



GCSE

3300U40 – 1

WEDNESDAY, 12 JUNE 2024 – MORNING

MATHEMATICS

UNIT 2: CALCULATOR – ALLOWED

INTERMEDIATE TIER

1 hour 45 minutes plus your additional time allowance

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

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: **0**

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	3	
2.	3	
3.	4	
4.	6	
5.	5	
6.	4	
7.	3	
8.	5	
9.	3	
10.	3	
11.	4	
12.	4	
13.	5	
14.	6	
15	2	
16	6	
17.	3	
18.	3	
19.	4	
20.	4	
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.

Models for Question 5 (a) and Question 14.

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 $3 \cdot 14$ 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 8, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Solve each of the following equations.

(a) $\frac{x}{5} = 20$

[1 mark]

(b) $7m + 3 = 31$

[2 marks]

(Turn over)

2. (a) Evaluate 55% of $42 \cdot 8$

[2 marks]

(b) Which one of the following is NOT equal to a recurring decimal?

Circle the correct answer.

$\frac{2}{11}$	$\frac{2}{3}$	$\frac{3}{16}$	$\frac{7}{9}$	$\frac{5}{6}$
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[1 mark]

(Turn over)

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

The diagram IS drawn to scale.

The diagram shows the line ***AB***.

ABC is a large triangle, where

AC = 16 m and ***BC*** = 13 m

- (a) On the diagram, draw a scale drawing of this triangle using the following scale:

1 cm REPRESENTS 2 metres.

The side ***AB*** has already been drawn accurately.

[2 marks]

- (b) (i) What is the size of angle ***ACB***?

[1 mark]

continued on the next page . . .

(Turn over)

Question 3 (b) continued

3. (b) (ii) What is the actual length of ***AB*** in the large triangle?

Actual length of ***AB*** = _____ m
[1 mark]

4. (a) A bowl contains 9 litres of water.
400 cm³ of water is poured out of the bowl.

How much water is left in the bowl?

Circle the correct answer.

50 cm ³
500 cm ³
5 litres
8•6 litres
8•96 litres

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

- 4. (b) How many minutes are there in 1 day
and 5 hours?**

1 day and 5 hours = _____ minutes

[2 marks]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (c) Look at the diagram for Question 4 (c) in the separate Diagram Booklet.

The diagram shows part of a measuring tape used in a long – jump competition.

The arrow indicates the distance jumped by the competitor who came second.

The winning jump was **676 cm** long.

What was the difference between the lengths of these jumps?

[3 marks]

(Turn over)

5. (a) Look at the diagram for Question 5 (a) in the separate Diagram Booklet.

Ask for the model for Question 5 (a).

The model is a cuboid measuring
7 cm by 5 cm by 3 cm.

On the grid, draw an isometric representation
of the cuboid measuring
7 cm by 5 cm by 3 cm.

[2 marks]

- (b) Calculate the volume of the cuboid.

You must give the units of your answer.

[3 marks]

(Turn over)

6. A children's play area contains a large number of coloured balls.

Some are yellow, some are red, some are blue and the others are pink.

- (a) A ball is chosen at random from the play area.

Complete the table below to find the probability of choosing a pink ball.

Colour	Probability
Yellow	0.54
Red	0.12
Blue	0.25
Pink	

[2 marks]

6. (b) There are **575** blue balls in the play area.

What is the total number of balls in the
play area?

[2 marks]

(Turn over)

7. Use the formula $v = u + at$ to find the value of t when $v = 51 \cdot 3$, $u = 2 \cdot 3$ and $a = 9 \cdot 8$

[3 marks]

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

What is $\frac{1}{3}$ of the time difference between

18:30 today and 10:30 tomorrow?

Give your answer in HOURS AND MINUTES.

You must show all your working.

(Turn over)

[3 marks + 2 marks OCW]

9. Calculate the circumference of a circle with a radius of 38 cm.

Give your answer in cm, correct to 2 significant figures.

[3 marks]

10. The employees of a company belong to one of three departments: MANAGEMENT (M), SALES (S) or DISTRIBUTION (D).

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

The diagram is NOT drawn to scale.

The diagram is a sketch of a pie chart.

The diagram shows the proportion of employees working in each of these departments.

An employee is chosen at random.

Calculate the probability that this employee works in the DISTRIBUTION department.

Give your answer as a decimal.

(Turn over)

[3 marks]

11. (a) Evaluate $\sqrt{0.9^3 - 0.9^4}$

[2 marks]

continued on the next page . . .

(Turn over)

Question 11 continued

- 11. (b) What is the greatest integer value of n if $2n < 17$?**

Greatest integer value of n = _____

[1 mark]

continued on the next page . . .

(Turn over)

Question 11 continued

11. (c) What is the least integer value of n if $2^n > 125$?

Least integer value of $n =$ _____

[1 mark]

(Turn over)

12. At lunchtime on Wednesday, a café had 19 CUSTOMERS.

- **7 of these customers bought a meal AND a drink.**
- **2 of these customers did not buy a meal OR a drink.**
- **The total number of customers who bought a meal was TWICE the total number of customers who bought a drink.**

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

The diagram is an incomplete Venn diagram.

Complete the Venn diagram to show this information.

(Turn over)

[2 marks]

12. (b) One of these customers is chosen at random.
What is the probability that this customer bought a meal?

[2 marks]

(Turn over)

13. The table below shows some of the values of $y = 2x^2 + 5x - 3$ for values of x from -4 to 2

x	$y = 2x^2 + 5x - 3$
-4	9
-3	0
-2	-5
-1	-6
0	-3
1	
2	15

(a) Complete the table.

