



GCSE

3300U30–1

THURSDAY, 16 MAY 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.	6	
2.	2	
3.	3	
4.	5	
5.	4	
6.	4	
7.	4	
8.	7	
9.	5	
10.	6	
11.	6	
12.	3	
13.	5	
14.	5	
15.	4	
16.	3	
17.	3	
18.	5	
Total	80	

(Turn over)

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.

Cut out shape for Question 9 (a)

Model for Question 11.

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.

Write your answers in the spaces provided.

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

Question numbers must be given for the 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 11, the assessment will take into account the quality of your organisation, communication and accuracy in writing.

(Turn over)

1. (a) Evaluate each of the following.

(i) $9^2 \times 10^3$

[2 marks]

(ii) 0.8×0.25

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 (a) continued**1. (a) (iii) $13\cdot4 - 2\cdot96$**

[1 mark]**continued on the next page . . .****(Turn over)**

Question 1 continued

1. (b) Evaluate $\frac{2}{7} \times \frac{1}{4}$

**Give your answer as a fraction
in its simplest form.**

[2 marks]

(Turn over)

- 2. (a) Which of the following is the nearest value to 488 grams?**

Circle the correct answer.

0.5 kg
500 kg
50 kg
5 tonnes
0.05 kg

[1 mark]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (b) Circle the correct answer for the following.**

15 miles is approximately equal to

1500 m
24 km
15 km
2•4 km
3000 m

(Turn over)

10

[1 mark]

(Turn over)

3. The n th term of a sequence is given by $5n - 1$

Calculate the sum of the first three terms.

You must show all your working.

12

Sum of the first three terms

=

[3 marks]

(Turn over)

4. Look at the diagram for Question 4 in the separate Diagram Booklet. The diagram is NOT drawn to scale. In the diagram, ABC is a right – angled triangle and CDE is an isosceles triangle.

Angle $ABC = 90^\circ$,

angle $BAC = 64^\circ$

and $CD = CE$.

Angle $ACB = w$

Angle $ECD = x$

Angle $EDC = y$

AD and BE are straight lines intersecting at C .

continued on the next page . . .

(Turn over)

Question 4 continued

Calculate the size of each of the angles w , x and y .

(Turn over)

w = _____ ☐

x = _____ ☐

y = _____ ☐

[5 marks]

(Turn over)

5. In a game, each competitor will have 20 attempts at throwing a ball into a bucket.

They will get 1 point for every ball that lands in the bucket.

Sioned wants to keep a record of the total points for each competitor.

She decides to show the results in a table with the total points recorded in GROUPS OF EQUAL WIDTH.

continued on the next page . . .

(Turn over)

Question 5 continued

5. (a) She starts to draw a table using five groups, as shown below.

Total points	Number of competitors
0 to 3	
4 to 7	
8 to 11	
_____ to _____	
_____ to _____	

continued on the next page . . .

(Turn over)

Question 5 (a) continued

Explain why these groups will not be suitable.

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 continued

5. (b) Sioned considers using the table shown below.

She decides that it is suitable for recording all the total points in **GROUPS OF EQUAL WIDTH**.

Fill in the two missing numbers in the **TOTAL POINTS** column.

Total points	Number of competitors
0 to 6	
7 to _____	
_____ to 20	

continued on the next page . . .

(Turn over)

Question 5 (b) continued

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 continued

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

Finally, Sioned decides to use the groups shown in the table.

The results for the first 100 competitors are shown in the table.

continued on the next page . . .

(Turn over)

Question 5 (c) continued

One of these 100 competitors is chosen at random.

- (i) What is the probability that this competitor scored 6, 7 or 8 points?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 5 (c) continued

- 5. (c) (ii) Explain why the following statement may be incorrect.**

“The probability that this competitor scored 19

points is $\frac{11}{100}$.”

[1 mark]

(Turn over)

**6. (a) Express 96 as a percentage
of 300**

[2 marks]

continued on the next page . . .

(Turn over)

Question 6 continued

6. (b) Share £48 in the ratio 1 : 7

[2 marks]

(Turn over)

7. (a) Factorise each of the following.

(i) $14m - 35$

[1 mark]

(ii) $5x + x^2$

[1 mark]

continued on the next page . . .

(Turn over)

Question 7 continued

7. (b) Solve the following equation.

$$\frac{x}{3} + 5 = 9$$

[2 marks]
(Turn over)

- 8. Look at the diagram for Question 8 in the separate Diagram Booklet. Ahmed organises a game using two fair spinners, as shown in the diagram.**

The first spinner shows the values 10, 20, 30 and 40

The second spinner shows the values 1, 2, 3, 4 and 5

continued on the next page . . .

Question 8 continued

In the game, the two spinners are spun and the values shown are added to give a score.

For example, the spinners shown in the diagram score 32

Ahmed charges £1 for each attempt at the game.

Any player who scores 43 OR MORE wins £5

Calculate Ahmed's expected profit when this game is played 100 times.

(Turn over)

(Turn over)

- 9. (a) Look at the diagram for Question 9 (a) in the separate Diagram Booklet.**

The diagram shows a shape on a coordinate grid.

Reflect the shape in the line
 $x = -1$

A cut out shape is provided for this question.

[2 marks]

continued on the next page . . .

(Turn over)

Question 9 continued

- 9. (b) Look at the diagram for Question 9 (b) in the separate Diagram Booklet.**

The diagram shows a different shape on a coordinate grid.

Enlarge the shape by a scale factor of 2, using (1, 3) as the centre of enlargement.

[3 marks]

(Turn over)

10. (a) Write the reciprocal of 4 as a decimal.

[1 mark]

continued on the next page . . .

(Turn over)

Question 10 continued

10. (b) Estimate the value of

$$\frac{79 \cdot 34}{40 \cdot 1 \times 0 \cdot 48}$$

**You must show all your
approximations in your working.**

(Turn over)

[2 marks]

10. (c) Evaluate

$$1\frac{5}{7} + 2\frac{11}{14}$$

Give your answer in its
simplest form.

(Turn over)

[3 marks]

(Turn over)

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

Ask for the model for Question 11.

The model is NOT made to scale.

