GCSE

3300U10-1

MATHEMATICS

UNIT 1: NON – CALCULATOR

FOUNDATION TIER

TUESDAY,

21 MAY 2019 – MORNING

1 hour 30 minutes

(plus your additional time allowance)

THE USE OF A CALCULATOR IS NOT PERMITTED IN THIS EXAMINATION

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	4	
2.	5	
3.	2	
4.	2	
5.	4	
6.	7	
7.	4	
8.	4	
9.	3	
10.	5	
11.	5	
12.	3	
13.	4	
14.	5	
15.	4	
16.	4	
Total	65	

Surname:	
Other Names:	
Centre Number:	
Candidate Number:	**0**

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.

A spare Diagram Booklet.

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 continuation pages at the back of the booklet.
Question numbers must be given for all work written on the continuation page(s).

Take π as $3 \cdot 14$

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 7, the assessment will take into account the quality of your linguistic and mathematical organisation and communication.

In question 2 (a), the assessment will take into account the quality of your linguistic and mathematical accuracy in writing.

1. (a) Add 3874 and 649

[1 mark]

(b) Subtract 532 from 700

[1 mark]

continued on the next page . . .

Question 1 continued

1. (c) Write down all the factors of 27

_____

_____

_____

_____

_____

The factors of 27 are _____

[2 marks]

2. (a) IN THIS PART OF THE QUESTION, YOU WILL BE ASSESSED ON THE QUALITY OF YOUR LINGUISTIC AND MATHEMATICAL ACCURACY IN WRITING.

Look at the diagram for Question 2 (a) in the separate Diagram Booklet.

The diagram shows a shape drawn on a square grid.

Each square represents an area of $5\ cm^2$

Estimate the total area of the shape.

You must show all your working.

[3 marks + 1 mark W]

Question 2 continued

2. (b) Look at the diagram for Question 2 (b) in the separate Diagram Booklet.
The diagram shows a shape on a square grid.

Draw a reflection of the shape in the line *PQ*.

[1 mark]

3. (a) Jac has a box of 100 cards.

50 of the cards are blue.

Jac chooses a card at random from his box of cards.

Describe the chance that Jac chooses a blue card.

Circle the correct expression from those given below.

impossible
unlikely
an even chance
likely
certain

[1 mark]

continued on the next page . . .

Question 3 continued

3. (b) Mair has a different box of 100 cards.

All the cards are either red or yellow.
Mair chooses a card at random from her box of cards.

Describe the chance that Mair chooses a green card.
Circle the correct expression from those given below.

impossible
unlikely
an even chance
likely
certain

[1 mark]

4. (a) Look at the diagram for Question 4 (a) in the separate Diagram Booklet.
The diagram shows a circle.

Draw a tangent to the circle.

O **is the centre of the circle.**

[1 mark]

(b) Look at the diagram for Question 4 (b) in the separate Diagram Booklet.
The diagram shows a circle.

Draw a radius of the circle.

O **is the centre of the circle.**

[1 mark]

5. (a) Write $481{\cdot}627$ correct to 2 decimal places.

_____

_____

[1 mark]

(b) Write down the value of 8^2

_____

_____

[1 mark]

(c) Write down the value of $\sqrt{49}$

_____

_____

[1 mark]

(d) Work out $38{\cdot}25 \div 1000$

_____

_____

[1 mark]

6. Look at the diagram for Question 6 in the separate Diagram Booklet.
The diagram is a pie chart.

The pie chart shows the favourite sport of 60 people.

(a) Which is the modal sport?

_____

_____

[1 mark]

(b) One person is chosen at random.

What is the probability that this person said swimming is their favourite sport?

_____

_____

_____

[1 mark]

continued on the next page . . .

Question 6 continued

6. (c) How many people said tennis is their favourite sport?

_____

_____

_____

_____

_____

[2 marks]

continued on the next page . . .

Question 6 continued

6. (d) Using the grid provided for Question 6 (d) in the separate Diagram Booklet, draw a bar chart to display the favourite sports of the 60 people.

SPACE FOR WORKING:

[3 marks]

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

Look at the diagram for Question 7 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

Two rectangles are shown in the diagram.

How many small rectangles will fit exactly into the large rectangle?
The small rectangles must not overlap and there must be no space left.
You must show all your working.

[3 marks + 1 mark OC]

8. (a) Simplify $8p - 12p + 9p$

[1 mark]

(b) Solve the following equations.

(i) $6x = 48$

[1 mark]

(ii) $32 - y = 17$

[1 mark]

Question 8 continued

8. (c) Tom thinks of a number.

He multiplies the number by 4

The answer is 76

What number did Tom think of?

[1 mark]

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

Circle either TRUE or FALSE for each calculation given in the table.

SPACE FOR WORKING:

[3 marks]

10. Look at the list provided for Question 10 in the separate Diagram Booklet.

Twenty – five balls have numbers printed on them.

Some of the balls are coloured yellow (Y), the others are coloured blue (B).

The list shows both the colour of each ball and the number printed on it.

(a) Complete the frequency table for Question 10 (a) in the separate Diagram Booklet.

[2 marks]

continued on the next page . . .

Question 10 continued

10. (b) How can you use your table to check that all the balls have been counted?

_____

_____

_____

_____

_____

[1 mark]

continued on the next page . . .

Question 10 continued

10. (c) The 25 balls are placed in a box.

One ball is chosen at random.

What is the probability that it is a yellow ball numbered less than 100?

[2 marks]

11. (a) Write down the next two numbers in the following sequence.

$-19 \quad -15 \quad -11 \quad -7 \quad \_\_\_\_\_ \quad \_\_\_\_\_$

[2 marks]

(b) Look at the diagram for Question 11 (b) in the separate Diagram Booklet.

Rods are used to make a sequence of patterns as shown in the diagram.

Pattern 1 uses six rods.

(i) How many rods are required to draw Pattern 4?

[1 mark]

Question 11 continued

11. (b) (ii) Pattern 37 requires 186 rods.

How many rods are required to draw Pattern 38?

_____

_____

[1 mark]

(c) Describe in words the rule used in the following sequence.

243 81 27 9 ……..

_____

_____

_____

[1 mark]

12. In this question, you must use only the numbers 3 and 7 to make other numbers. You must only add or subtract.

For example, if we wanted an answer of 11 we could write

$$7 + 7 - 3 = 11$$

Show how you can get each of the following answers.

(a) 2

Write your solution in the box below.

= 2

[1 mark]

Question 12 continued

Remember: You must use only the numbers 3 and 7 to make other numbers.

You must only add or subtract.

12. (b) 8

Write your solution in the box below.

= 8

[1 mark]

continued on the next page . . .

Question 12 continued

Remember: You must use only the numbers 3 and 7 to make other numbers.

You must only add or subtract.

12. (c) 19

Write your solution in the box below.

= 19

[1 mark]

13. A Venn diagram is used to show the following information:

- The Universal set, ε, is the set of numbers from 10 to 20 inclusive.
- Set A = {11, 13, 14, 18, 20}
- Set B = {multiples of 3}

On the blank page provided for Question 13 in the separate Diagram Booklet, draw the Venn diagram that shows the above information.

[4 marks]

14. (a) Solve the following equations.

(i) $\frac{x}{7} = 21$

[1 mark]

(ii) $13f + 2 = 6f + 5$

[3 marks]

Question 14 continued

14. (b) n **is an integer.**

Tick (✓) the correct statement below.

You must give an explanation for your decision.

	Tick (✓)
$5n - 3$ is always an even number.	
$5n - 3$ is always an odd number.	
$5n - 3$ can be an even number or an odd number.	

Explanation _____

_____

_____

_____

_____

[1 mark]

(Turn over)

15. Look at the diagram for Question 15 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

In the diagram, *ABCE* is a square and *CDE* is a right – angled triangle.
The length of *DE* is 4 cm and the area of triangle *CDE* is 14 cm^2

Calculate the area of the WHOLE SHAPE *ABCDE*.
You must show all your working.