[1 mark]

continued on the next page . . .

(Turn over)

Question 13 continued

13. (b) On the grid provided for Question 13 (b) in the separate Diagram Booklet, draw the graph of $y = 2x^2 + 5x - 3$ for values of x from -4 to 2

[2 marks]

- (c) Draw the line $y = 6$ on the grid.

Write down the values of x where the line $y = 6$ cuts the curve $y = 2x^2 + 5x - 3$

Values of x are _____ and _____

[2 marks]

14. Ask for the model for Question 14.

The model is NOT made to scale.

The model represents a water container.

It is formed from an open rectangular tank with a solid cylinder attached to its base inside the tank.

The base radius of the cylinder is 10 cm.

The height of the cylinder is 30 cm.

How many LITRES of water can the container hold?

You must show all your working.

(Turn over)

The container can hold _____ litres.
[6 marks]

15. The equation of a straight line is $y = -3x + 7$

(a) What is the gradient of the line?

Circle the correct answer.

$\frac{1}{3}$	$-\frac{1}{3}$	3	-3	7
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[1 mark]

(b) What are the coordinates of the point where the line intersects the y - axis?

Circle the correct answer.

$(-3, 7)$	$(0, -3)$	$(0, 3)$	$(0, -7)$	$(0, 7)$
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[1 mark]

16. Look at the diagram for Question 16 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

In the diagram, ABD and BCD are both right – angled triangles.

$AB = 7.3$ cm, $AD = 13.8$ cm and $CD = 5.5$ cm.

Calculate the value of y .

(Turn over)

(Turn over)

17. Factorise $x^2 + 3x - 40$, and hence solve $x^2 + 3x - 40 = 0$

This image shows a blank sheet of white paper with horizontal black 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)

18. p and q are two numbers, where $q > p$

The mean of the two numbers is equal to the range of the two numbers.

Show that $3p = q$

[3 marks]

(Turn over)

19. (a) Look at the diagrams for Question 19 (a) in the separate Diagram Booklet.

The diagrams are NOT drawn to scale.

The diagrams show two similar triangles, *ABC* and *PQR*.

In the triangle *ABC*

$$AB = 5.2 \text{ cm}$$

$$BC = 3.8 \text{ cm}$$

In the triangle *PQR*

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

$$QR = 13.3 \text{ cm}$$

Calculate the value of *x*.

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

Question 19 continued

19. (b) Look at the diagrams for Question 19 (b) in the separate Diagram Booklet.

The diagrams are NOT drawn to scale.

Four rectangles labelled A, B, C and D are shown.

Which two rectangles are similar?

Give a reason for your choice.

The two rectangles which are similar are rectangles _____ and _____

Reason: _____

[2 marks]

(Turn over)

20. Aled and Berwyn share $\pounds x$ in the ratio 2 : 3

(a) Aled's share of the money is $\pounds 0.4x$

What is Berwyn's share of the money in terms of x ?

[1 mark]

(b) Carys and Delyth share the same amount, $\pounds x$, in the ratio 3 : 7

Show that one of these four people receives the same amount as the combined total of two of the other people.

(Turn over)

[3 marks]

END OF PAPER
TOTAL 80 MARKS

(Turn over)

[illegible]

(Turn over)

[illegible]