**The model is a right – angled
triangular prism.**

**Look at the diagram for Question 11
in the separate Diagram Booklet.**

The diagram is NOT drawn to scale.

continued on the next page . . .

(Turn over)

Question 11 continued

The right-angled triangle ABC is a cross-section of a prism, as shown in the diagram.

In the diagram,

$AB = 9$ cm,

$BC = 10$ cm and

angle $ABC = 90^\circ$

The length of the prism is 20 cm.

Calculate the volume of the prism.

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)

[illegible]

(Turn over)

12. Look at the diagram for Question 12 in the separate Diagram Booklet.

Point P lies on:

- **the bisector of angle ABC**
- **the perpendicular bisector of line BC .**

Using only a ruler and a pair of compasses, CONSTRUCT suitable lines and arcs to show the position of point P .

Construction arcs must be clearly shown.

[3 marks]

(Turn over)

- 13. Look at the diagram for Question 13 in the separate Diagram Booklet.**
- The diagram is NOT drawn to scale.**
- The diagram shows a shape *ABCDEF* made by joining two rectangles together.**
- The area of the whole shape *ABCDEF* is 89 cm^2**

In the diagram,

$$***AB = (y + 8) \text{ cm}***$$

$$***AF = 7 \text{ cm}***$$

$$***CD = 3 \text{ cm}***$$

$$***DE = (y + 1) \text{ cm}***$$

continued on the next page . . .

(Turn over)

Question 13 continued

**Form and solve an equation to find
the value of y**

(Turn over)

46

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[5 marks]

(Turn over)

**14. Look at the information for
Question 14 in the separate
Diagram Booklet.**

**It gives information about a Lowest
Common Multiple (LCM) and a
Highest Common Factor (HCF).**

Calculate the value of n .

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.

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)

n = _____

[5 marks]

(Turn over)

15. A group of people hired two buses, Bus A and Bus B, to take them home from a party.

Bus A left the party at 11:00 p.m.

Bus B left the party at midnight.

A person from the group is chosen at random.

The probability that this person left

the party on Bus A is $\frac{3}{8}$

The probability that this person sat on the left – hand side of the bus is equal to the probability that this person sat on the right – hand side.

continued on the next page . . .

(Turn over)

Question 15 continued

**15. (a) Look at the diagram for
Question 15 (a) in the separate
Diagram Booklet.**

**The diagram is an incomplete
tree diagram.**

Complete the tree diagram.

[2 marks]

continued on the next page . . .

(Turn over)

Question 15 continued

15. (b) What is the probability that this person sat on the right – hand side of the bus that left at midnight?

[2 marks]

(Turn over)

16. (a) Express 0.0057 in standard form.

[1 mark]

continued on the next page . . .

(Turn over)

Question 16 continued

16. (b) Calculate the value of

$$\frac{2 \times 10^4}{5 \times 10^{-3}}$$

**Give your answer in
standard form.**

[2 marks]

(Turn over)

17. A car travels a distance of x miles in 2 hours.

In the next hour, it travels a further distance of 36 miles.

Its average speed for the whole journey is 42 mph.

Calculate the value of x .

You must show all your working.

(Turn over)

[illegible]

(Turn over)

[3 marks]

18. Look at the diagrams for Question 18 in the separate Diagram Booklet.

The diagrams are NOT drawn to the same scale.

The diagrams show kite $ABCD$ and isosceles triangle PQR .

In the kite diagram:

$$AB = 13 \text{ cm}$$

$$AD = (2x + 3y) \text{ cm}$$

$$BC = 22 \text{ cm}$$

$$DC = (8x - 3y) \text{ cm}$$

continued on the next page . . .

(Turn over)

Question 18 continued

In the isosceles triangle diagram:

$$PQ = x \text{ cm}$$

$$PR = x \text{ cm}$$

$$RQ = y \text{ cm}$$

Using the information shown on the kite, calculate the perimeter of the isosceles triangle.

Do not use a trial and improvement method.

You must show all your working.

(Turn over)

Perimeter of the isosceles triangle

= _____ cm

[5 marks]

END OF PAPER

TOTAL 80 MARKS

(Turn over)

[illegible]

(Turn over)

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

(Turn over)

[illegible]