[4 marks]

16. Look at the diagram for Question 16 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

ABCD **is a rectangle.**

AB **is parallel to** ***EF*****.**

AC**,** ***CE*** **and** ***DG*** **are straight lines.**

Find the size of each of the angles marked ***w*****,** ***x*** **and** ***y*****.**

w = _____ °

x = _____ °

y = _____ °

[4 marks]

END OF PAPER

TOTAL 65 MARKS

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

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Diagram Booklet

Surname:	
Other Names:	
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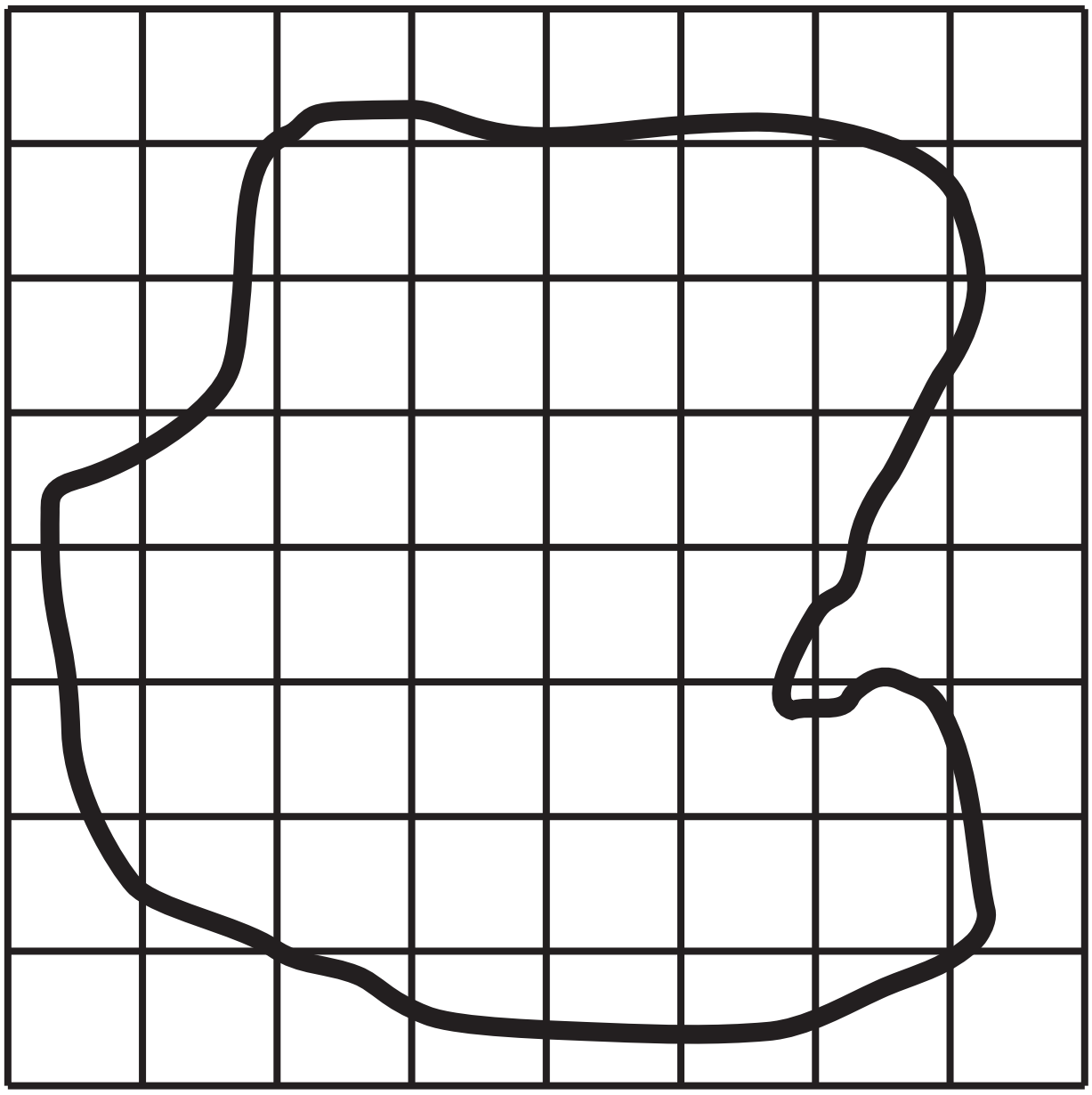
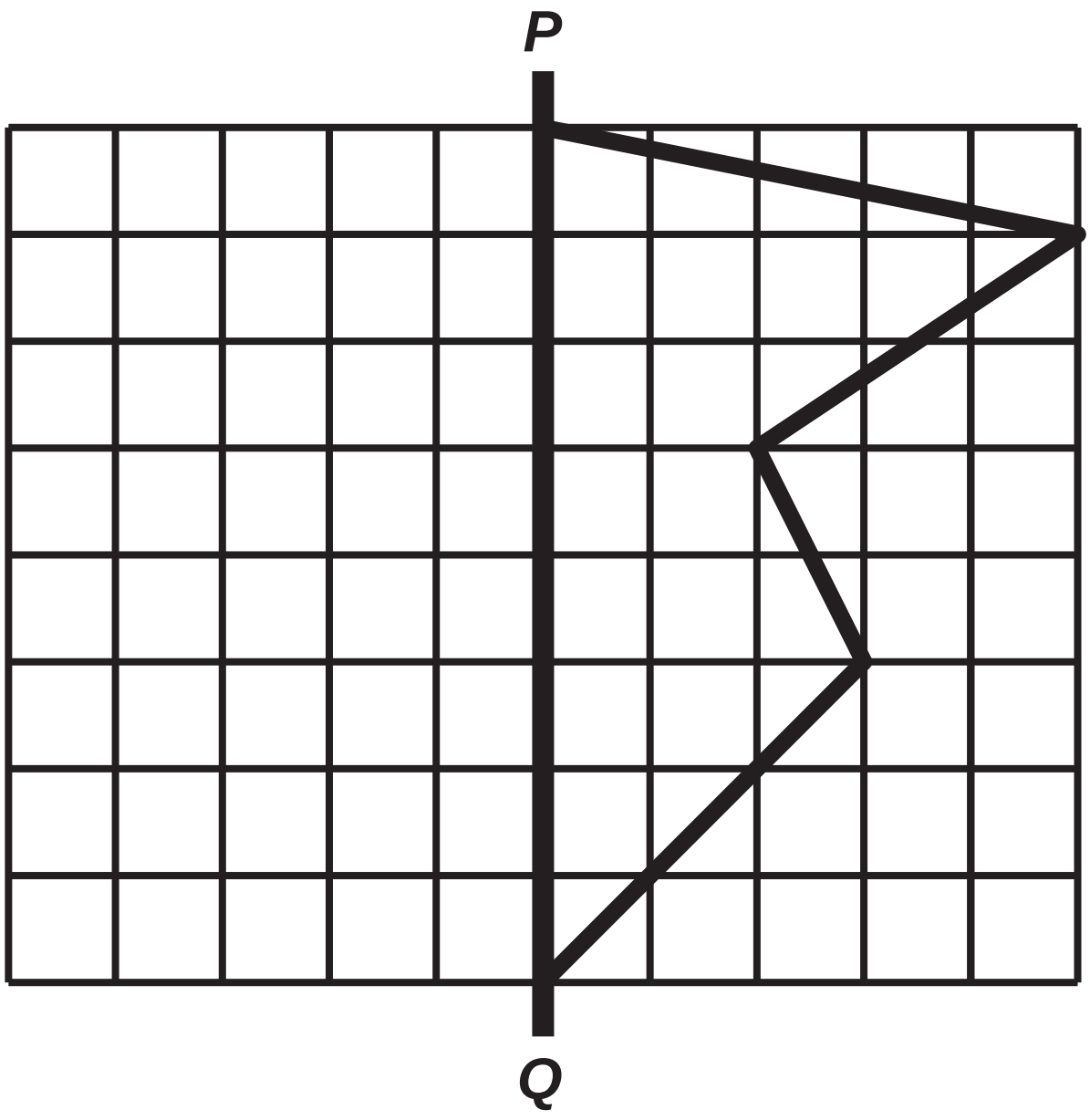
Candidate Number:	**0**

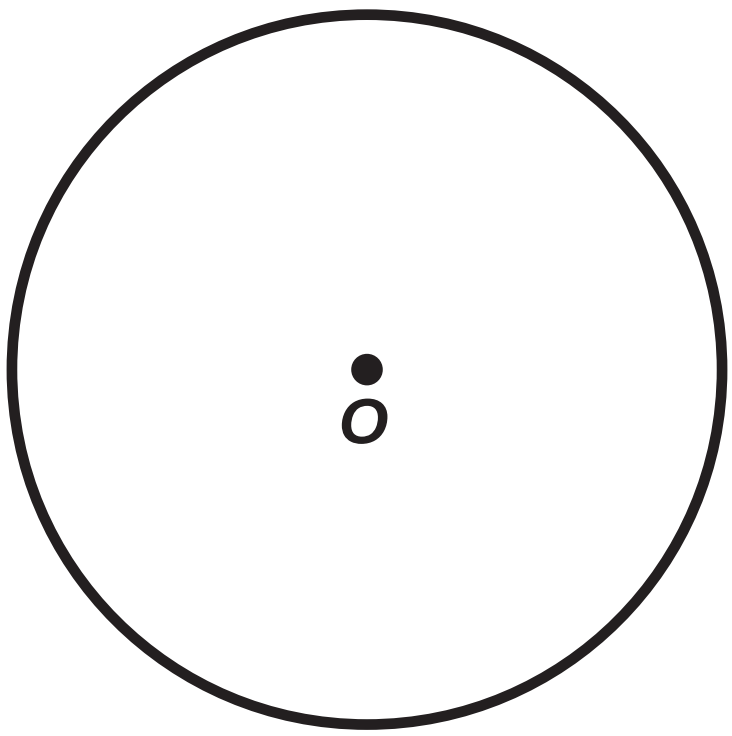
Question 2 (a)



