

**GCSE**  
**3300U20-1**

**MATHEMATICS**

**UNIT 2:**

**CALCULATOR – ALLOWED**  
**FOUNDATION TIER**

**THURSDAY,**  
**6 JUNE 2019 – MORNING**

**1 hour 30 minutes**  
**(plus your additional**  
**time allowance)**

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

| For Examiner's use only |              |              |
|-------------------------|--------------|--------------|
| Question                | Maximum Mark | Mark Awarded |
| 1.                      | 4            |              |
| 2.                      | 3            |              |
| 3.                      | 3            |              |
| 4.                      | 2            |              |
| 5.                      | 3            |              |
| 6.                      | 2            |              |
| 7.                      | 4            |              |
| 8.                      | 4            |              |
| 9.                      | 5            |              |
| 10.                     | 4            |              |
| 11.                     | 3            |              |
| 12.                     | 5            |              |
| 13.                     | 4            |              |
| 14.                     | 5            |              |
| 15.                     | 5            |              |
| 16.                     | 5            |              |
| 17.                     | 4            |              |
| Total                   | 65           |              |

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| <b>Surname:</b>          |          |
| <b>Other Names:</b>      |          |
| <b>Centre Number:</b>    |          |
| <b>Candidate Number:</b> | <b>0</b> |

**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.**

**Models for Question 2 (a) and Question 9.**

**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  $\pi$  as 3.14 or use the  $\pi$  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 9, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.**

1. Fill in the boxes below to make each calculation correct.

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| 9p | + | £4.58 | = | £ |
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| 43p | + | £ | = | £6.27 |
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| 12 | × | 59p | = | £ |
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| 19 | × | £ | = | £27.55 |
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SPACE FOR WORKING:

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(Turn over)

**6**

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**[4 marks]**

**(Turn over)**

- 2. Ask for the model for Question 2.**  
**Look at the diagrams for Question 2**  
**in the separate Diagram Booklet.**

**Write down the special name of each shape.**

**(a) Shape A is a**

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**[1 mark]**

**(b) Shape B is a**

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**[1 mark]**

**(c) Shape C is a**

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**[1 mark]**

**(Turn over)**

3. (a) Write down the first 3 multiples of 47

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[1 mark]

- (b) One of the numbers below is a factor of 676

Circle the correct number.

|    |    |    |    |    |
|----|----|----|----|----|
| 22 | 32 | 42 | 52 | 62 |
|----|----|----|----|----|

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[1 mark]

continued on the next page . . .

(Turn over)

**Question 3 continued**

3. (c) When one of the numbers below is divided by **22**, there is a remainder of **11**  
Circle the correct number.

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 208 | 209 | 210 | 211 | 212 |
|-----|-----|-----|-----|-----|

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[1 mark]

(Turn over)

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

The diagram shows the line  $AB$ .

- (a) Mark the midpoint of  $AB$  with a **×**

[1 mark]

- (b) Draw a line parallel to  $AB$  that passes through point  $C$ .

[1 mark]

5. (a) Bethan writes down two square numbers.

She adds her two numbers together.

Her answer is a square number  
less than 30

Which two square numbers did  
Bethan write down?

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Bethan's square numbers are

\_\_\_\_\_ and \_\_\_\_\_

[2 marks]

continued on the next page . . .

(Turn over)

