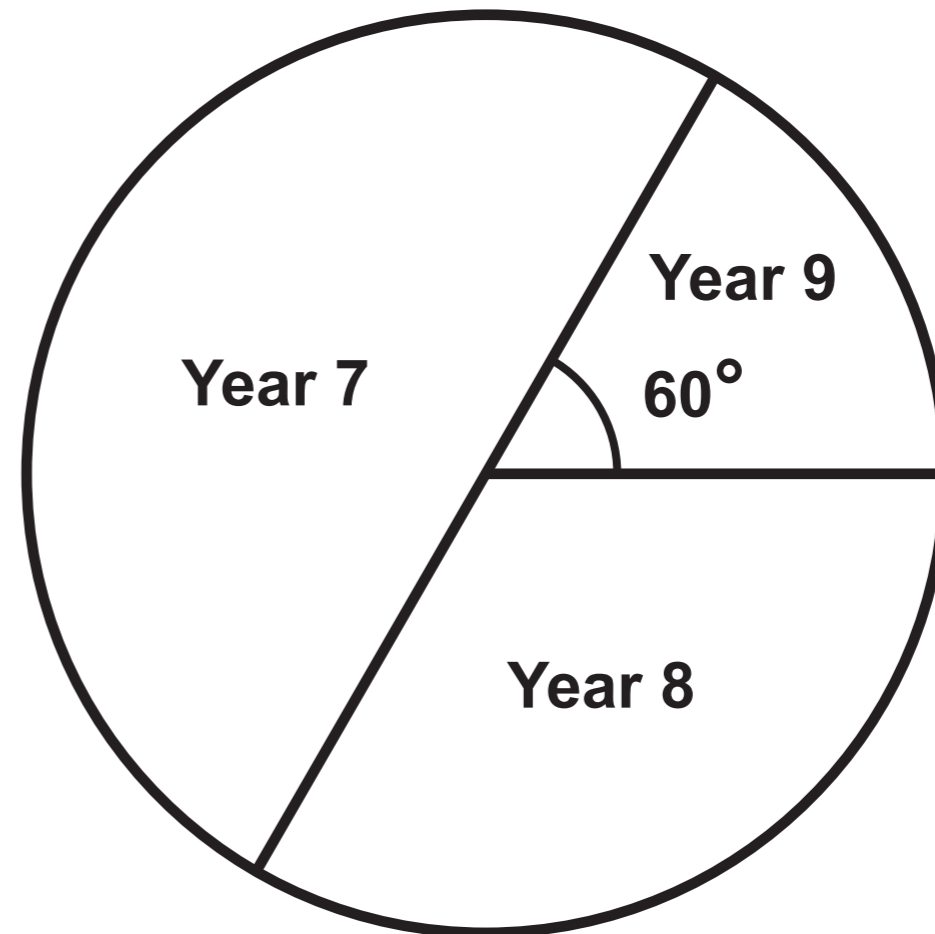


Question 12

YSGOL AFON



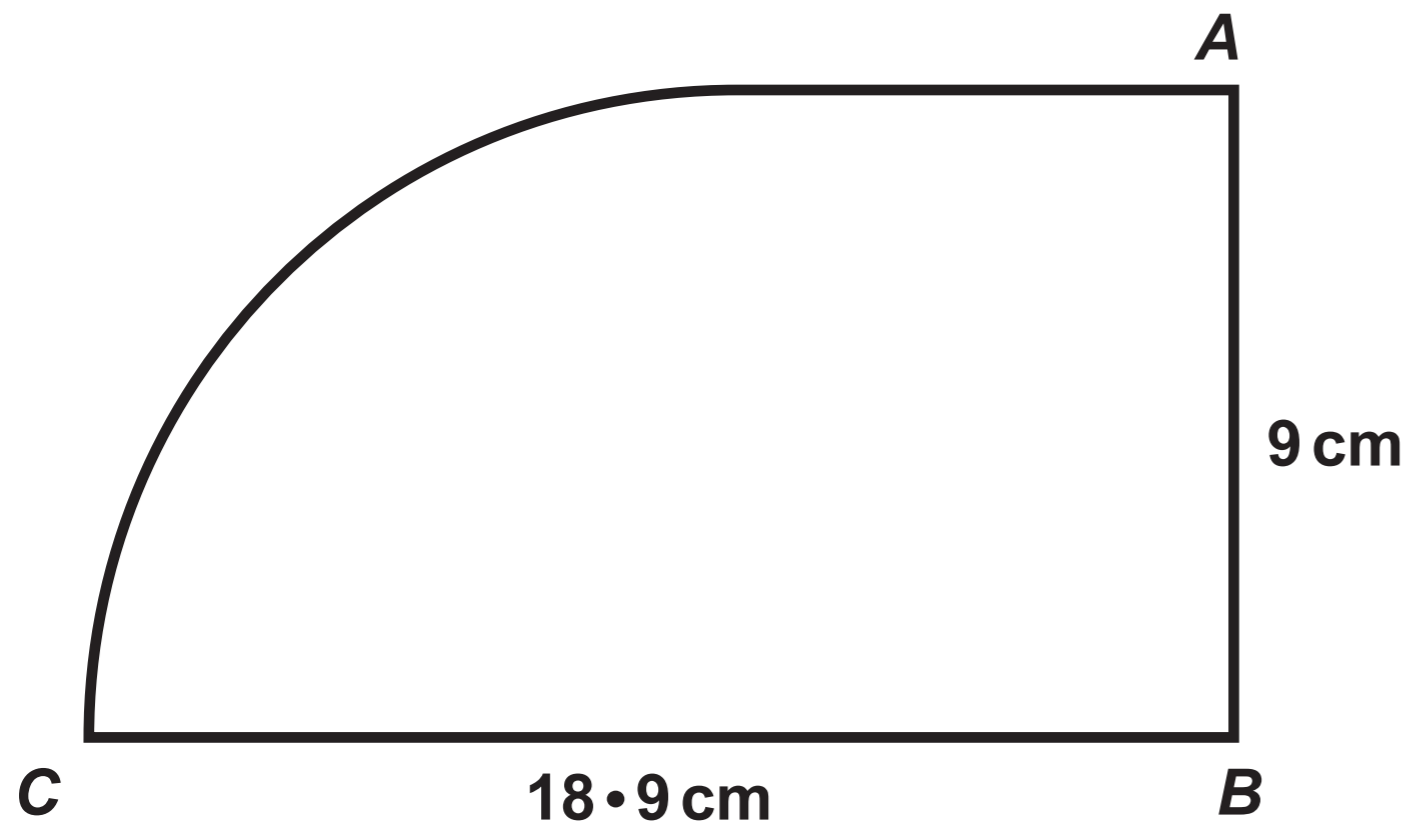