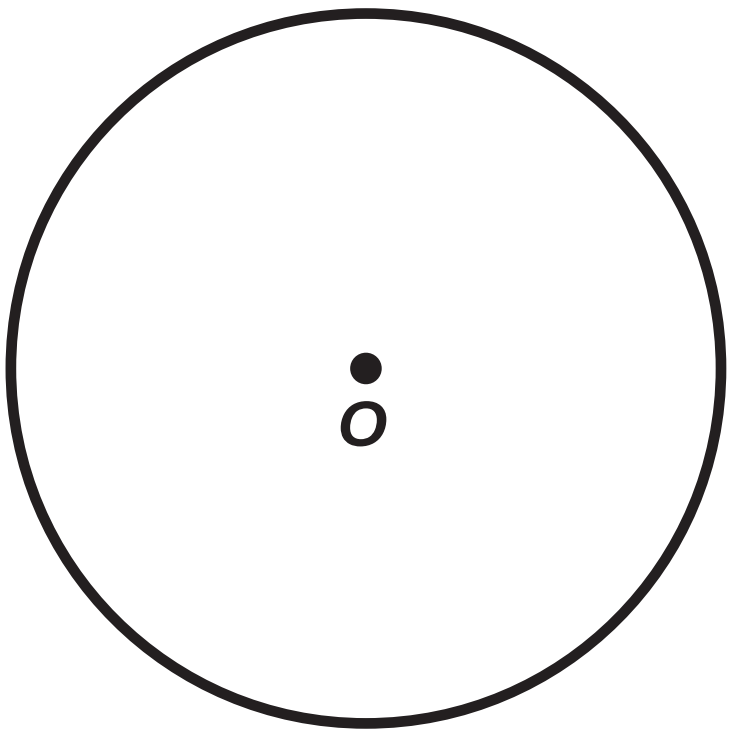
Question 2 (b)



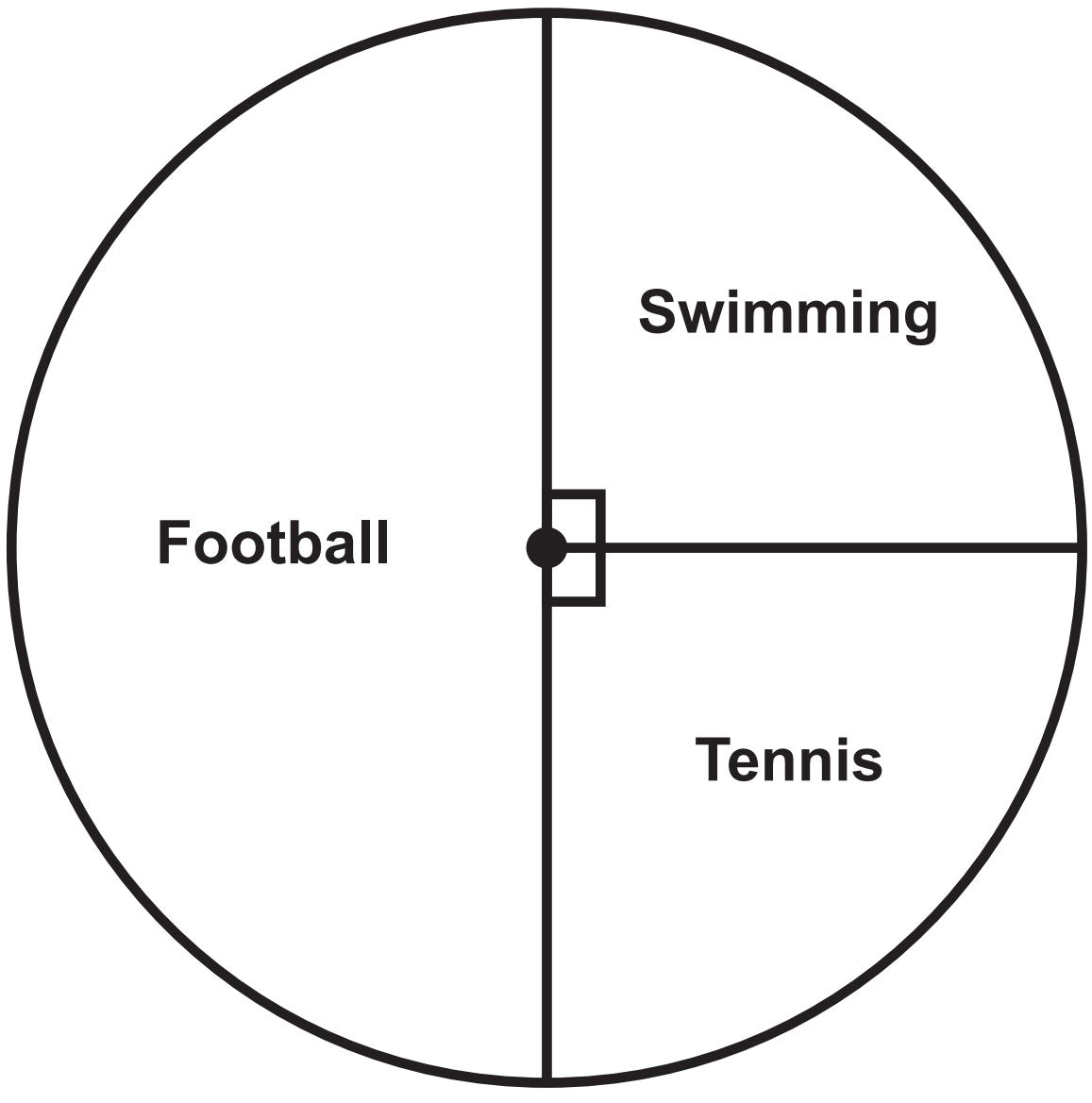
Question 4 (a)



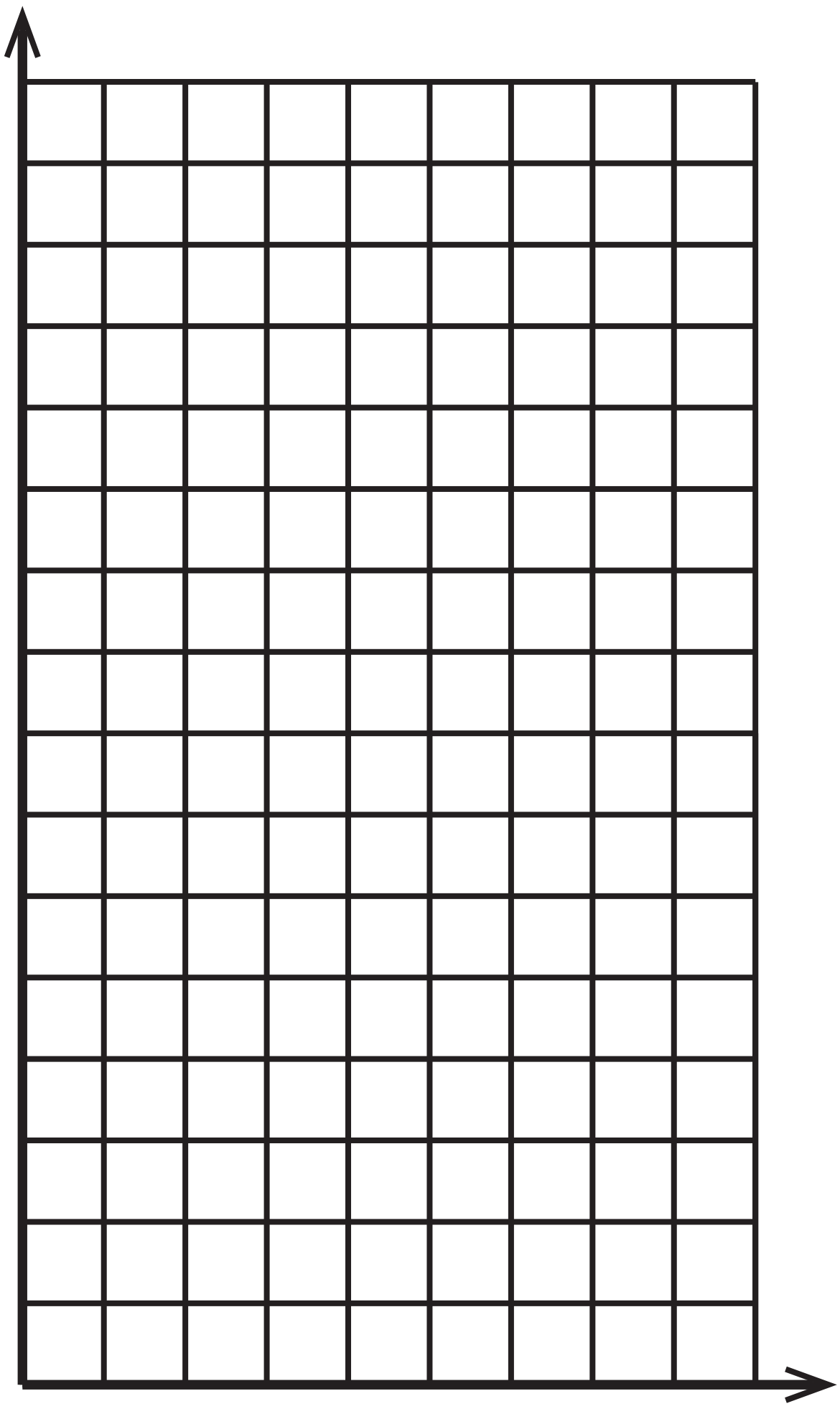
Question 4 (b)