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MATHEMATICS

UNIT 1: NON – CALCULATOR

INTERMEDIATE TIER

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

Diagram Booklet

Surname: _____

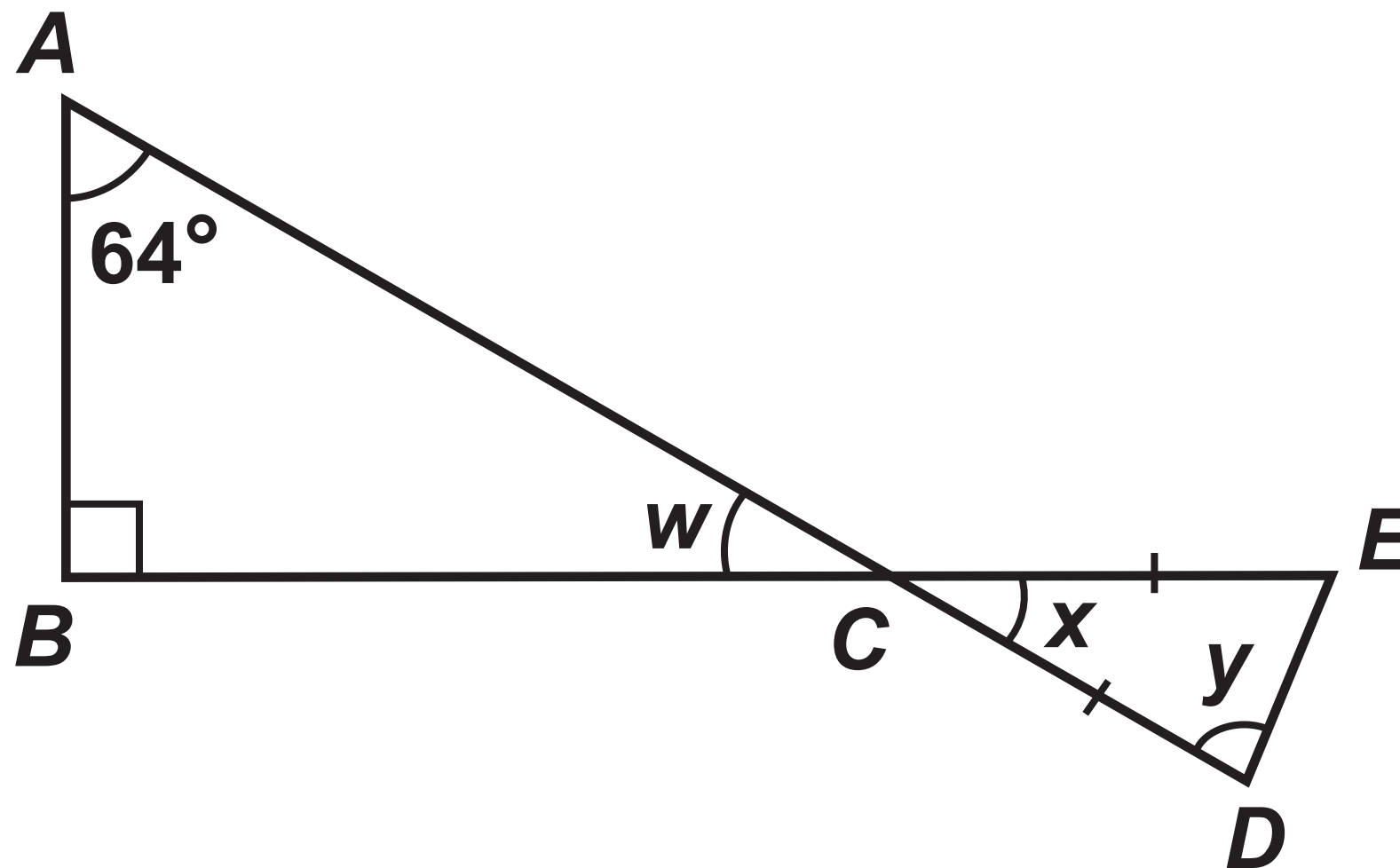
First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 4

Diagram NOT drawn to scale



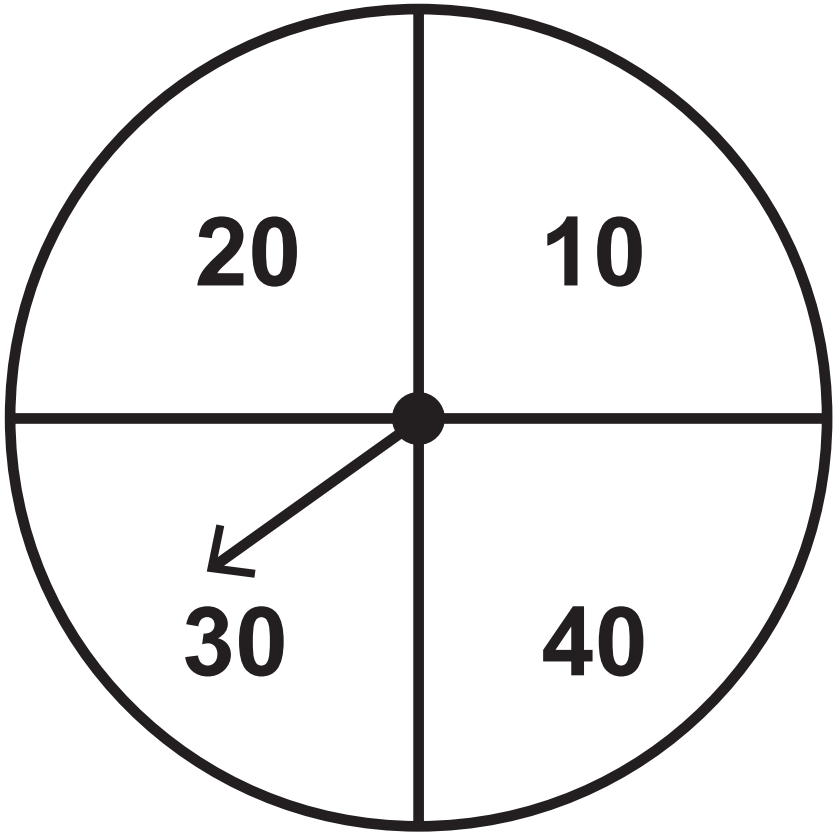
Question 5 (c)

Table

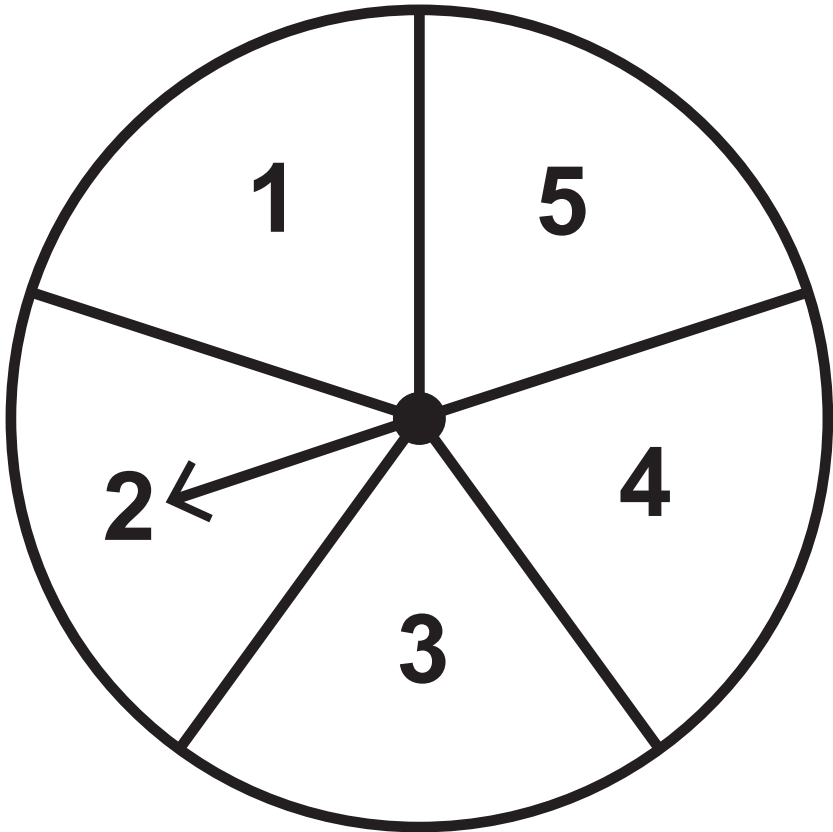
Total points	Number of competitors
0 to 2	5
3 to 5	10
6 to 8	17
9 to 11	22
12 to 14	23
15 to 17	12
18 to 20	11