YSGOL TWYN



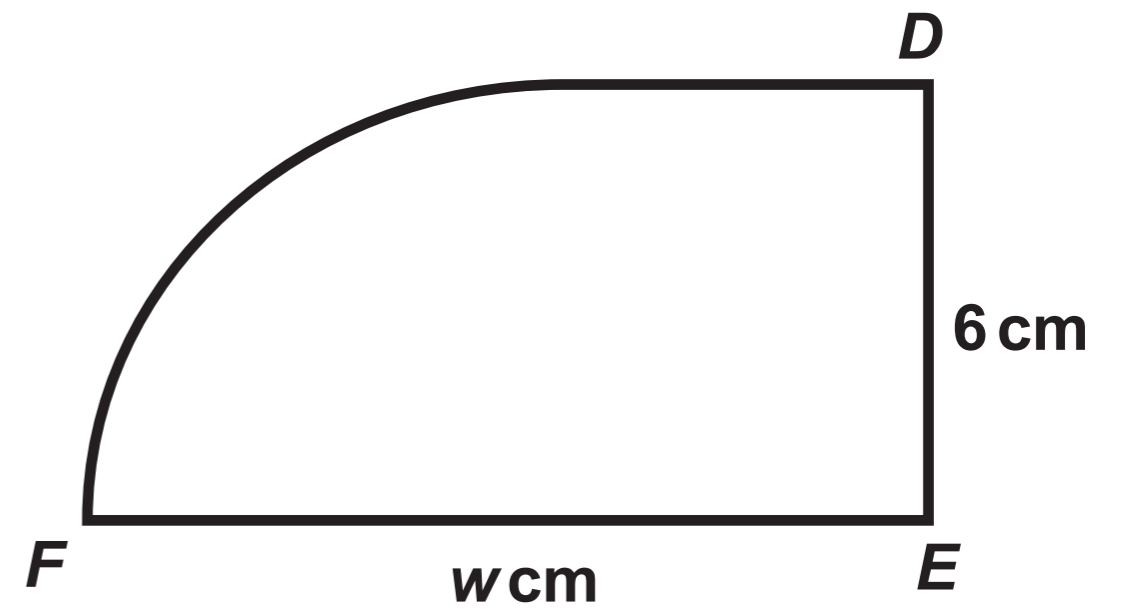
Question 14