**Question 5 continued**

- 5. (b) Harri adds three even numbers together and gets an answer of 23**

**Explain how you know that Harri's answer is incorrect.**

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**[1 mark]**

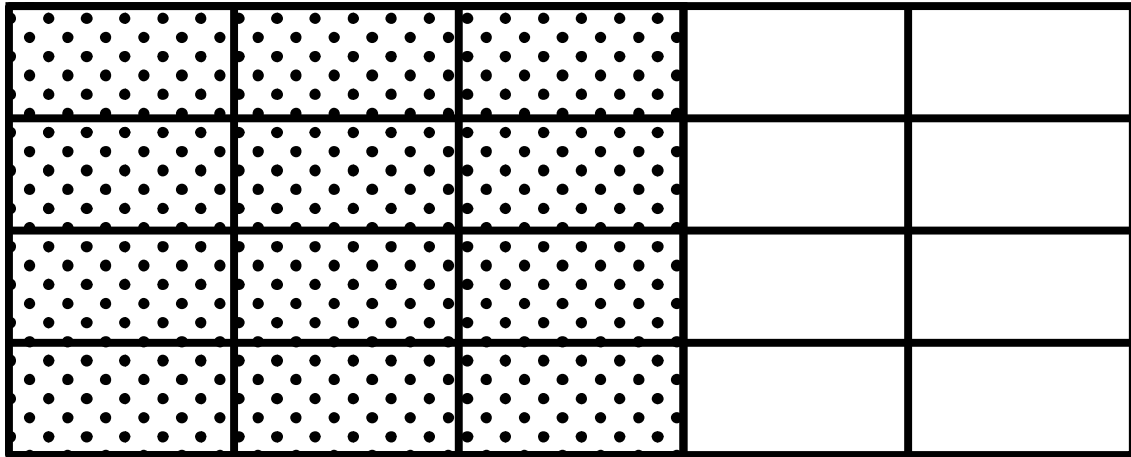
**(Turn over)**

- 6. Look at the statements for Question 6 in the separate Diagram Booklet.**

**Circle either TRUE or FALSE for each statement given.**

**[2 marks]**

7. (a) What percentage of the following shape is shaded?



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ %

[2 marks]

continued on the next page . . .

(Turn over)

**Question 7 continued**

- 7. (b) You are given the value of 25% of a number.**

**Explain how you can find the value of the number.**

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**[1 mark]**

- (c) Explain how you know that**

**$\frac{1}{8}$  is greater than  $\frac{1}{10}$**

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**[1 mark]**

**(Turn over)**

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

Measure angle *BAC*.

Angle *BAC* = \_\_\_\_\_<sup>°</sup>

[1 mark]

- (b) One of the angles below is a reflex angle.  
Circle the correct answer.

|     |     |      |      |      |
|-----|-----|------|------|------|
| 45° | 90° | 135° | 180° | 225° |
|-----|-----|------|------|------|

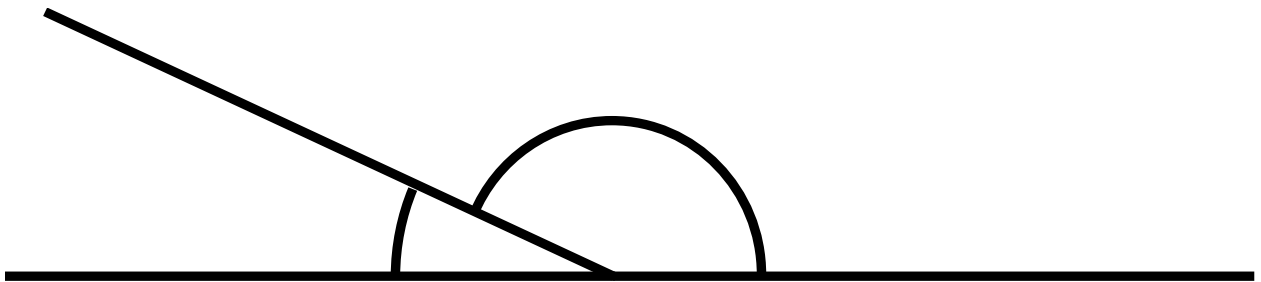
[1 mark]

continued on the next page . . .

(Turn over)

**Question 8 continued**

8. (c) The diagram below shows two angles on a straight line.  
The diagram is NOT drawn to scale.



The large angle is **5** times the size  
of the small angle.

Find the size of each angle.

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(Turn over)

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Small angle = \_\_\_\_\_ °

Large angle = \_\_\_\_\_ °

[2 marks]

(Turn over)

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

**Ask for the model for Question 9.**

**Cuboid A is made up of a number of cubes as shown on the model.**

**Each cube represents a one centimetre cube.**

**A different cuboid, Cuboid B, has the same length and width as Cuboid A.**

**The height of Cuboid B is three times the height of Cuboid A.**

**What is the volume of Cuboid B?**

**You must show all your working.**

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**(Turn over)**

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**[3 marks + 2 marks OCW]**

**(Turn over)**

10. (a) Describe IN WORDS the rule for continuing each of the following sequences.

(i) 38, 32, 26, 20, .....

Rule: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[1 mark]

(ii)  $\frac{1}{4}$ ,  $\frac{1}{2}$ , 1, 2, .....

Rule: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[1 mark]

continued on the next page . . .

(Turn over)

## Question 10 continued

10. (b) (i) Adam has  $X$  marbles.

His friend gives him 3 more.

Write down, in terms of  $X$ , the total number of marbles Adam now has.

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[1 mark]

(ii) Petrol costs  $\pounds g$  per litre.

Write down, in terms of  $g$ , the cost of 15 litres of petrol.