Question 8

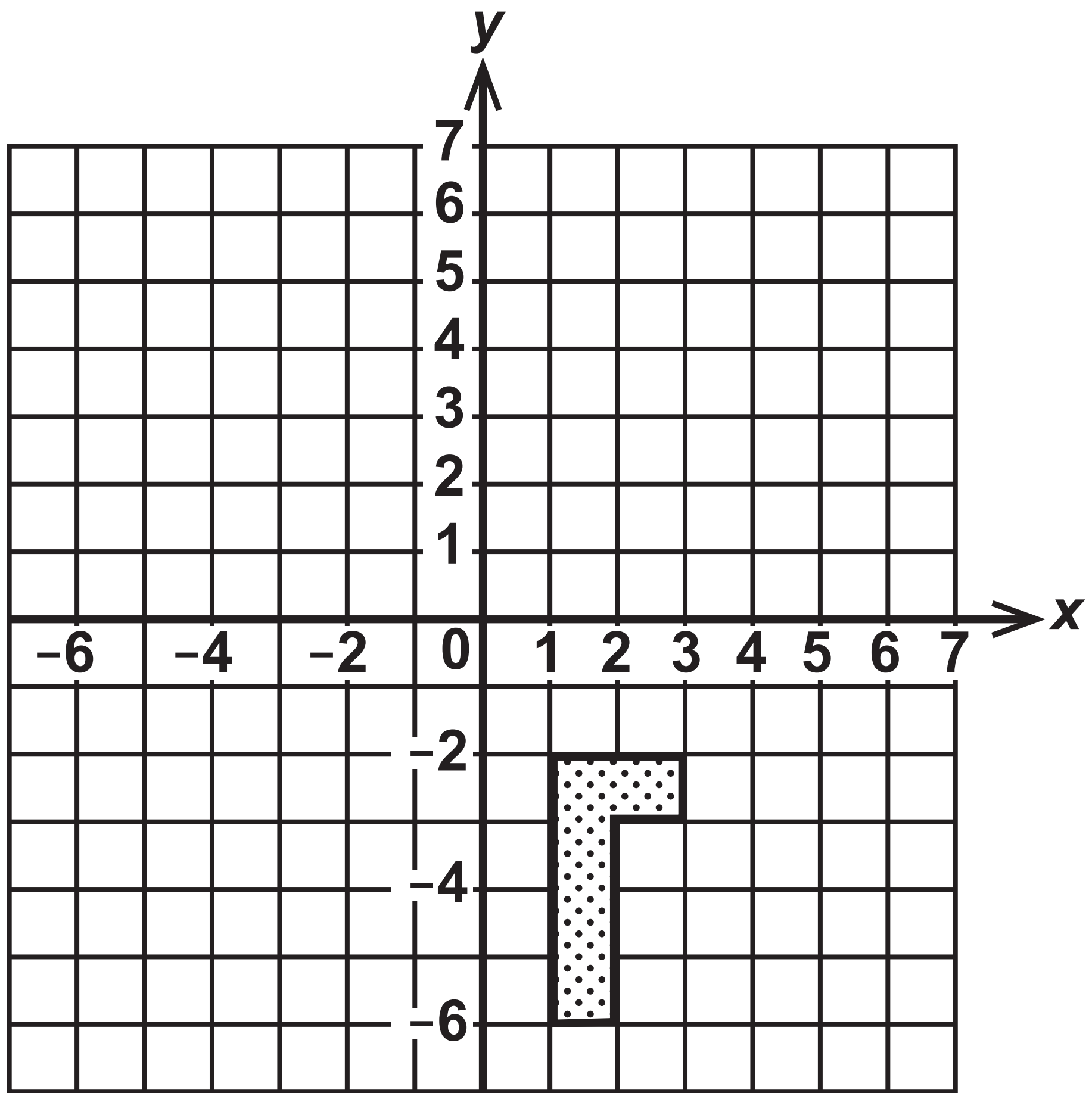
First Spinner



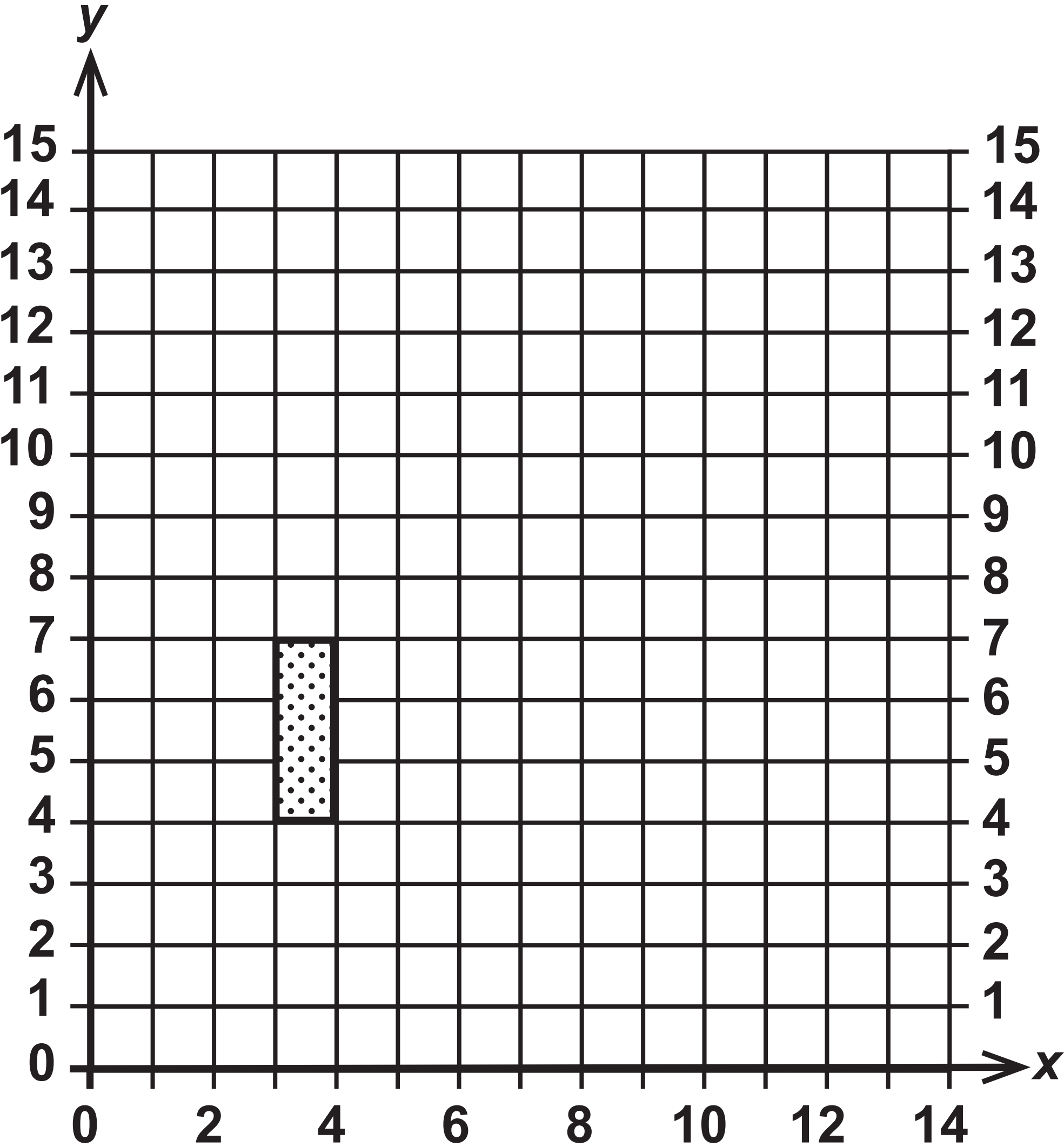