Diagrams NOT drawn to scale

Shape 1



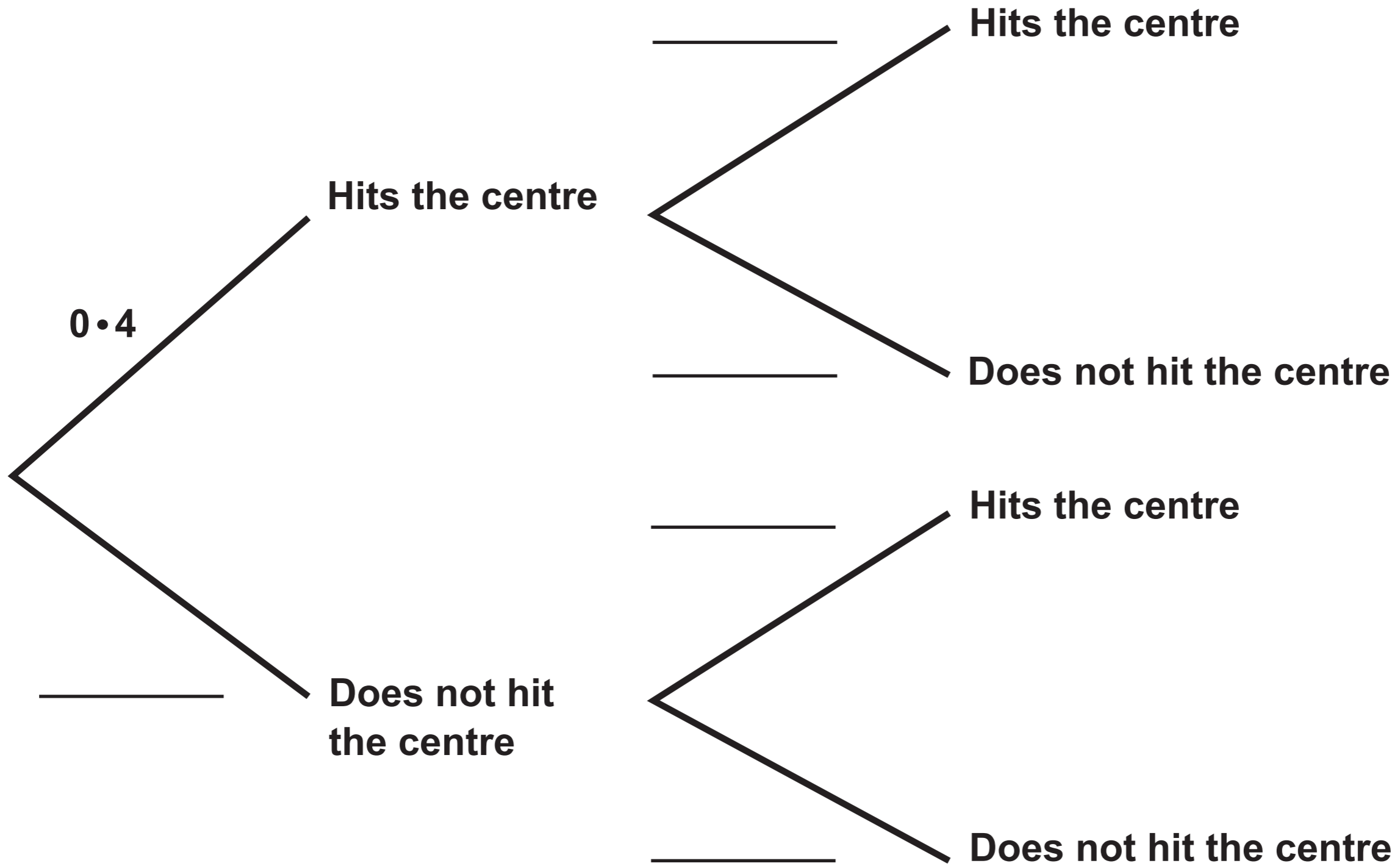
Shape 2



Question 15 (a)