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[1 mark]

(Turn over)

11. Calculate each of the following.

(a)  $4 \cdot 8^2 + \sqrt{28 \cdot 09}$

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[2 marks]

(b)  $\frac{4}{9}$  of 78.3

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[1 mark]

(Turn over)

12. (a) Find the value of  $5f + 7g$  when  
 $f = 3.8$  and  $g = -2.6$

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[2 marks]

continued on the next page . . .

(Turn over)

**Question 12 continued**

- 12. (b) Solve the following equation.  
Give your answer correct to  
1 decimal place.**

$$7x - 4 = 12$$

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**[3 marks]**

**(Turn over)**

13. (a) Circle the longest time period from the list given below.

|                           |
|---------------------------|
| 180 minutes               |
| 4.5 hours                 |
| 4 hours 45 minutes        |
| $4\frac{1}{4}$ hours      |
| $\frac{1}{6}$ th of a day |

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[1 mark]

continued on the next page . . .

(Turn over)

**Question 13 continued**

- 13. (b) Circle the longest distance from the list given below.**

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|------------------|
| <b>30 000 mm</b> |
| <b>250 m</b>     |
| <b>2 km 70 m</b> |
| <b>4 000 cm</b>  |
| <b>2.4 km</b>    |

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**[1 mark]**

**continued on the next page . . .**

**(Turn over)**

## Question 13 continued

13. (c) Circle either TRUE or FALSE for each statement given below.

| STATEMENT                                    |      |       |
|----------------------------------------------|------|-------|
| 7 kilometres is less than<br>5 miles         | TRUE | FALSE |
| 1 kilogram is less than<br>2 pounds (lb)     | TRUE | FALSE |
| 1 litre is less than 1 pint                  | TRUE | FALSE |
| 8 litres is less than<br>900 cm <sup>3</sup> | TRUE | FALSE |

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[2 marks]

(Turn over)

14. Catrin makes the following statement.

If you double the length of each side of a rectangle, you will double its perimeter and also double its area.

Is Catrin correct?

**SHOW CLEARLY**, using an example,  
how you came to your decision.

**[5 marks]**

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**(Turn over)**



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**[5 marks]**

**(Turn over)**

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

The diagram is NOT drawn to scale.

The diagram shows two congruent triangles.

The coordinates of each vertex are shown.

Find the value of  $e$  and the value of  $f$ .

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$e =$  \_\_\_\_\_

$f =$  \_\_\_\_\_

[2 marks]

(Turn over)

**Question 16 continued**

- 16. (b) On the grid provided for Question 16 (b) in the separate Diagram Booklet, draw an enlargement of the rectangle, using a scale factor of 3 and centre (1, 2)**

**[3 marks]**

- 17. Look at the diagram for Question 17 in the separate Diagram Booklet.**

**Alison and Sarfraz play a game.**

**They each have a different bag of cards.**

**Alison has cards spelling**

**C A E R N A R F O N** in her bag.

**Sarfraz has cards spelling A B E R**

**in his bag.**

**They each take a card at random from their own bag.**

**They make a note of the letter, and return the card to the bag.**

**They each do this 100 times.**

**continued on the next page . . .**

**Question 17 continued**

**Who do you think is likely to choose  
the letter **R** more often?**

**Alison**

☐

**Sarfraz**

☐

**You must explain your decision and  
show all your working.**

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**(Turn over)**

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[4 marks]

END OF PAPER

TOTAL 65 MARKS

(Turn over)

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

| <b>Question<br/>number</b> | <b>Additional pages, if required. Write the<br/>question number(s) in the left - hand margin.</b> |
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**MATHEMATICS**