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MATHEMATICS

UNIT 2: CALCULATOR – ALLOWED

INTERMEDIATE TIER

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

Diagram Booklet

Surname: _____

First name(s): _____

Centre Number: _____

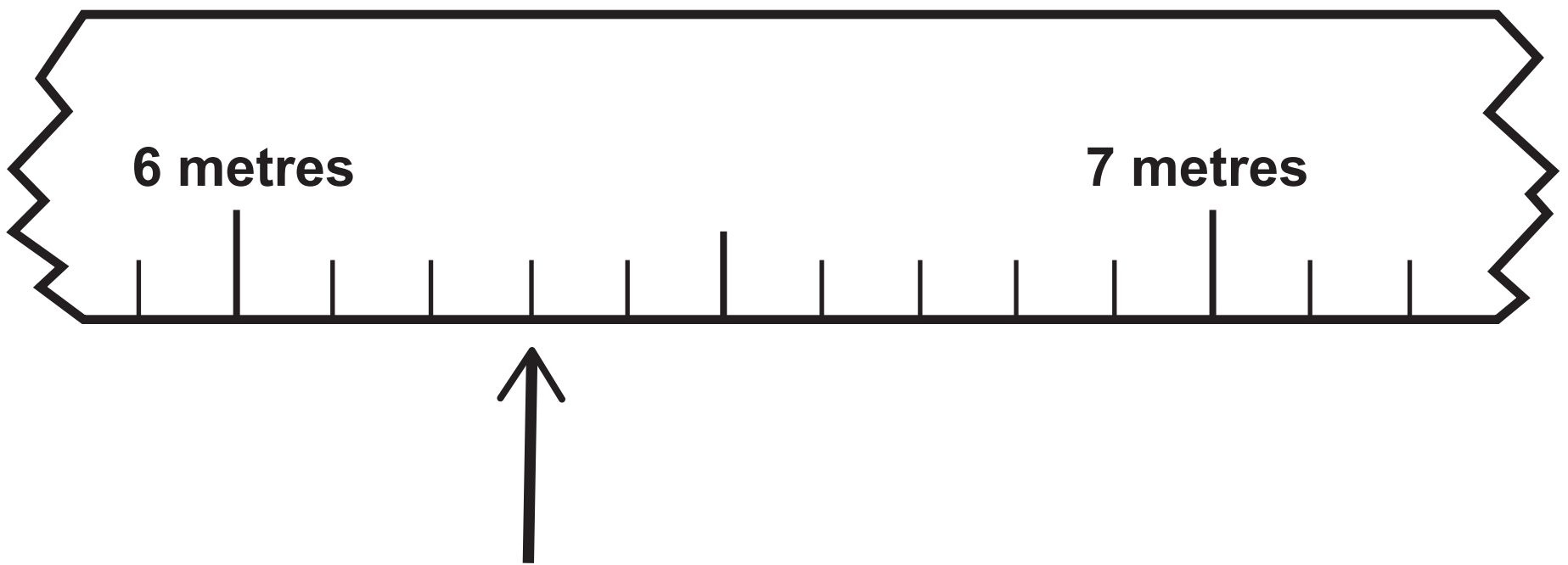
Candidate Number: 0 _____

Question 3

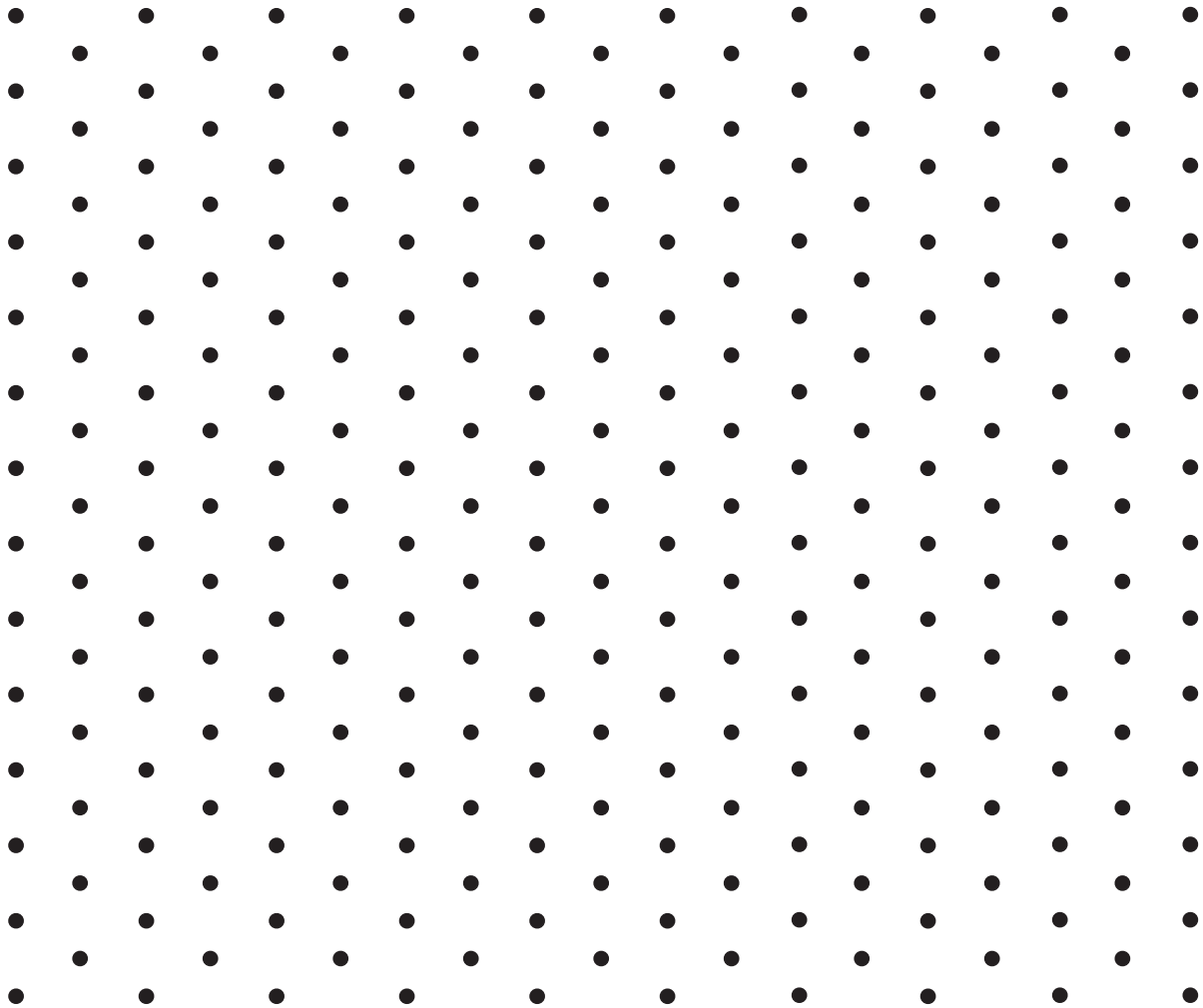
Scale: 1 cm REPRESENTS 2 metres



Question 4 (c)



Question 5 (a)