Question 6

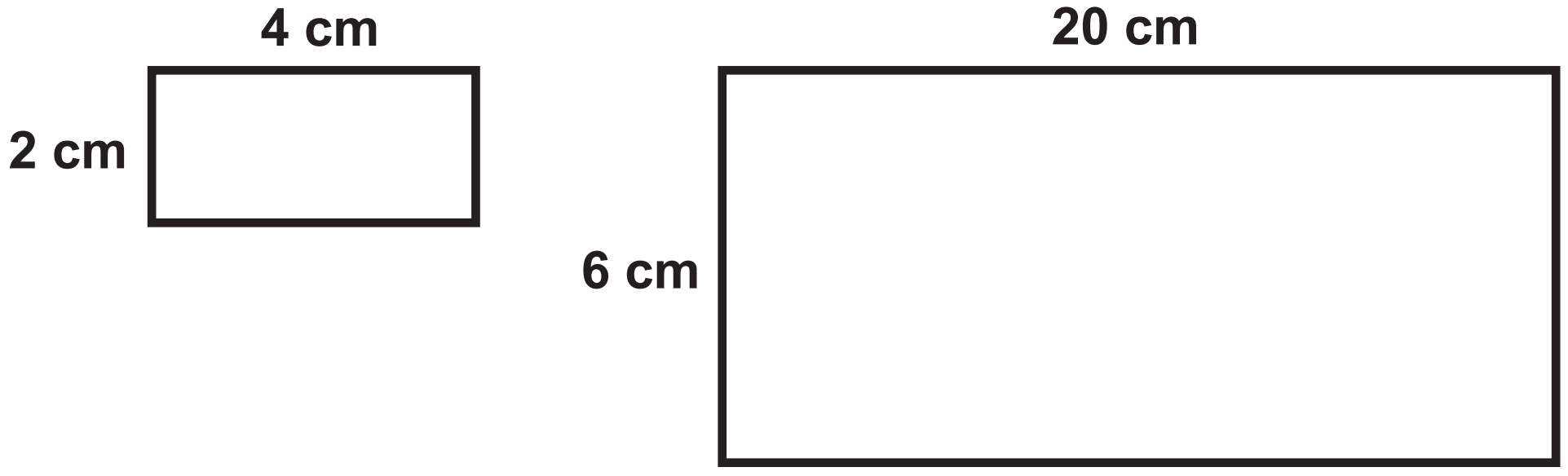


Question 6 (d)



Question 7

Diagram NOT drawn to scale



Question 9

Table

CALCULATION		
$23 - (4 + 2) \times 3 = 5$	TRUE	FALSE
$\frac{7}{10} + \frac{2}{5} = \frac{9}{15}$	TRUE	FALSE
$\frac{1}{2}$ of $\frac{1}{8} = \frac{1}{4}$	TRUE	FALSE
25% of 0•4 = 0•1	TRUE	FALSE
$28 - 3 \times 2 + 5 = 55$	TRUE	FALSE

Question 10

List

Y 76	Y 217	B 54	B 126	Y 21
Y 438	Y 32	B 561	B 194	Y 69
B 37	B 518	Y 94	Y 157	Y 208
Y 382	B 56	B 234	Y 72	B 84
Y 68	Y 271	Y 53	B 100	Y 321

Question 10 (a)

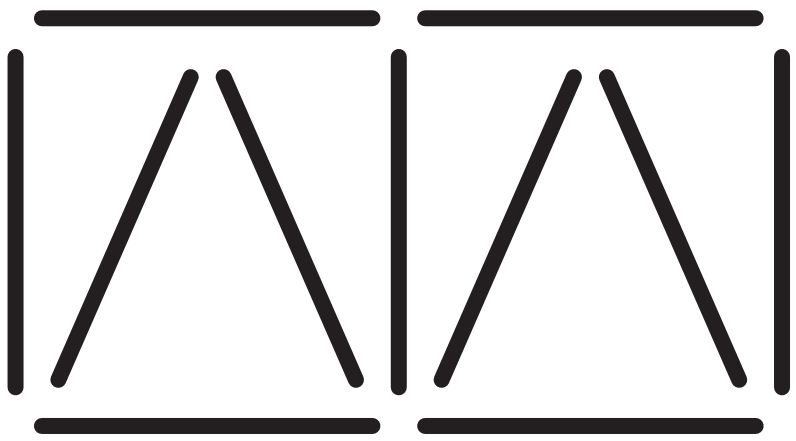
Frequency table

Type of ball	Yellow		Blue	
	Number < 100	Number ≥ 100	Number < 100	Number ≥ 100
Frequency	8			

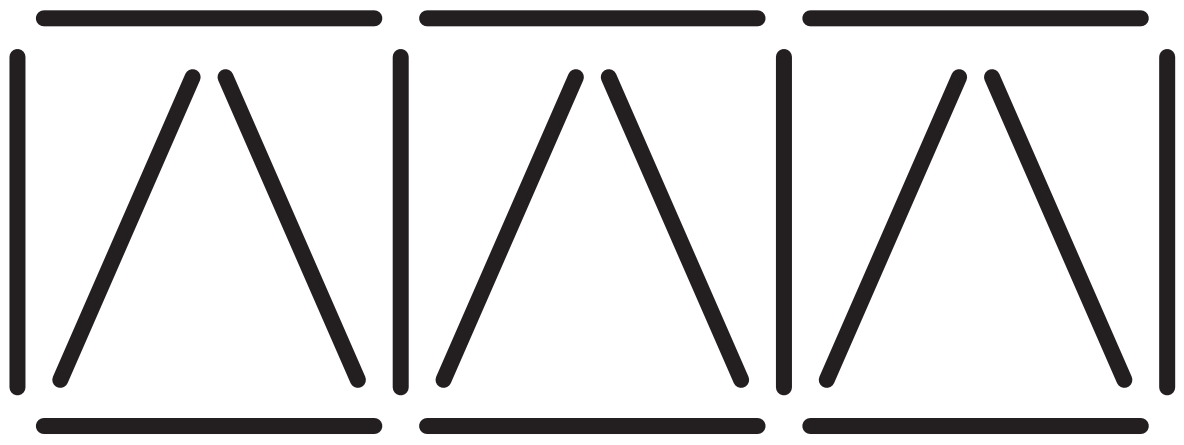
Question 11 (b)