**UNIT 2: CALCULATOR – ALLOWED  
FOUNDATION TIER**

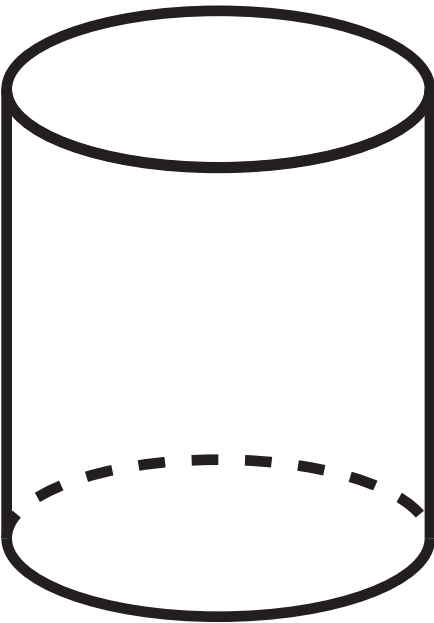
**THURSDAY, 6 JUNE 2019 – MORNING**

# Diagram Booklet

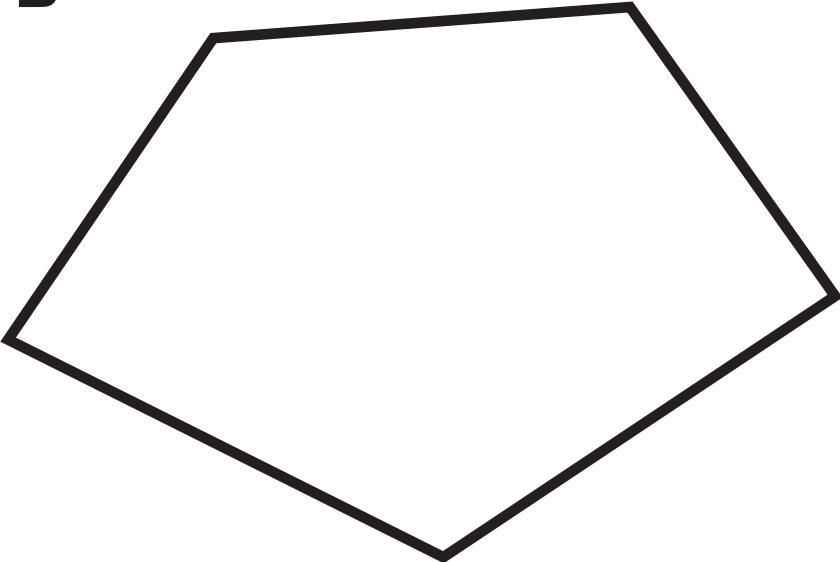
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| <b>Surname:</b>          |          |
| <b>Other Names:</b>      |          |
| <b>Centre Number:</b>    |          |
| <b>Candidate Number:</b> | <b>0</b> |