Question 10

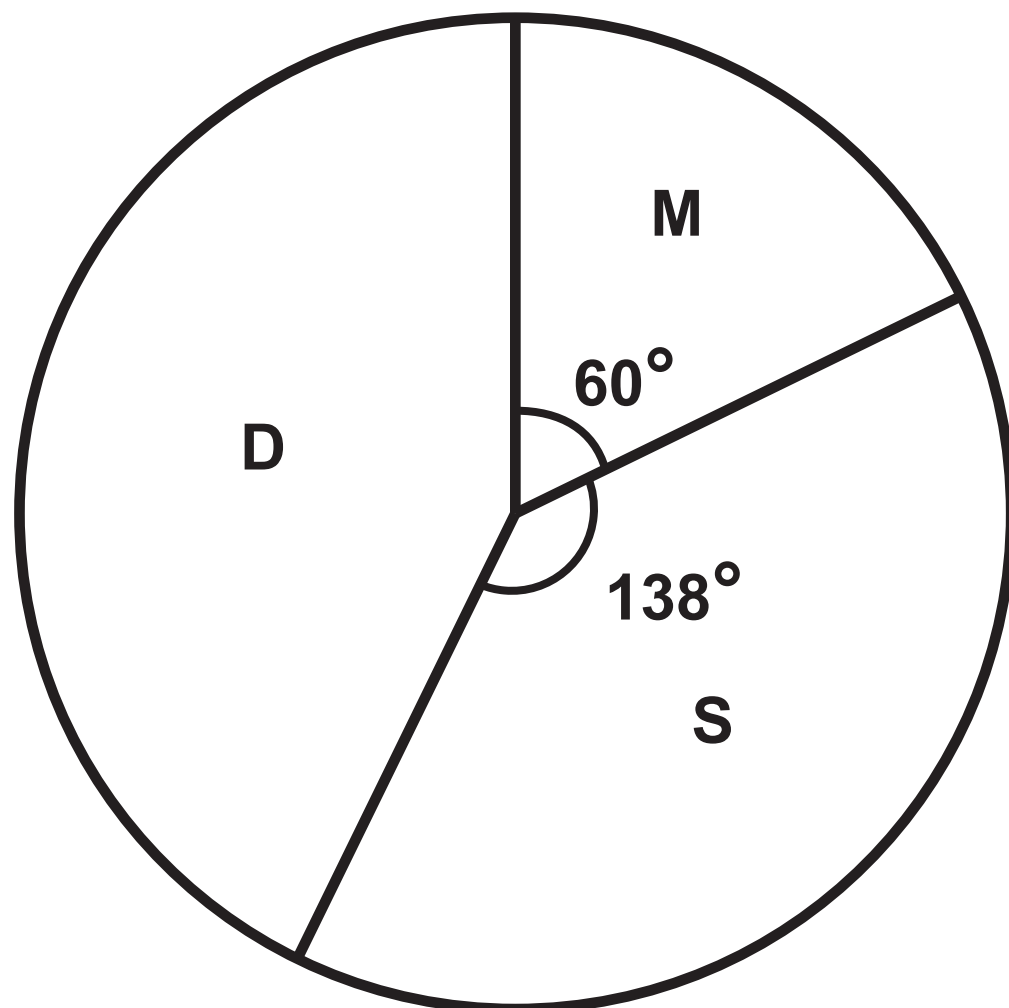
Diagram NOT drawn to scale

Key:

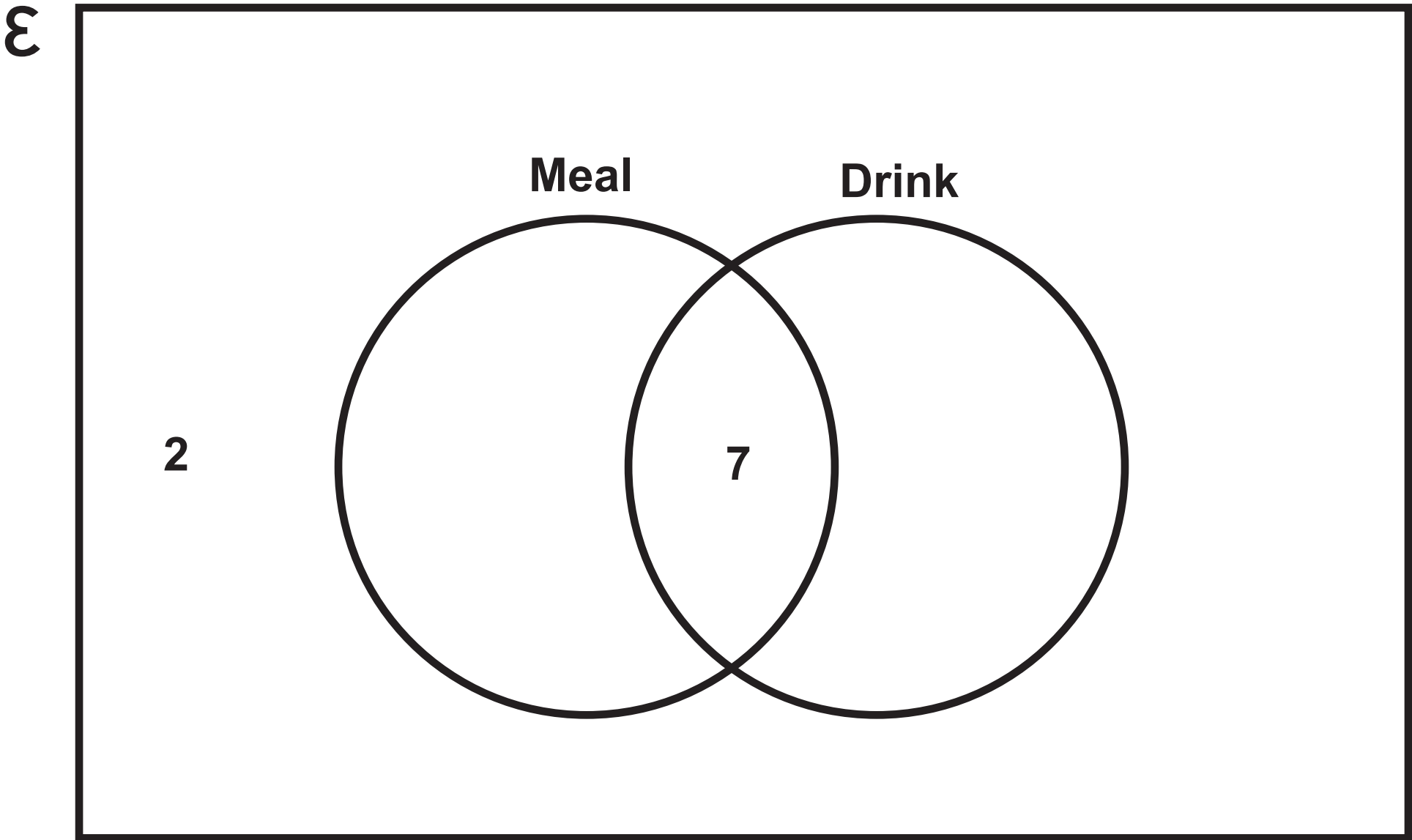
M = MANAGEMENT

S = SALES

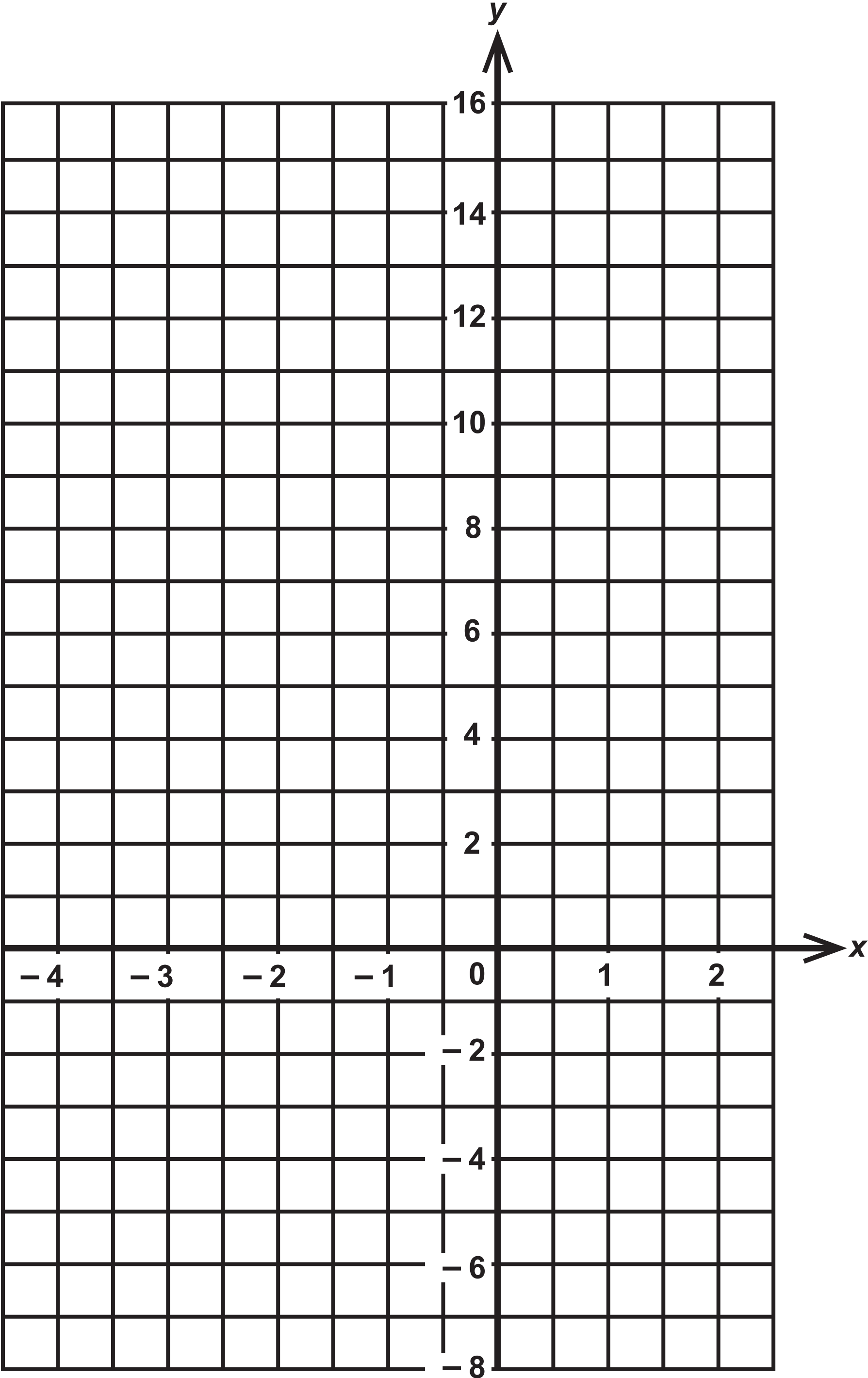
D = DISTRIBUTION



Question 12 (a)