Second Spinner



Question 9 (a)

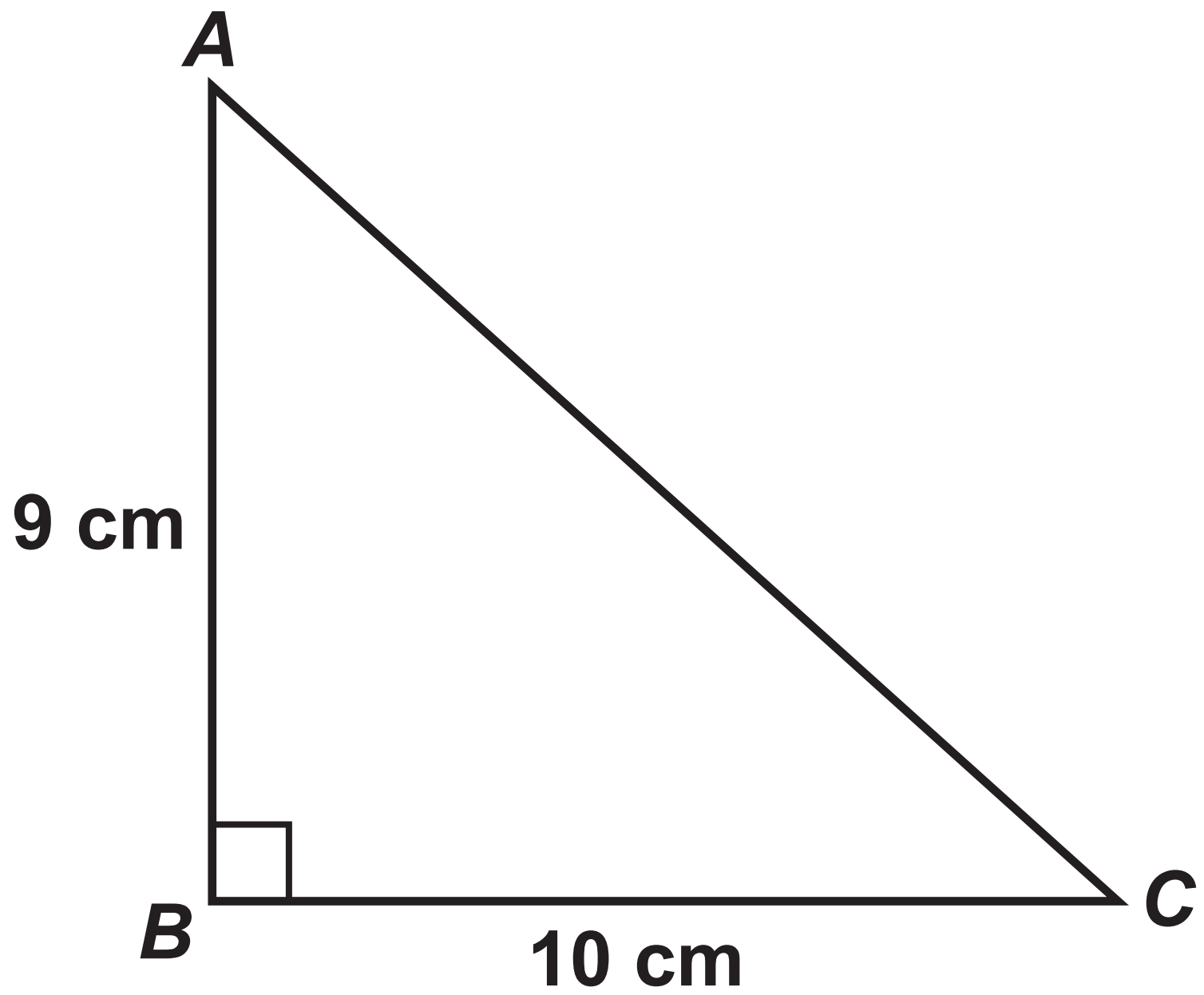


Question 9 (b)