Pattern 1

Pattern 2



Pattern 3

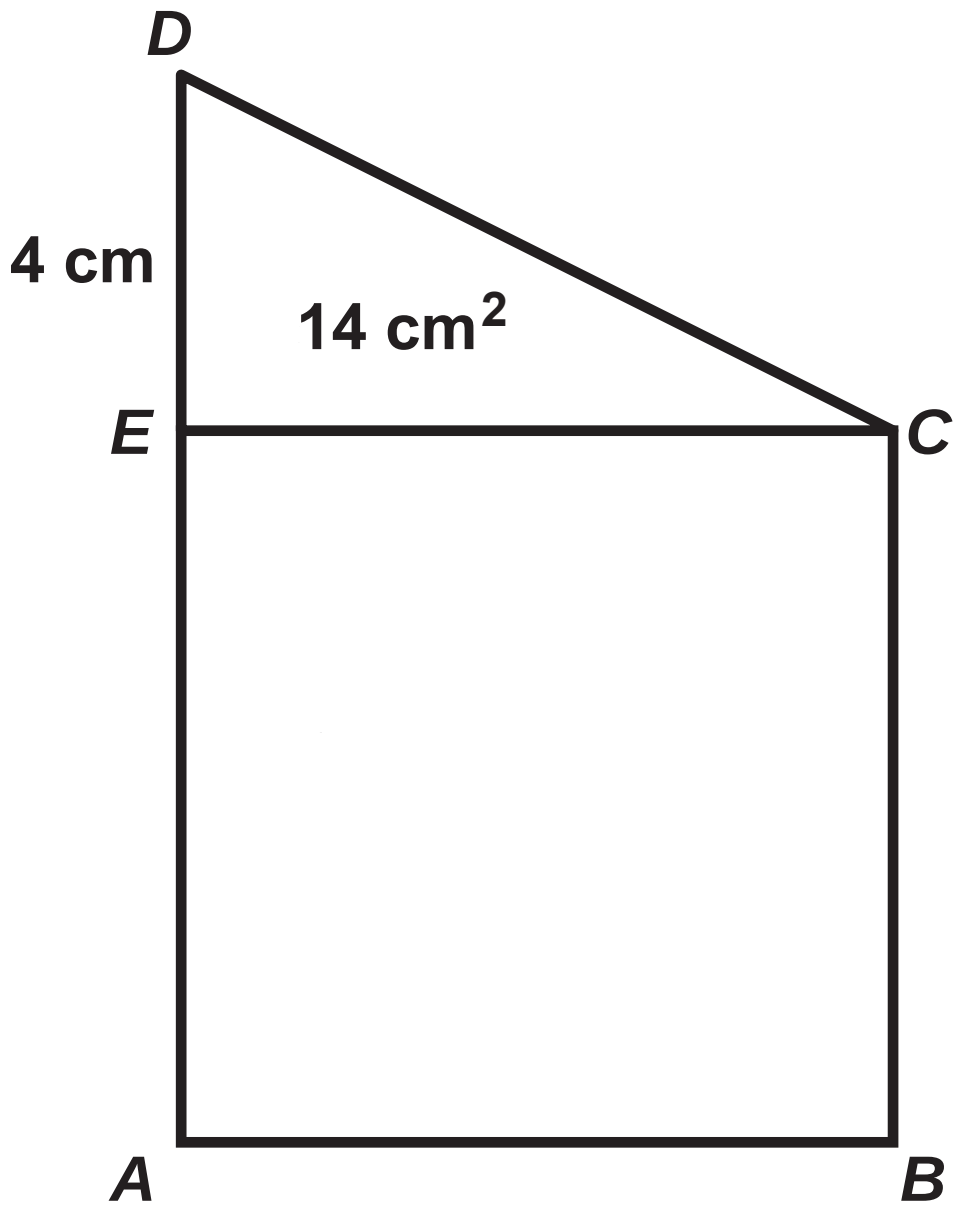


Question 13

Blank page to draw the Venn diagram

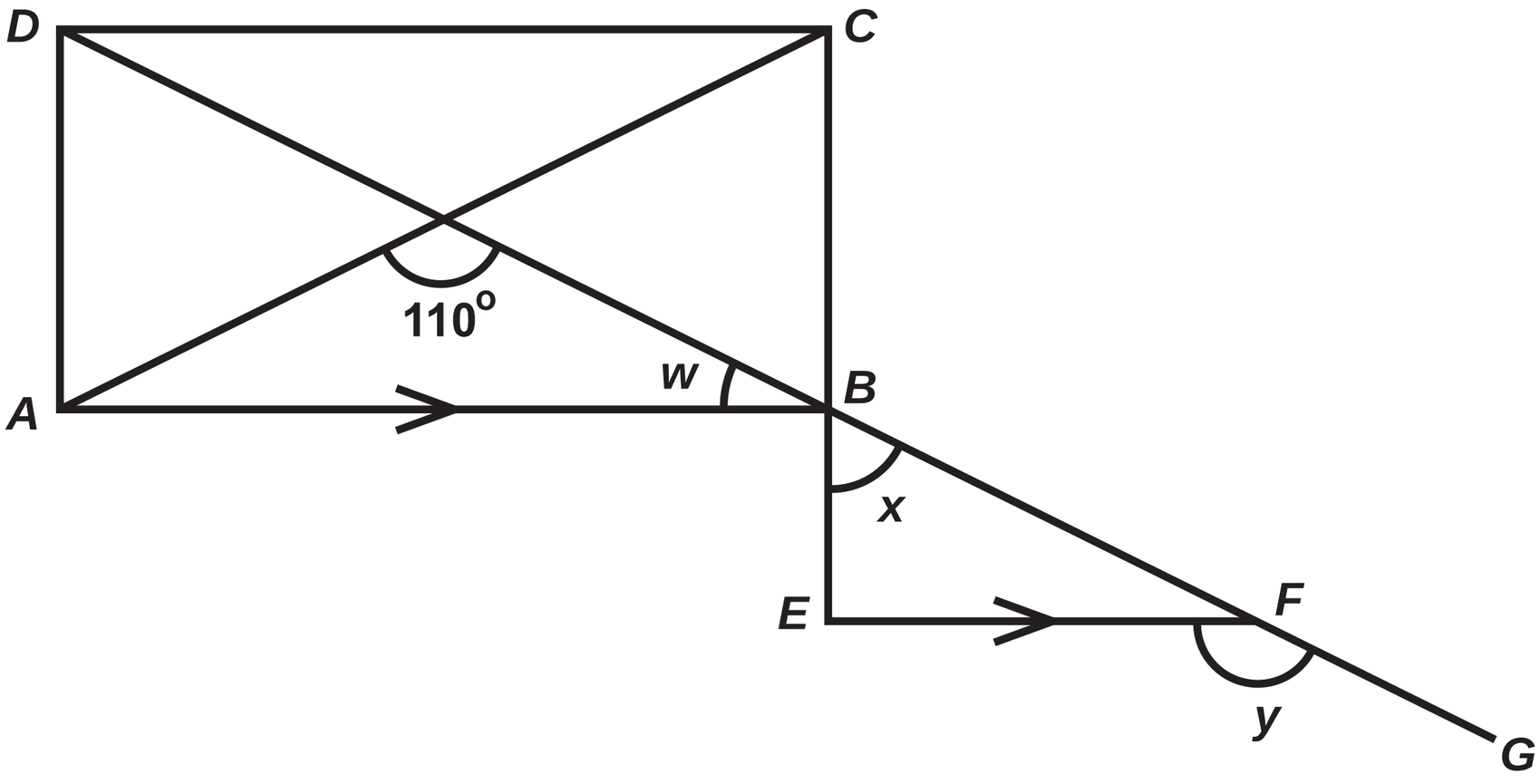
Question 15

Diagram NOT drawn to scale



Question 16

Diagram NOT drawn to scale



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MATHEMATICS

UNIT 1: NON – CALCULATOR

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TUESDAY, 21 MAY 2019 – MORNING

Spare Diagram Booklet

Surname:	
Other Names:	
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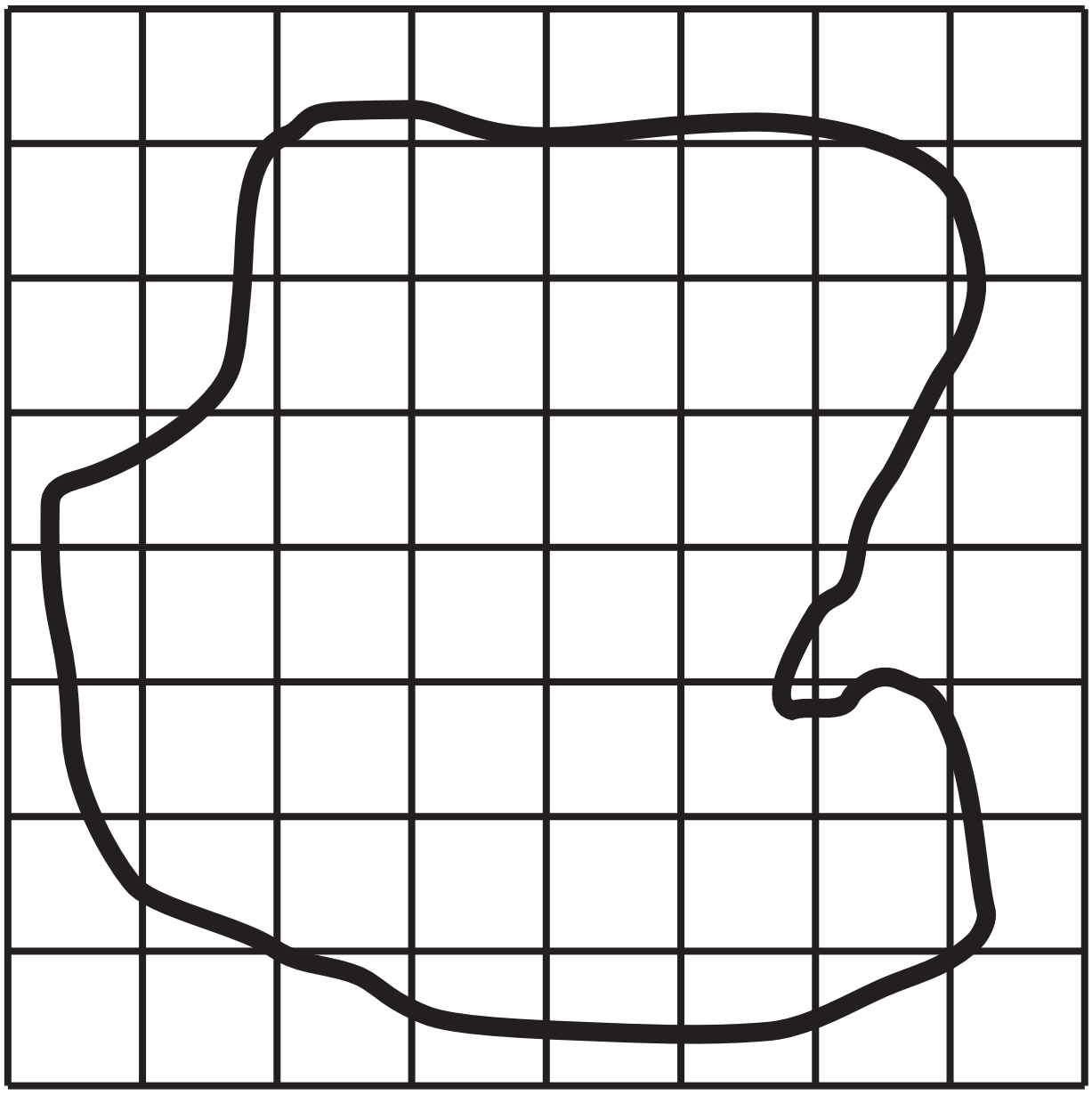
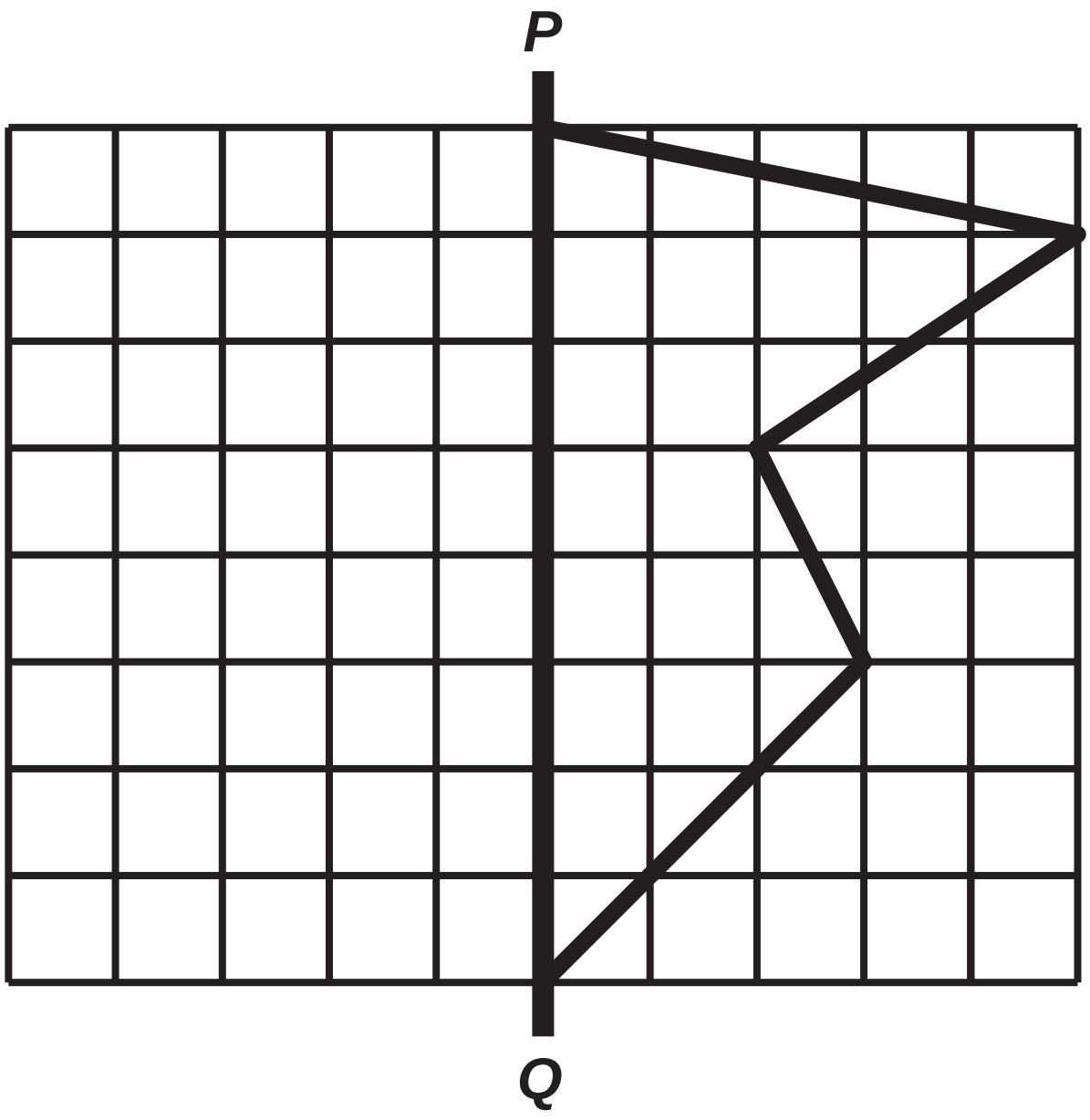
Question 2 (a)