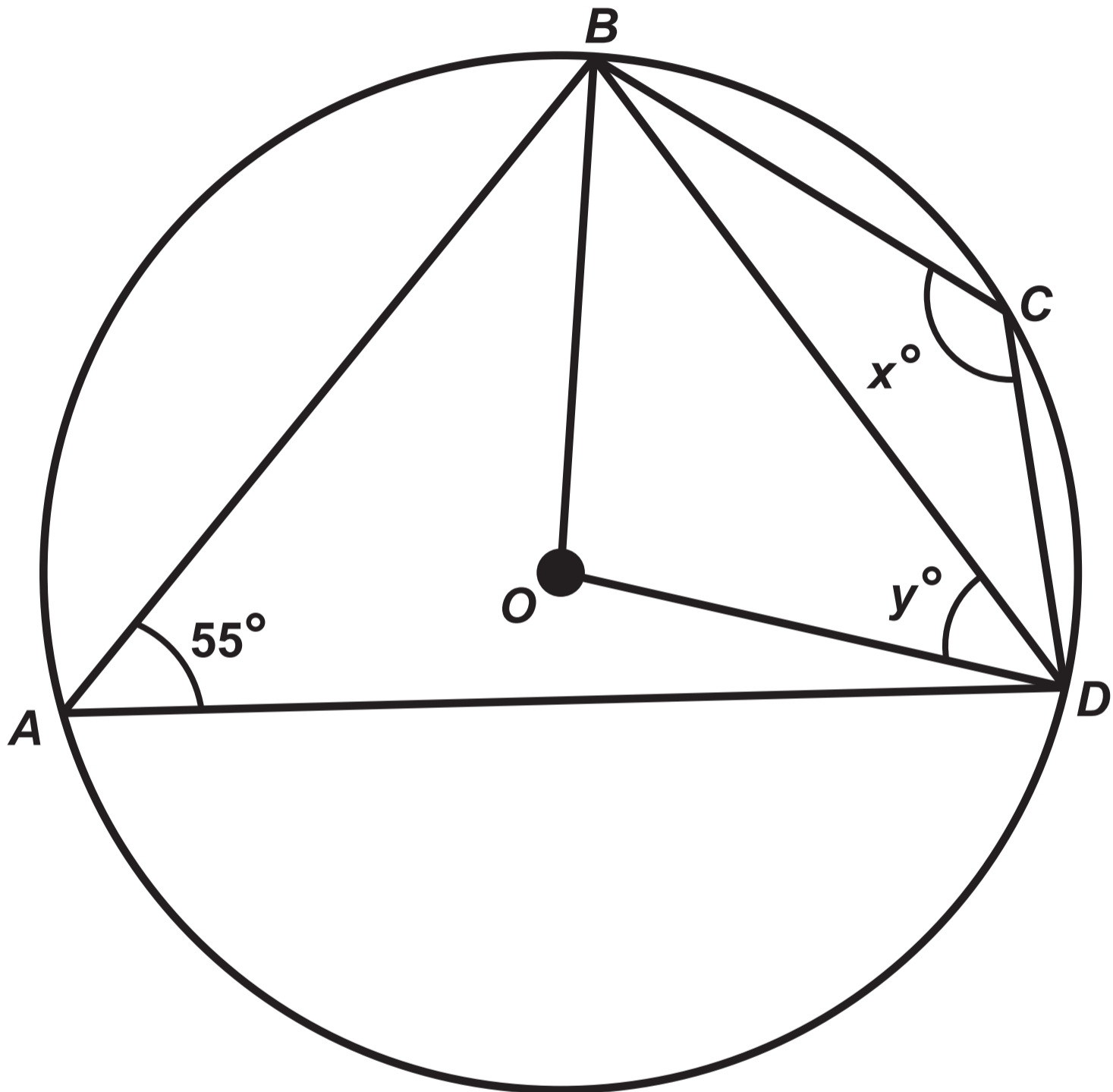
EVAN

JANE



Question 18

Diagram NOT drawn to scale



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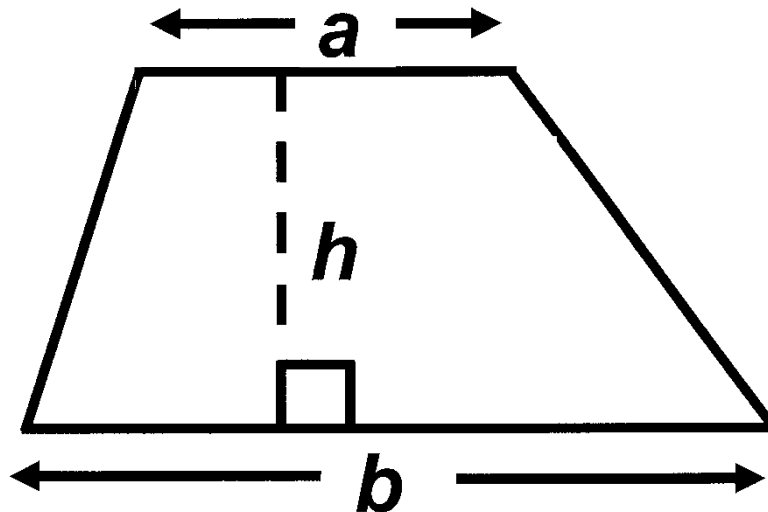
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

You must not write on these formula pages.

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

Formula List – Intermediate Tier

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



Volume of prism =
area of cross – section \times length