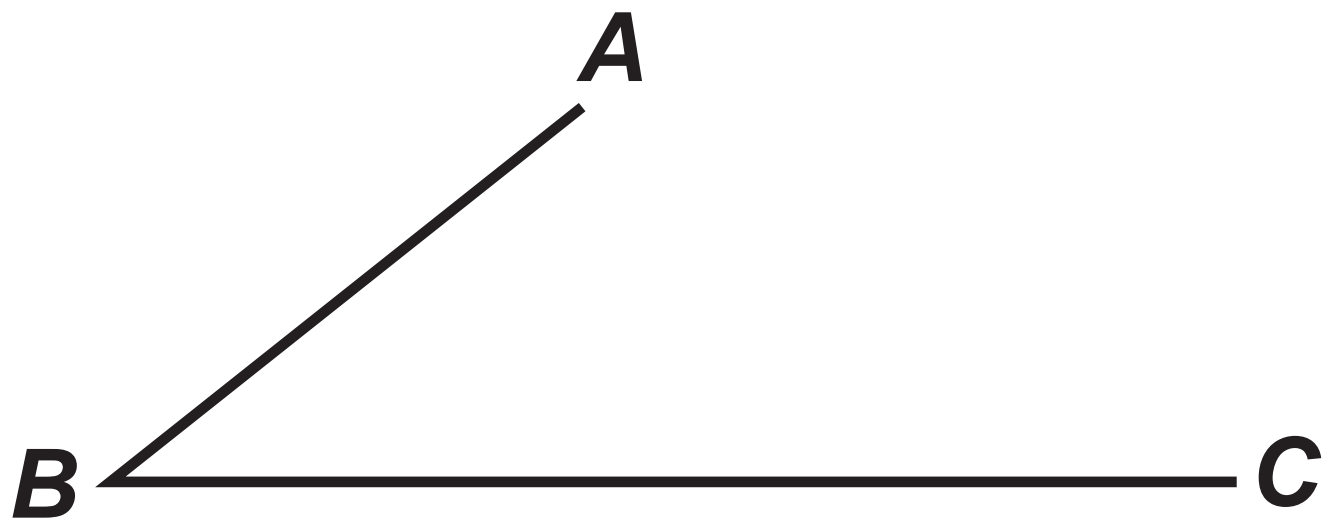


Question 11

Diagram NOT drawn to scale

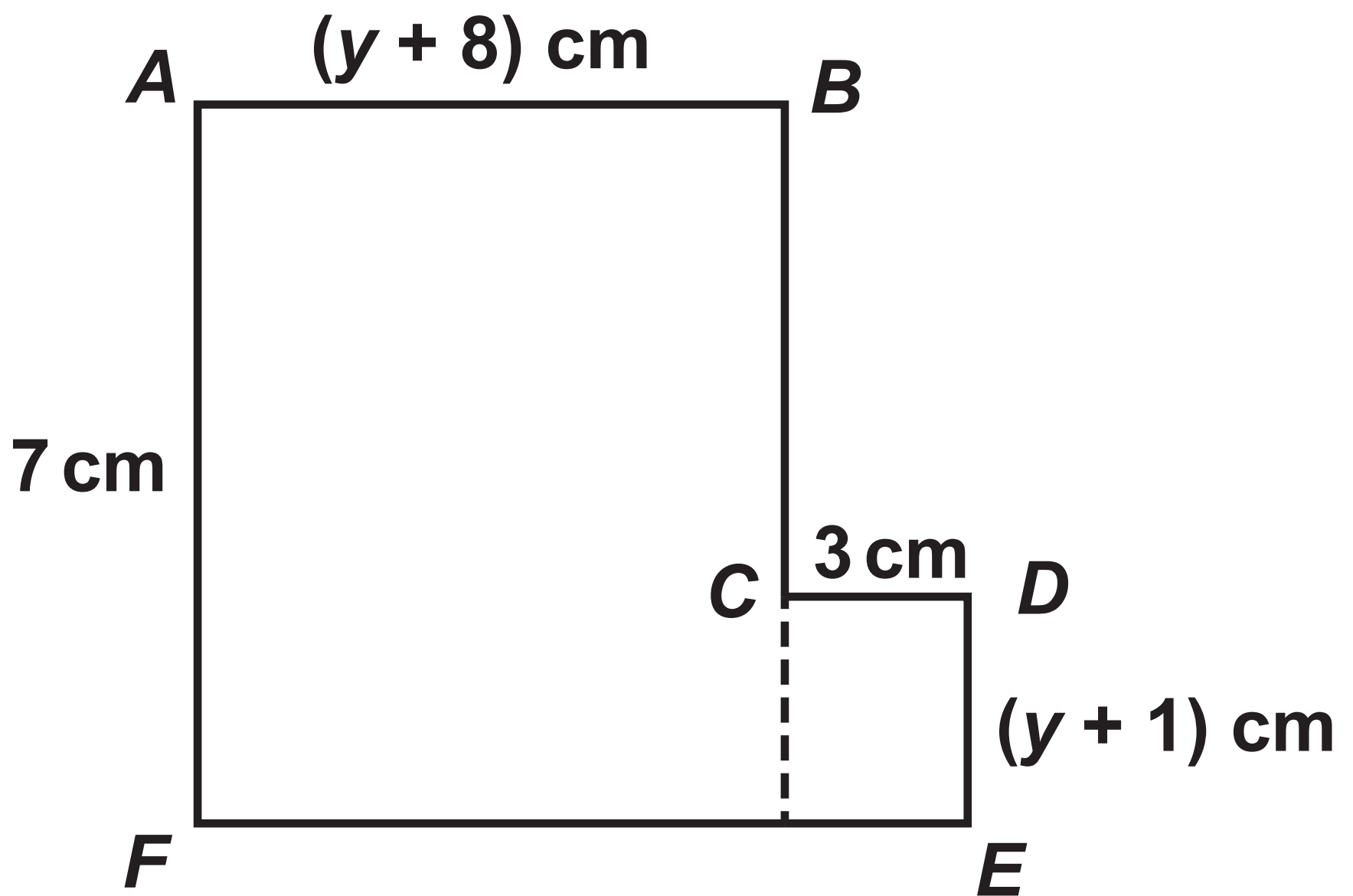


Question 12



Question 13

Diagram NOT drawn to scale



Question 14

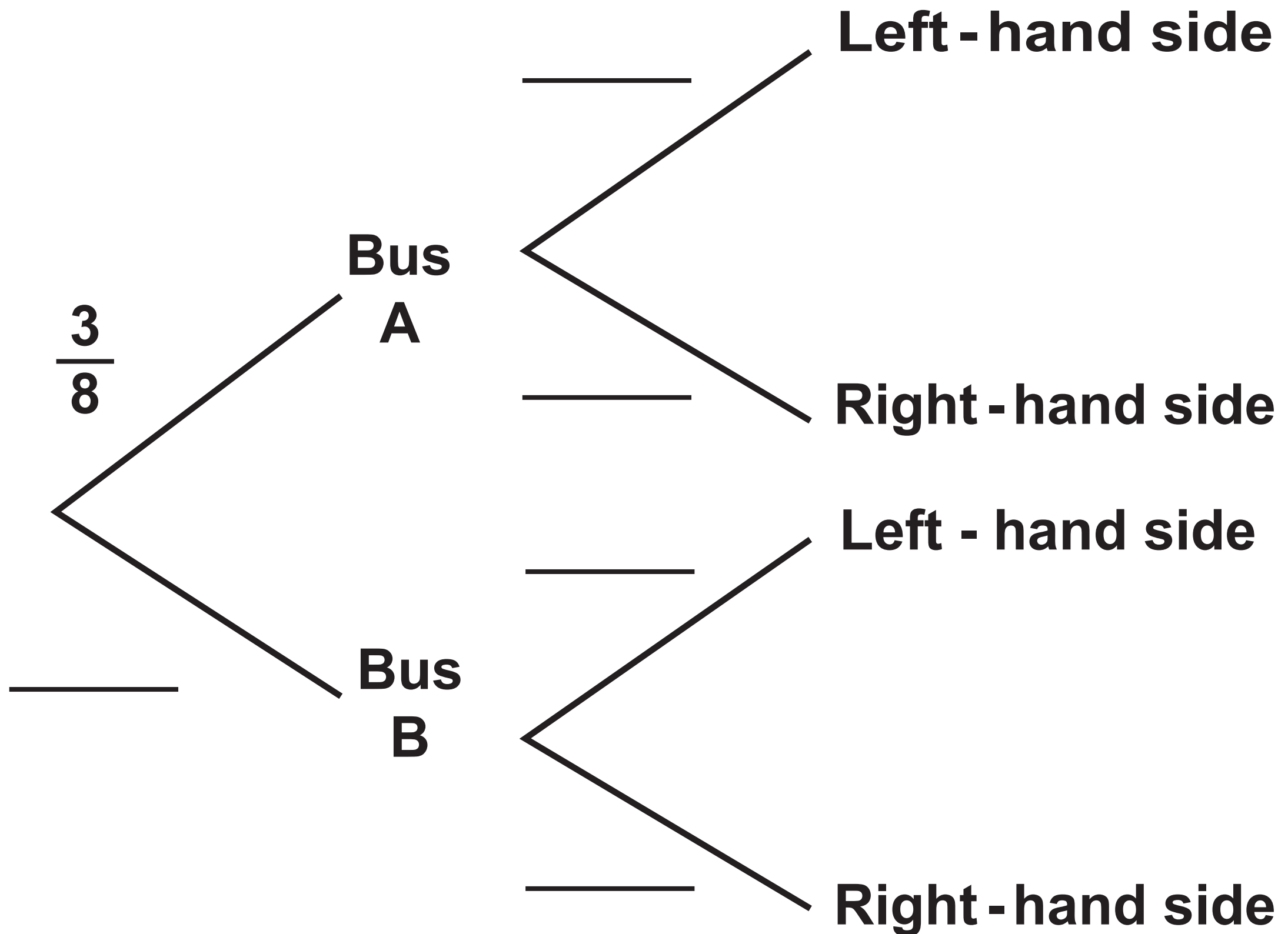