Question 2 (b)



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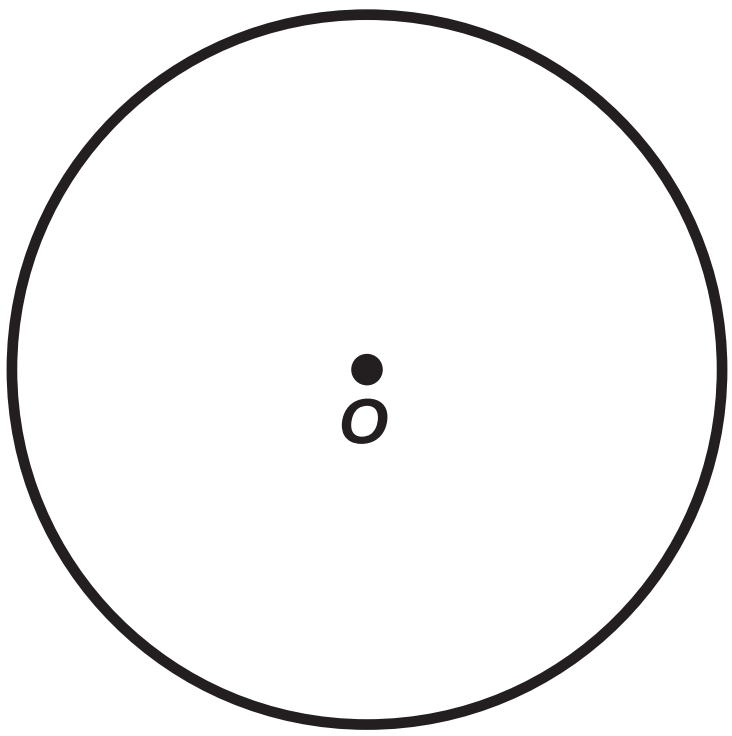
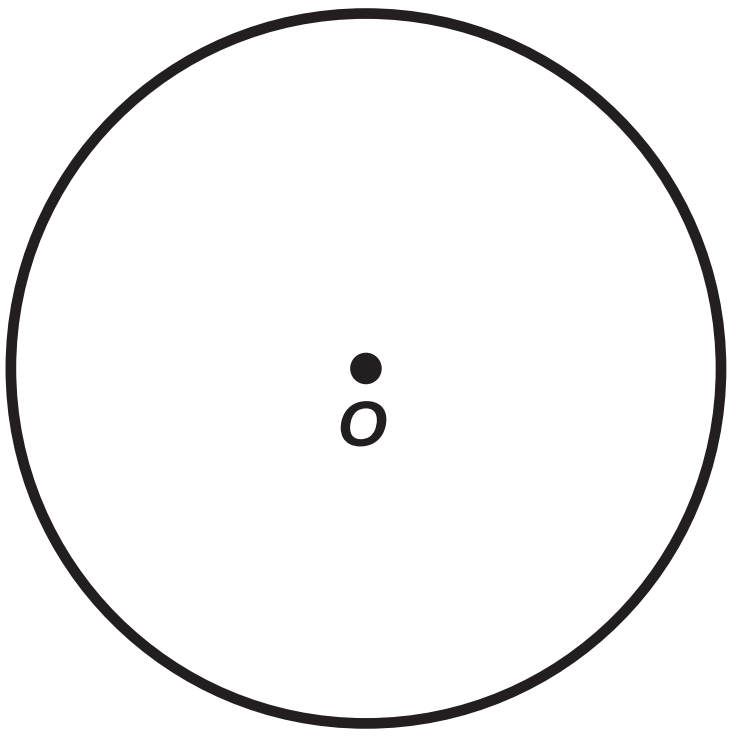
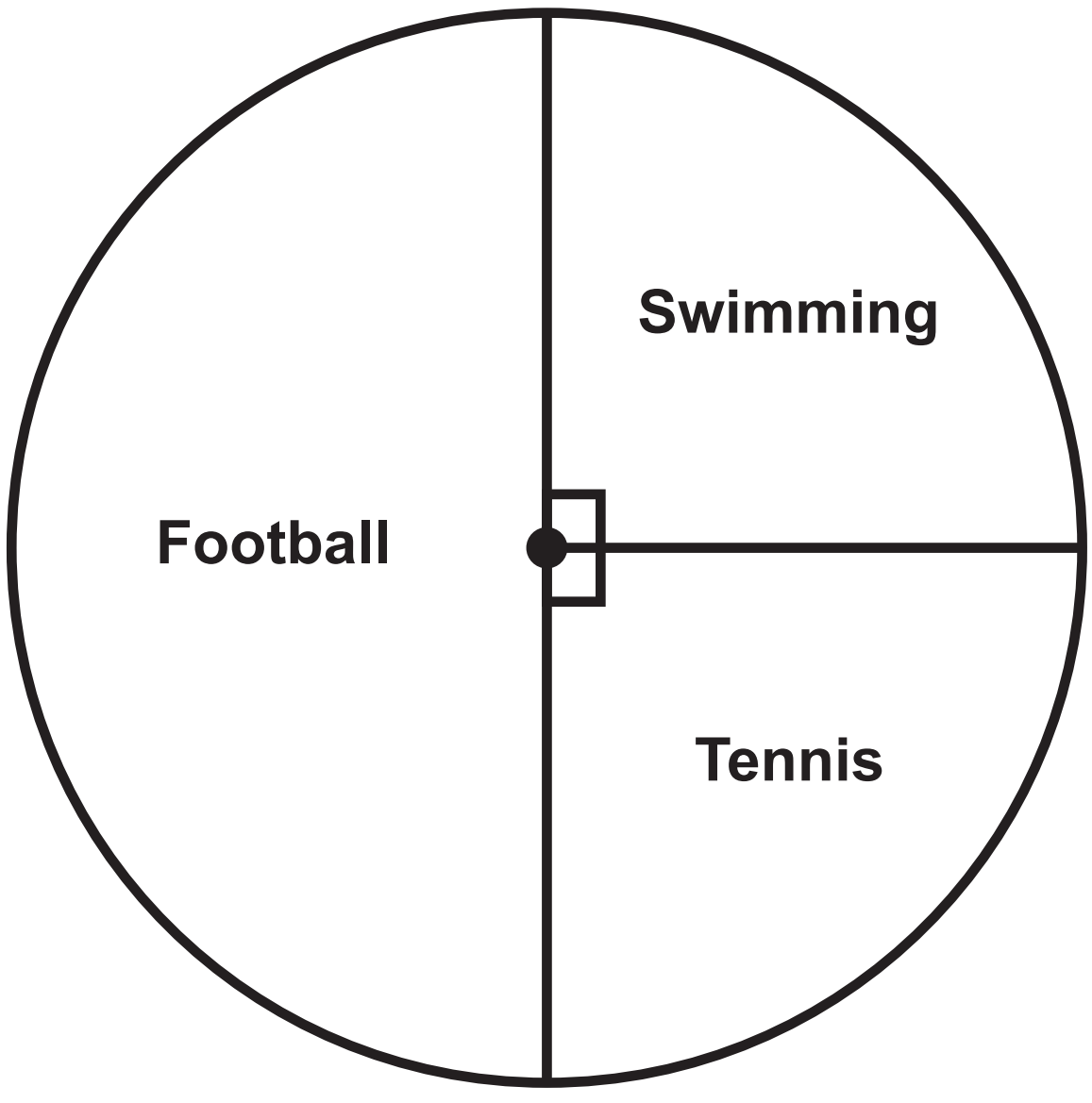