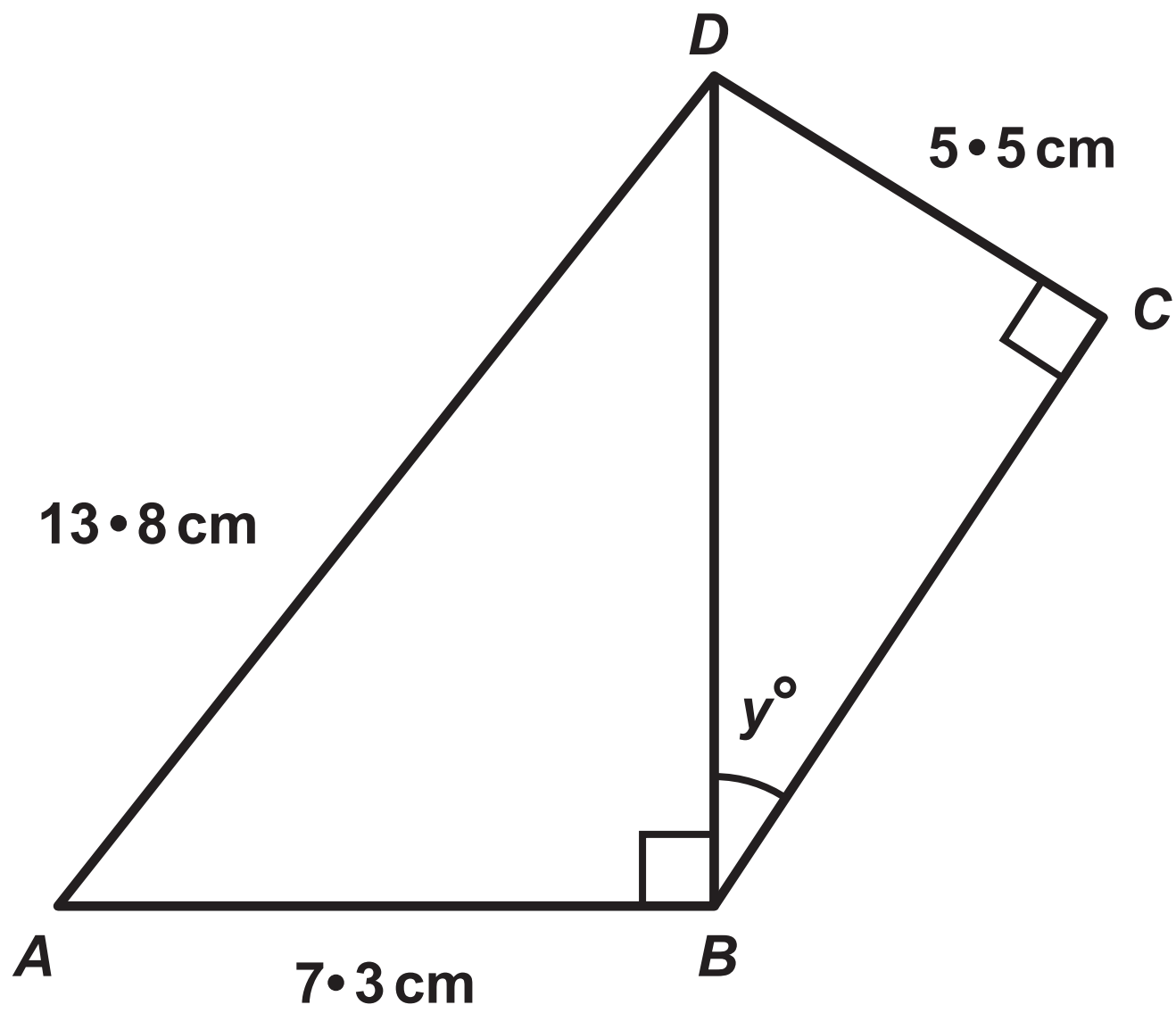


Question 13 (b)