Information

**Lowest common
multiple (LCM) of 10 and 18**

= n x

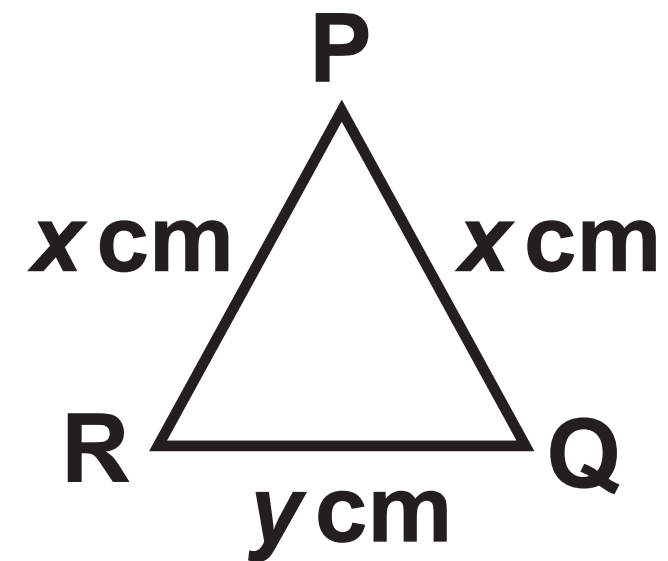
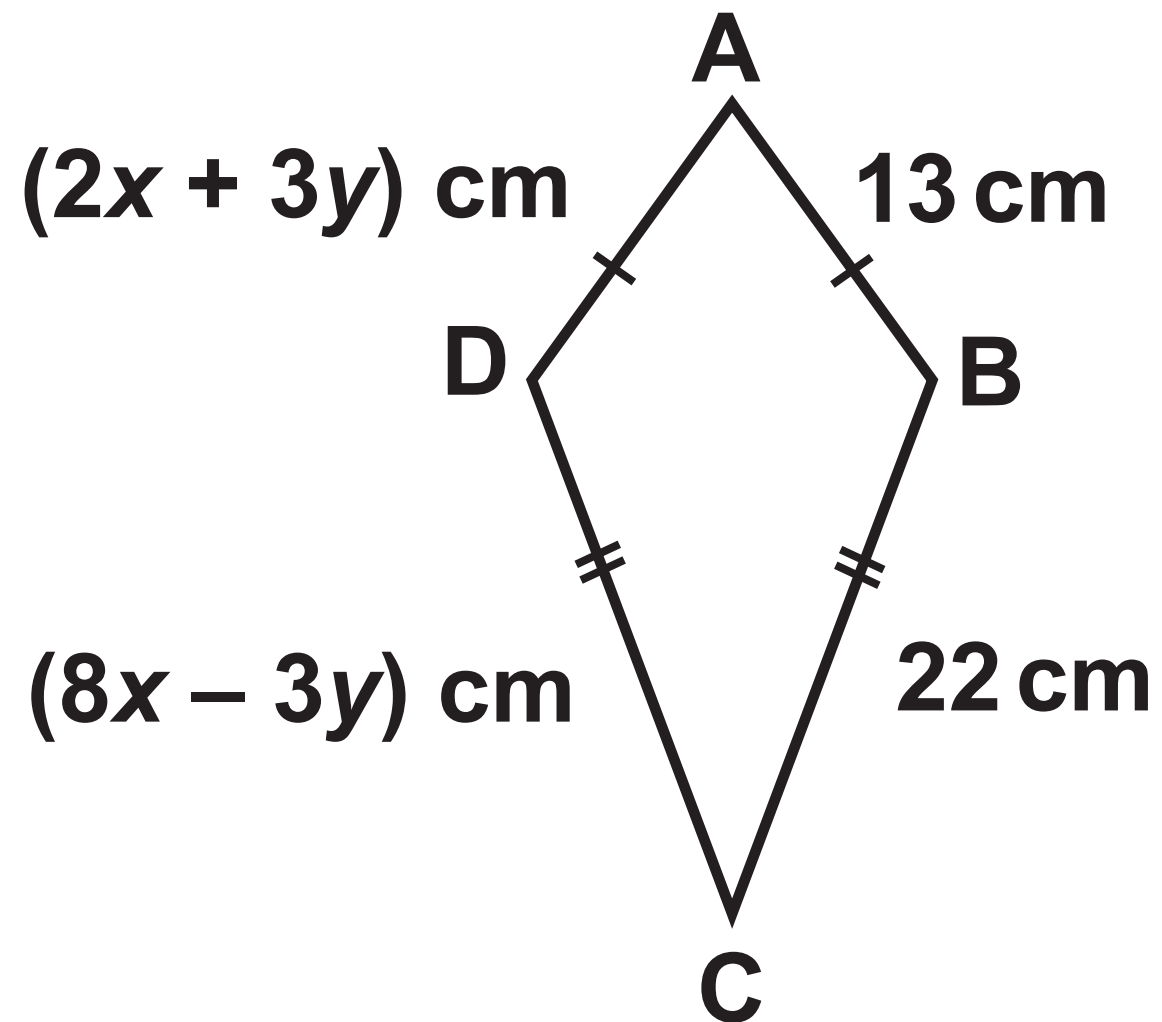
**Highest common
factor (HCF) of 30 and 72**

Question 15 (a)



Question 18