Question 2

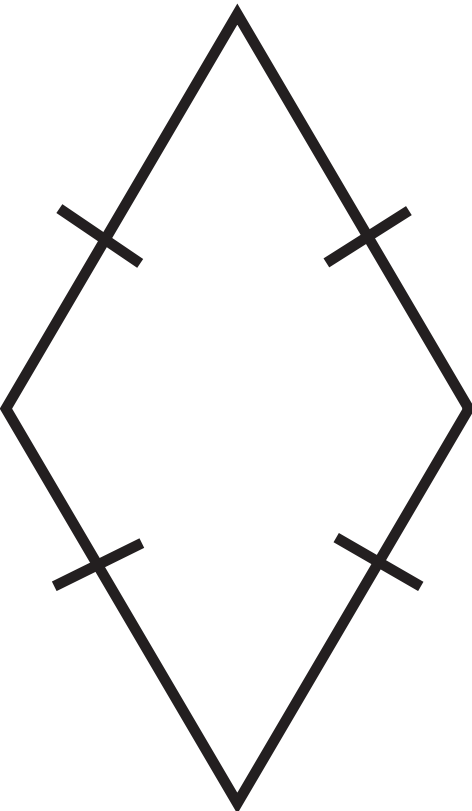
Shape A



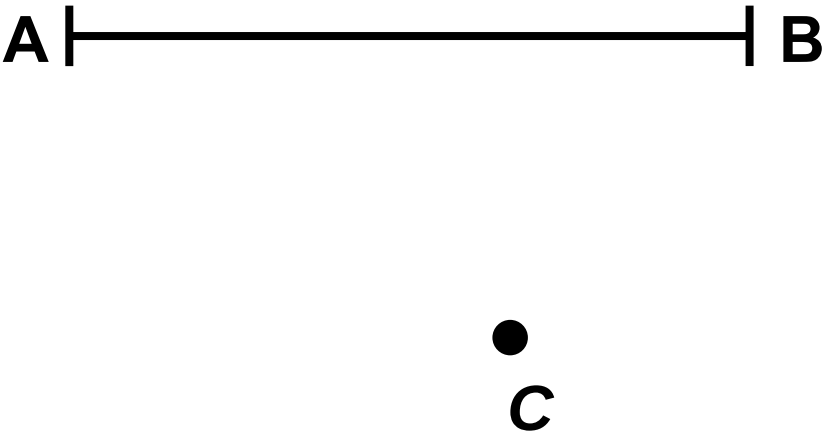
Shape B



Shape C



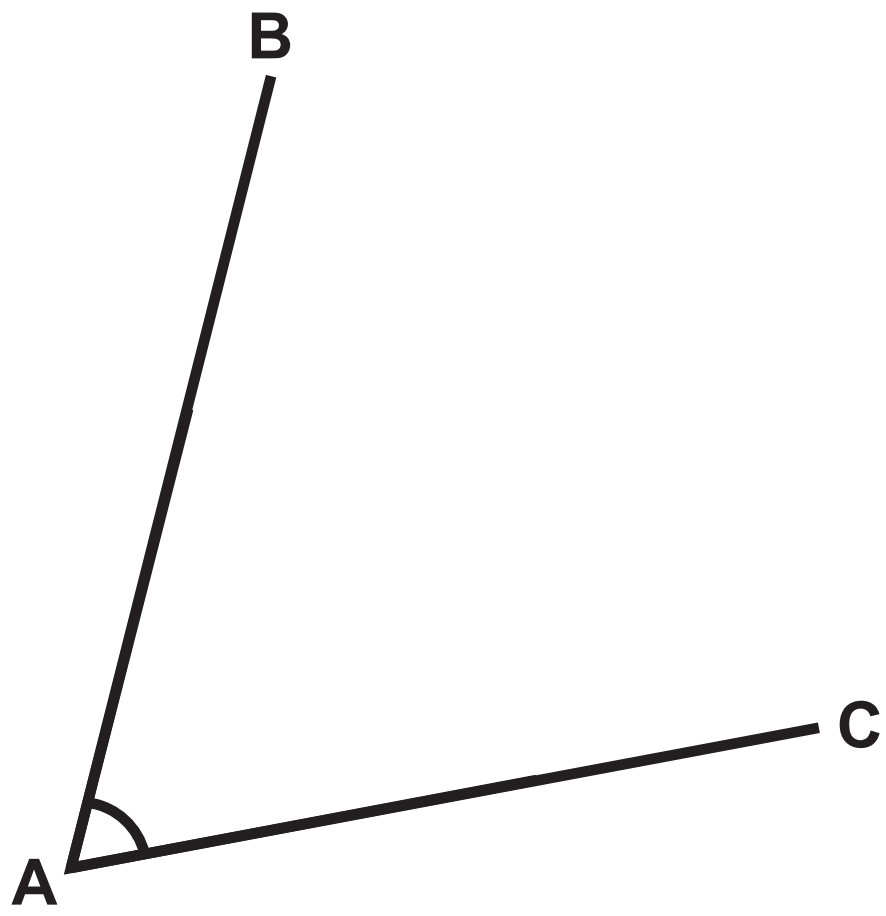
Question 4



**Question 6**  
**Statements**

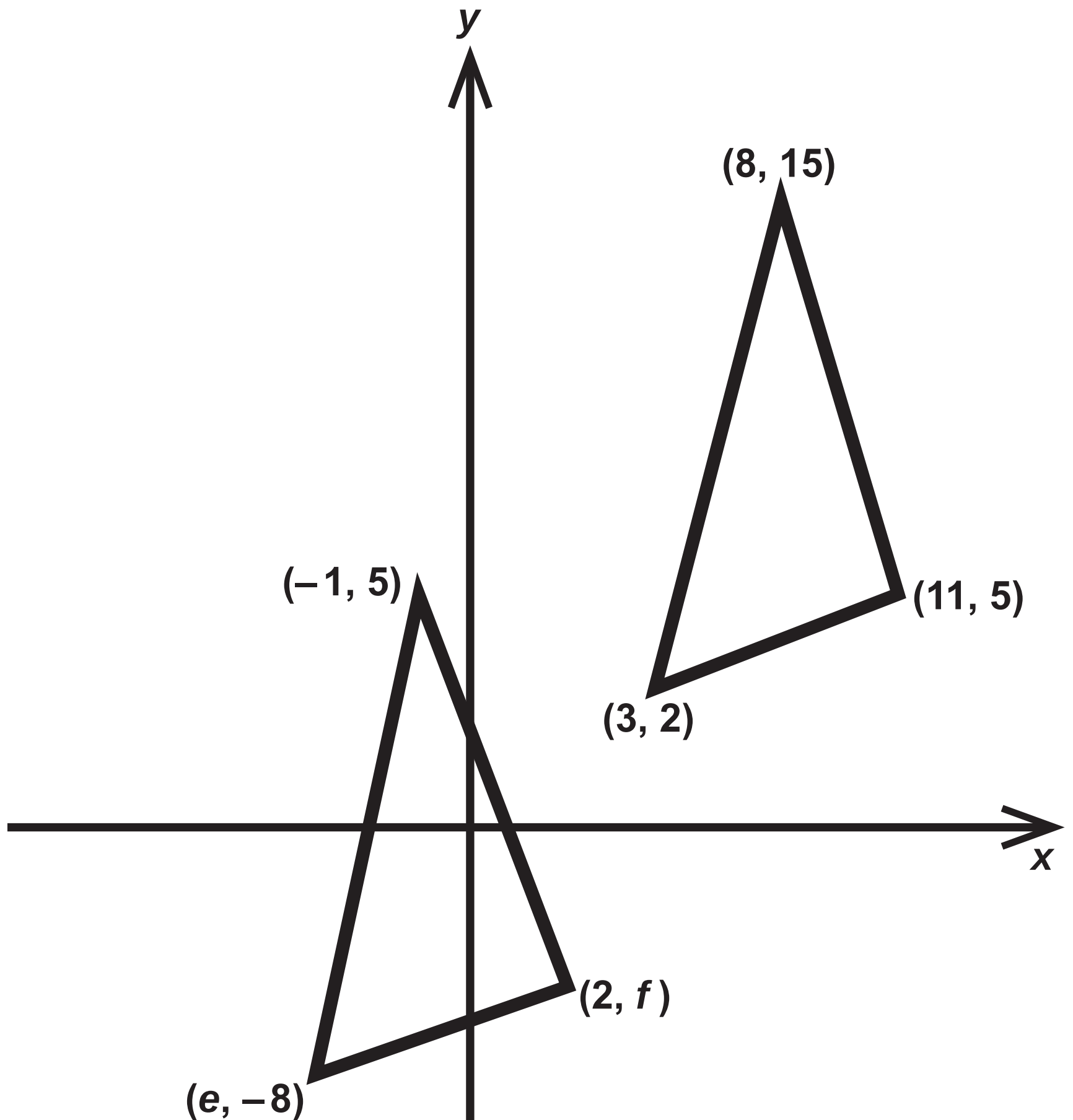
| STATEMENT                                                                         |      |       |
|-----------------------------------------------------------------------------------|------|-------|
| The length of the diameter of a circle is equal to half the length of its radius. | TRUE | FALSE |
| A straight line connecting two points on the perimeter of a circle is a chord.    | TRUE | FALSE |
| The circumference is the special name for the space inside a circle.              | TRUE | FALSE |
| Two circles, each with radius 5 cm, must be congruent.                            | TRUE | FALSE |