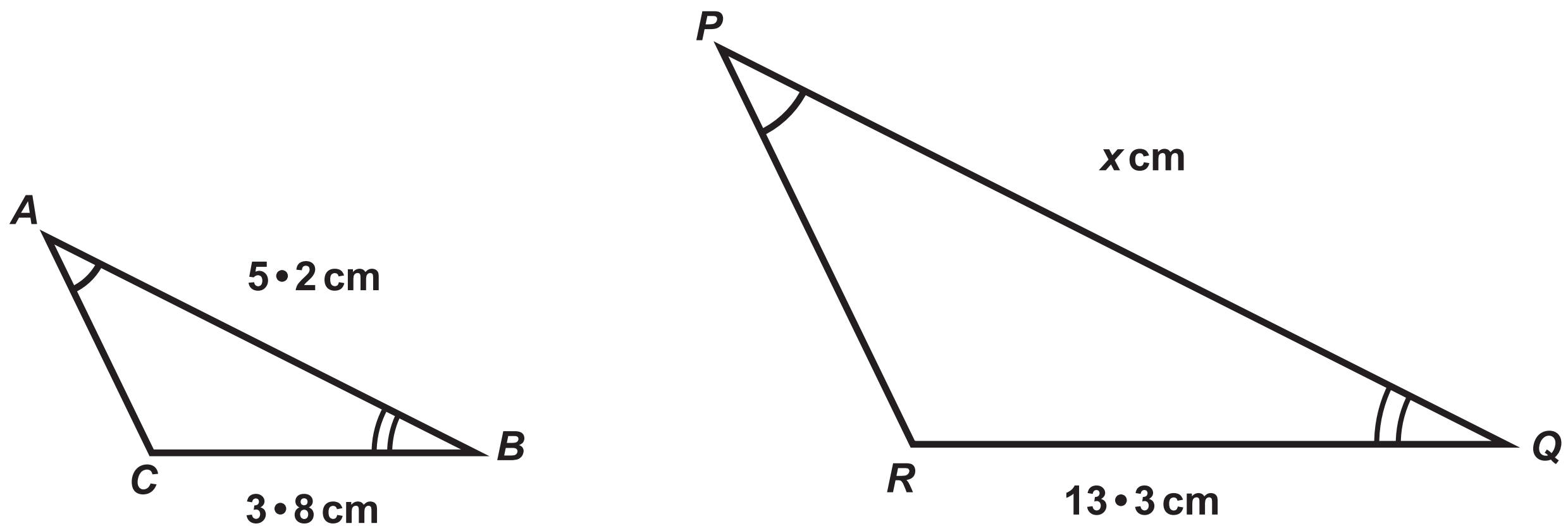
Question 16

Diagram NOT drawn to scale



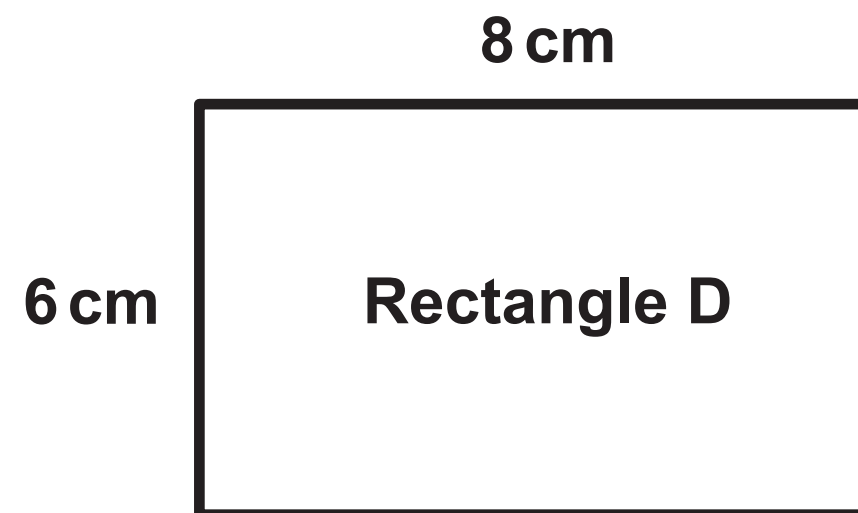
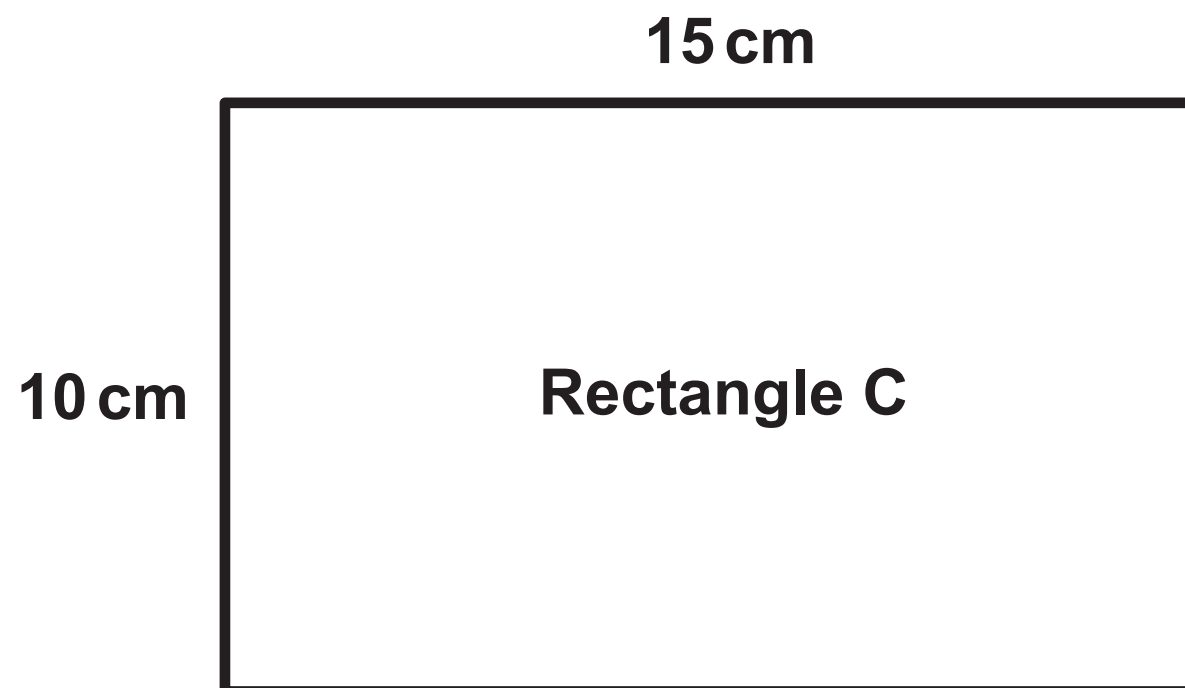
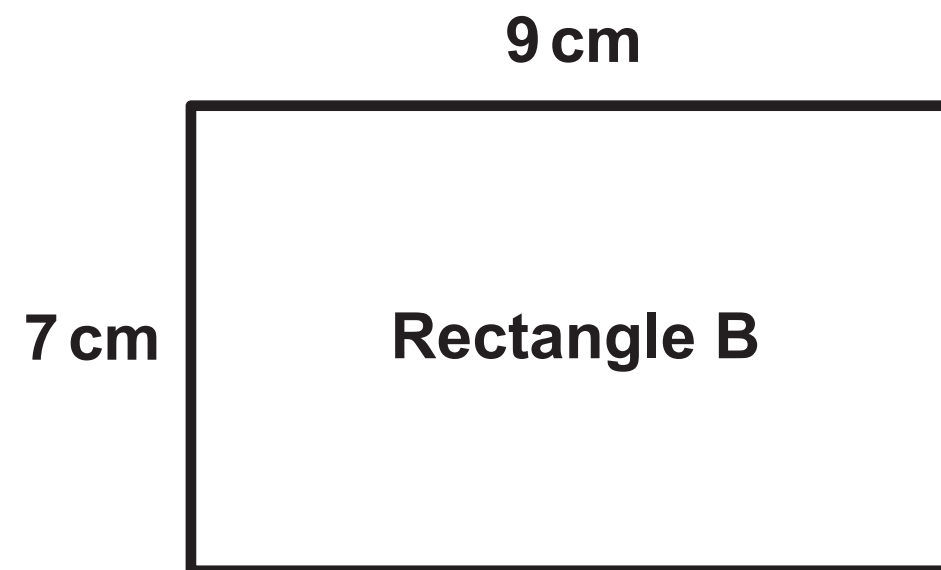
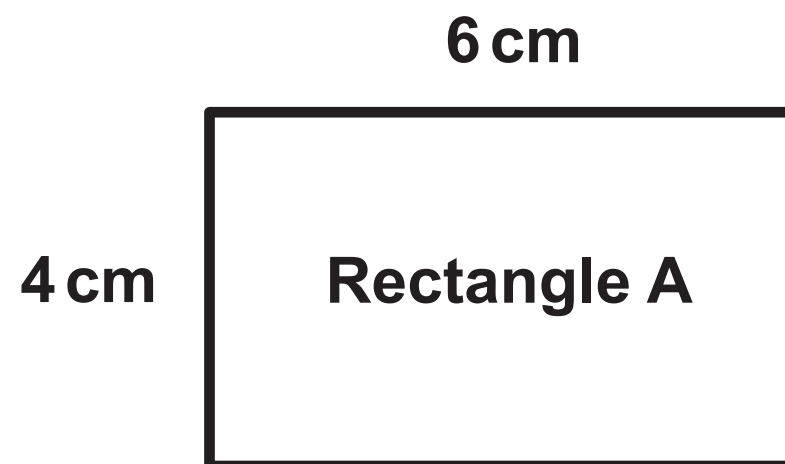
Question 19 (a)