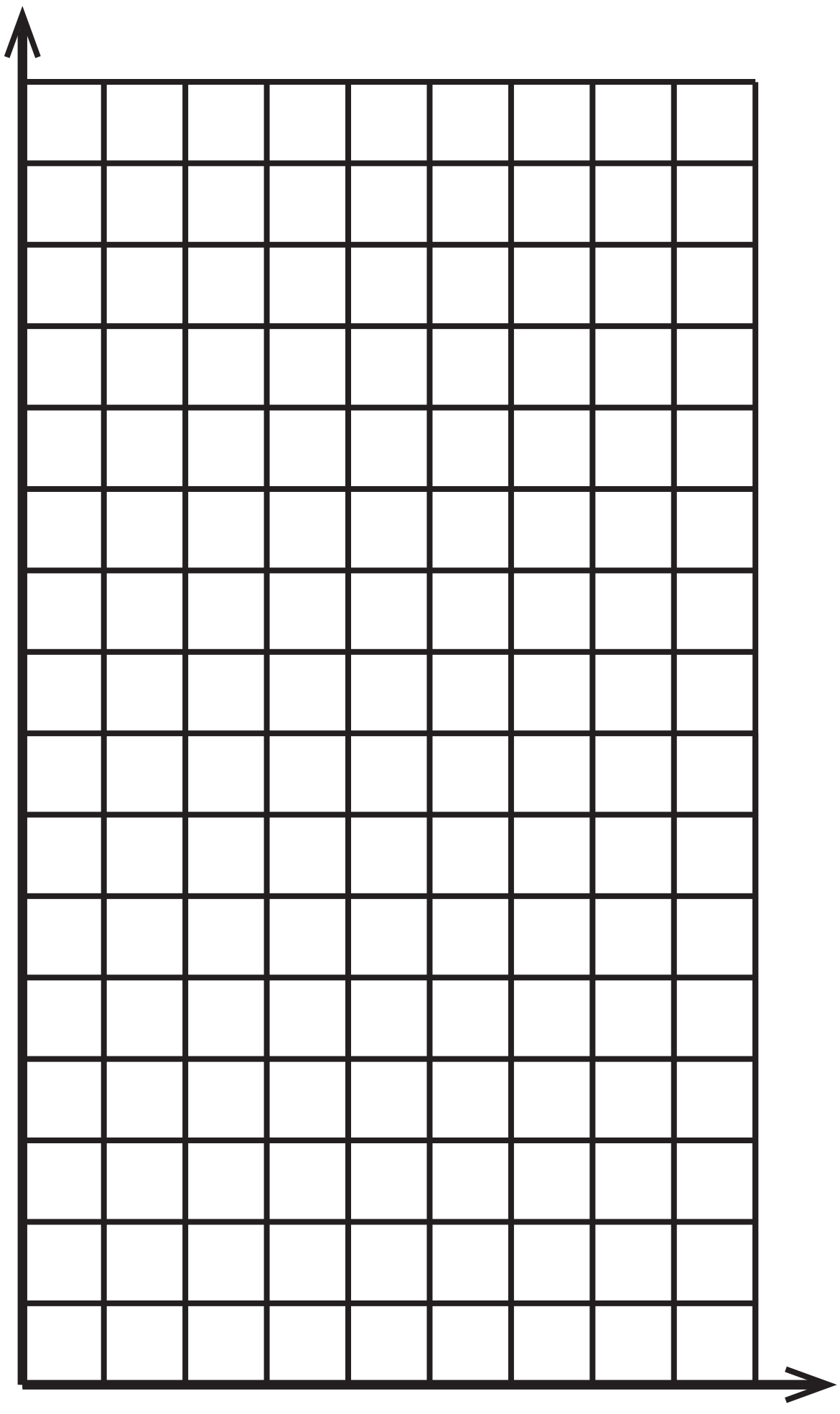
Question 4 (b)



Question 6

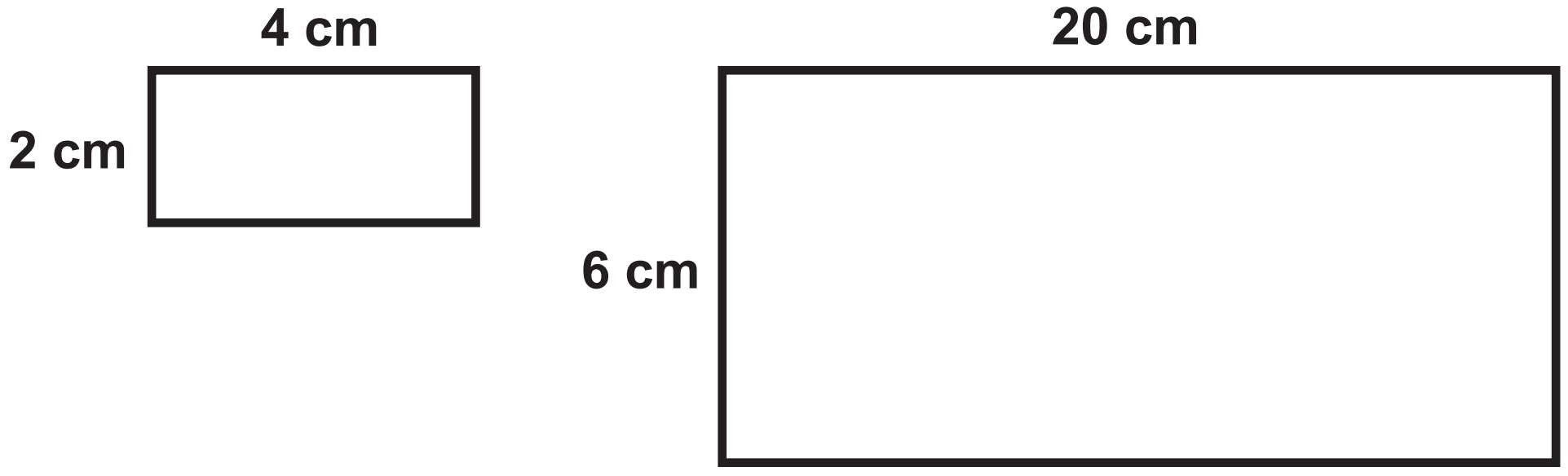


Question 6 (d)



Question 7

Diagram NOT drawn to scale



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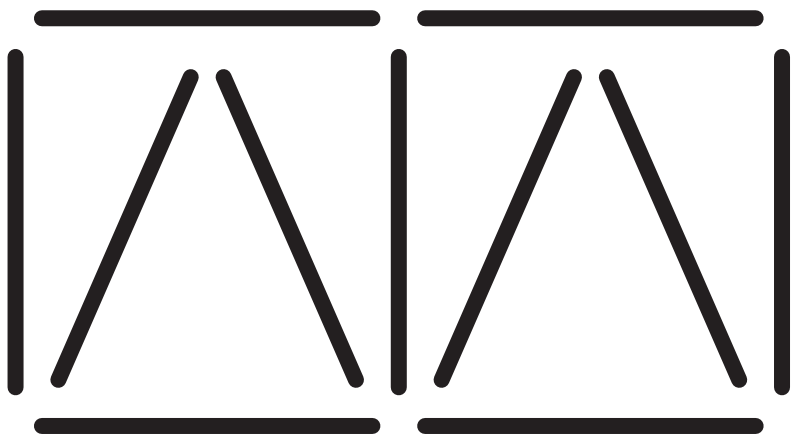
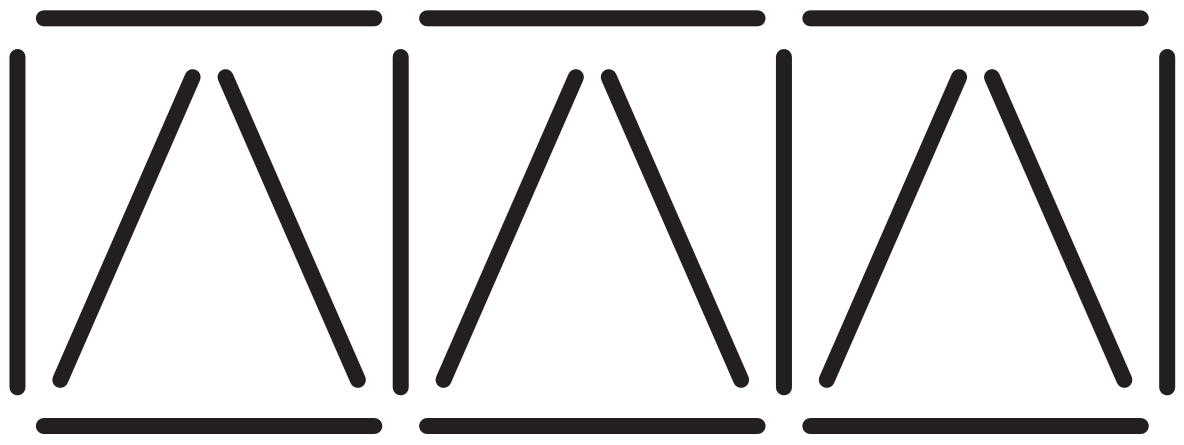