### Question 8 (a)

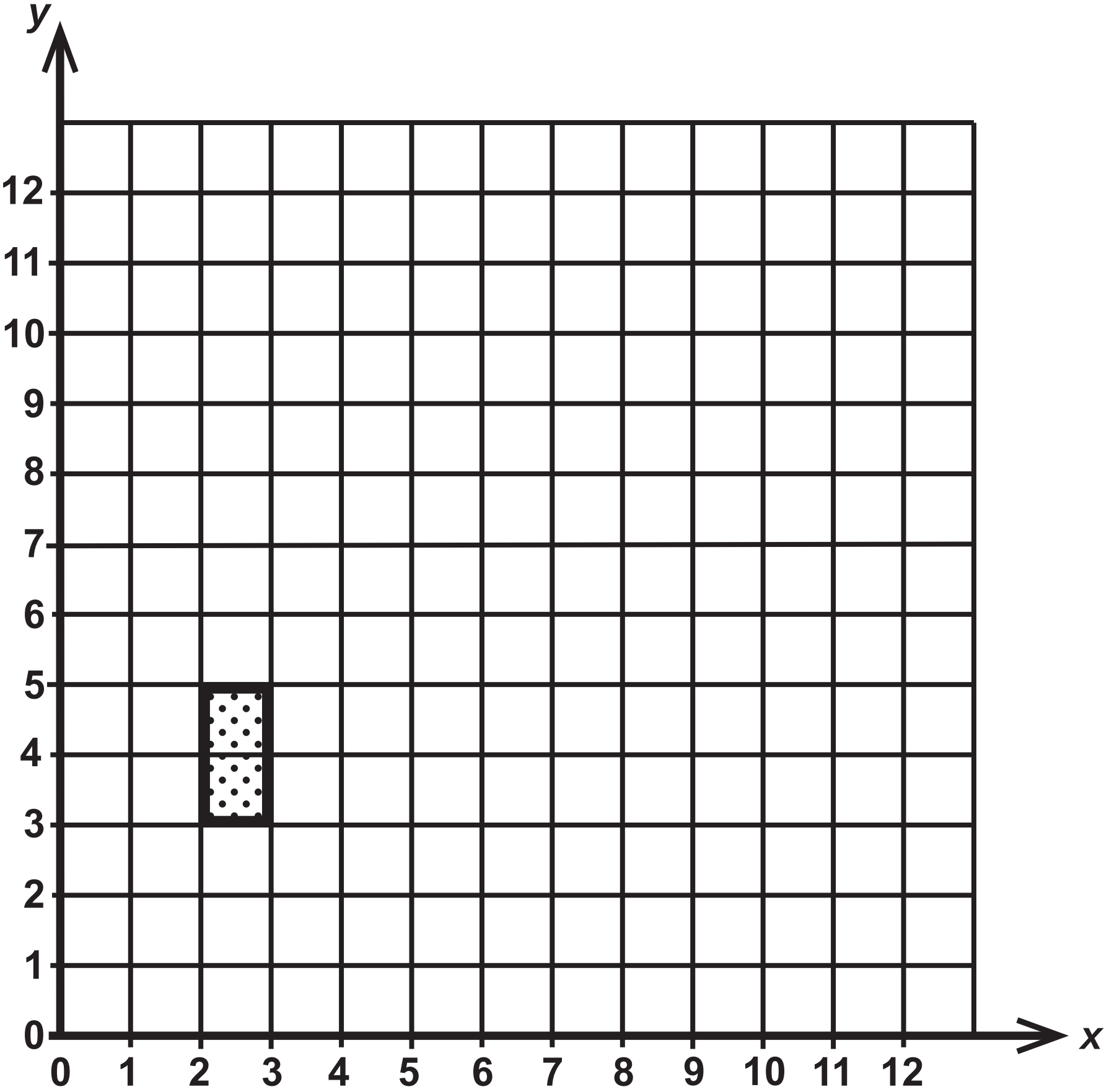


Question 16 (a)

Diagram NOT drawn to scale



Question 16 (b)



Question 17

Alison's cards

C

A

E

R

N

A

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F

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Sarfraz's cards

A

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**MATHEMATICS**  
**UNIT 2: CALCULATOR – ALLOWED**  
**FOUNDATION TIER**

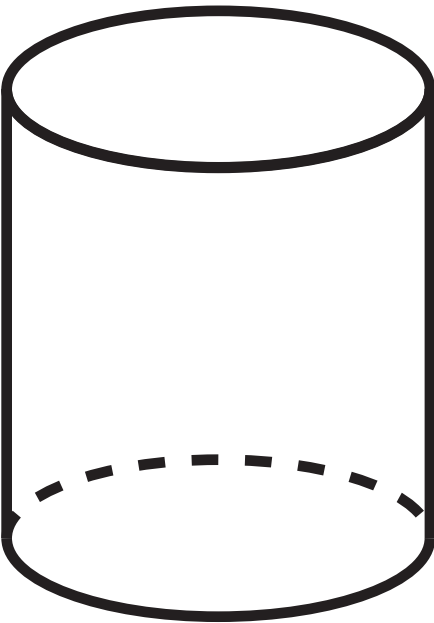
**THURSDAY, 6 JUNE 2019 – MORNING**

**Spare Diagram Booklet**

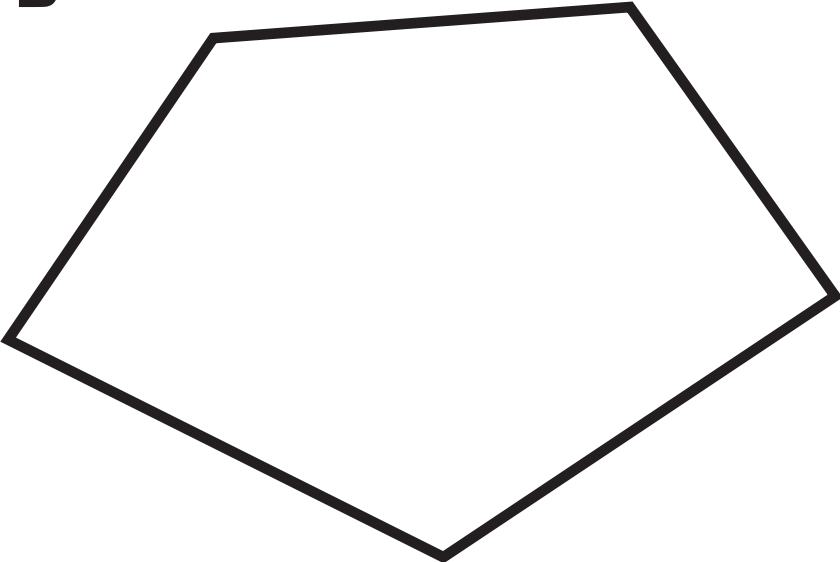
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| <b>Surname:</b>          |          |
| <b>Other Names:</b>      |          |
| <b>Centre Number:</b>    |          |
| <b>Candidate Number:</b> | <b>0</b> |