Diagrams are NOT drawn to the same scale



**GCSE
MATHEMATICS
and
NUMERACY**



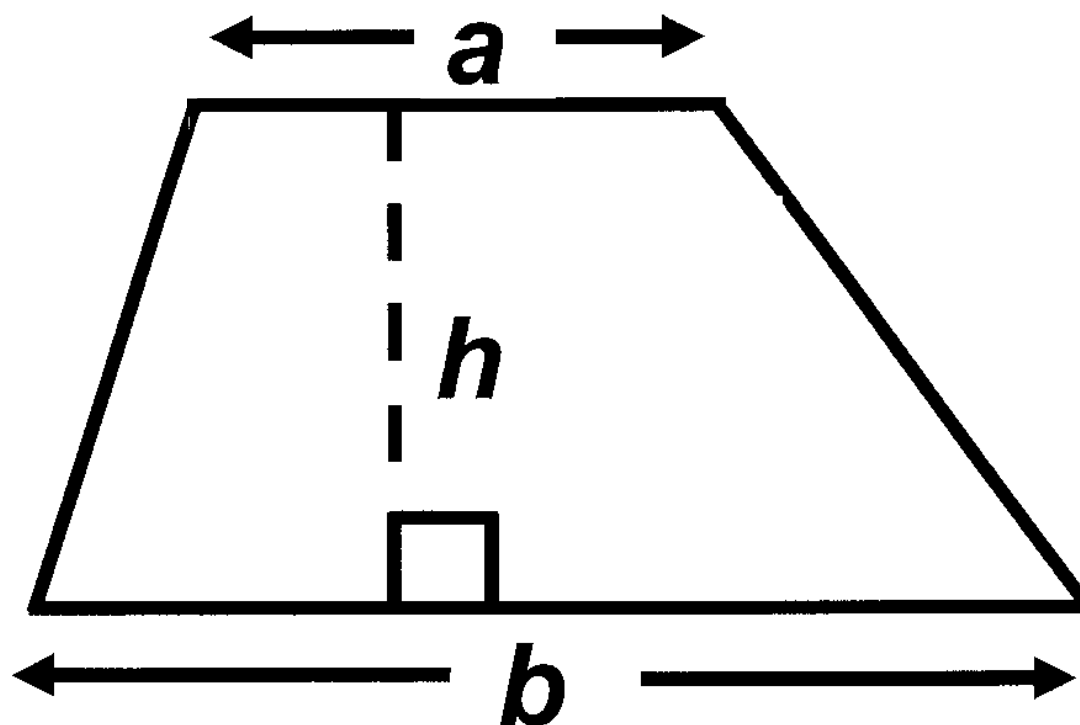
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

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