Pattern 3



Question 13

Blank page to draw the Venn diagram

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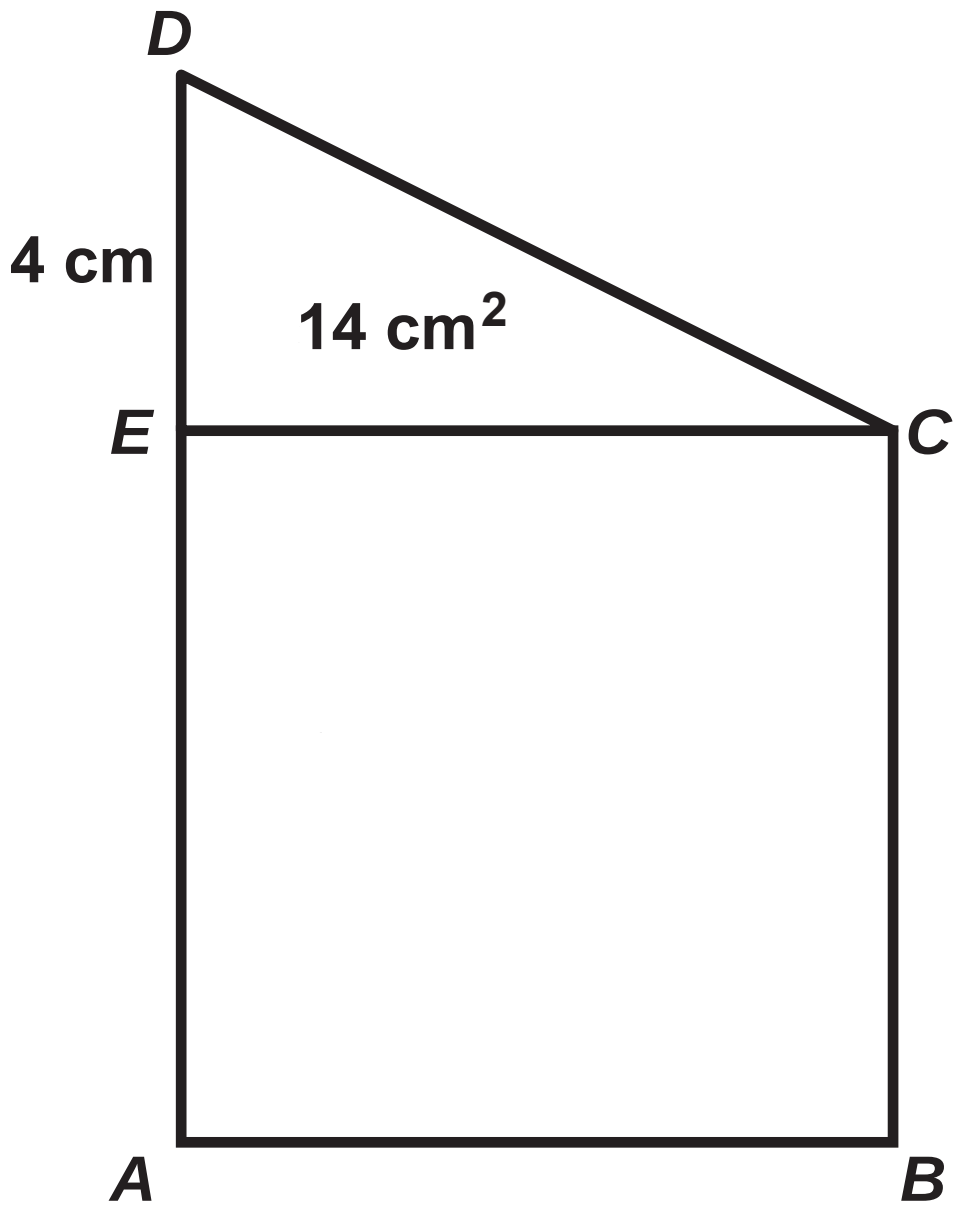
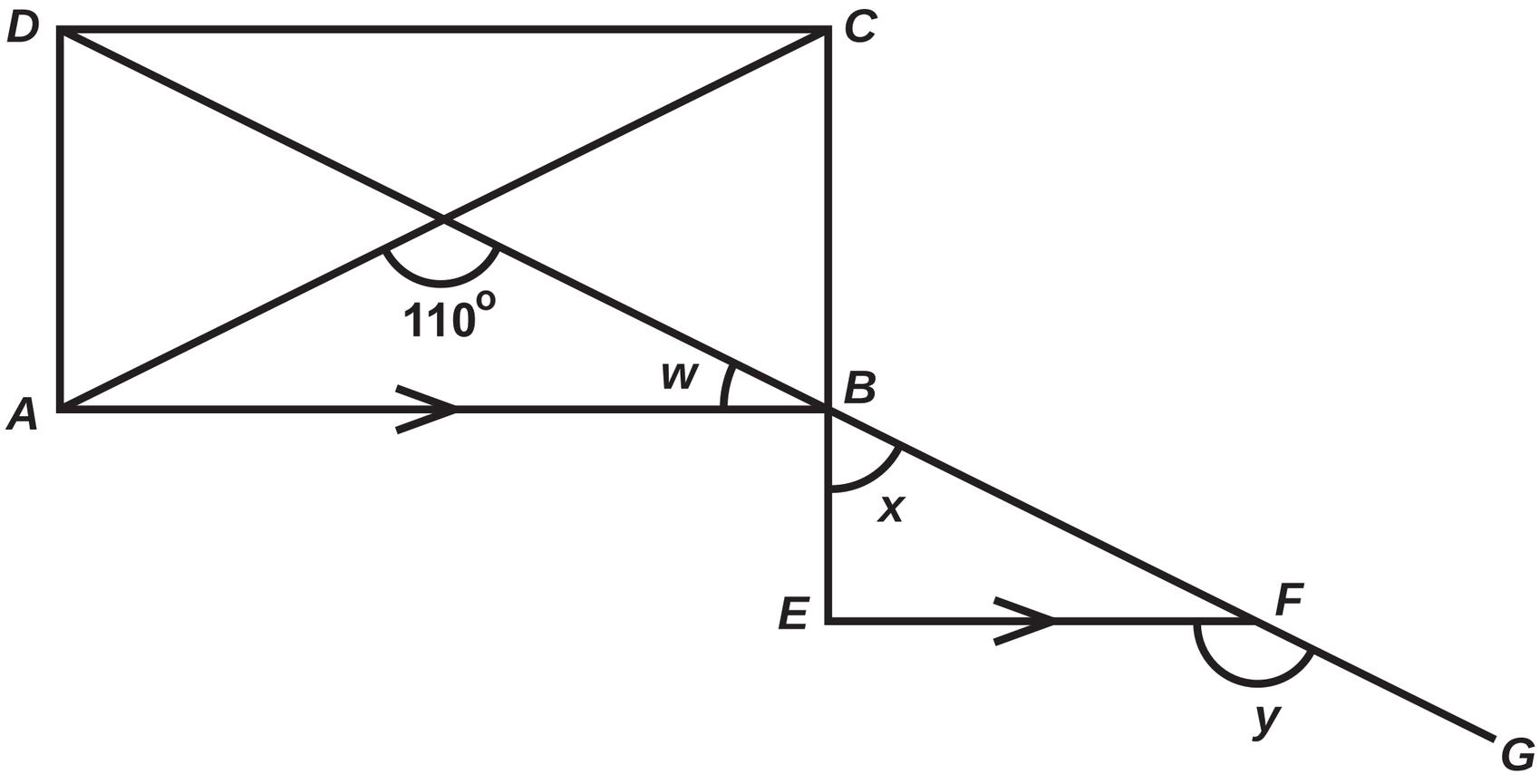
Diagram NOT drawn to scale



Question 16

Diagram NOT drawn to scale



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MATHEMATICS
and
NUMERACY

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cbac

FORMULA LIST
FOUNDATION TIER
GCSE

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