Diagrams NOT drawn to scale



Question 19 (b)

Diagrams NOT drawn to scale



**GCSE
MATHEMATICS
and
NUMERACY**



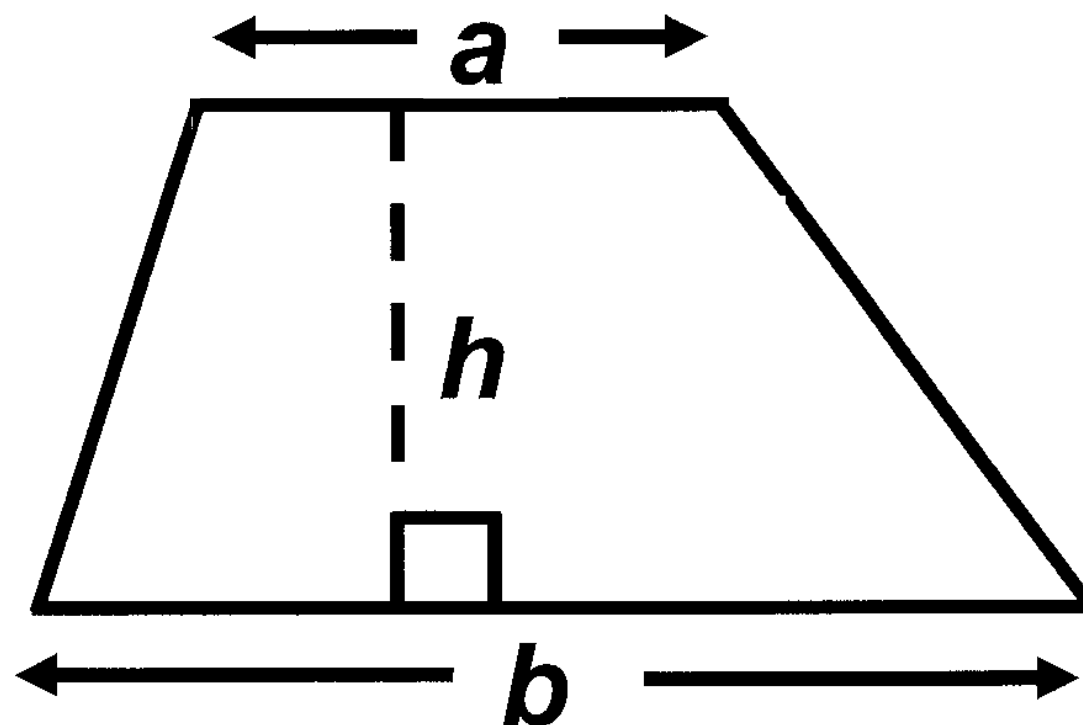
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

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