Question 2

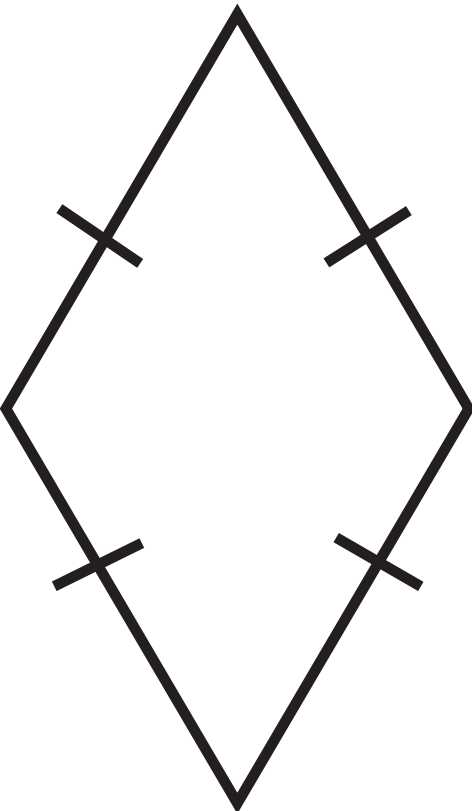
Shape A



Shape B



Shape C



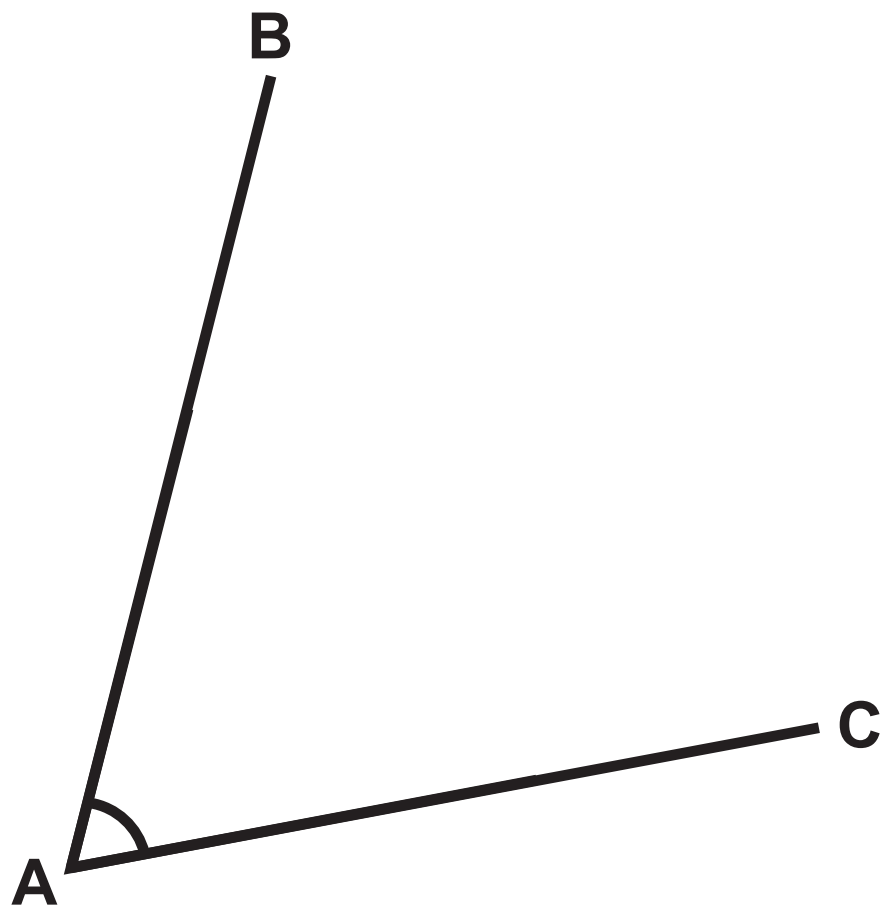
Question 4



**Question 6**  
**Statements**

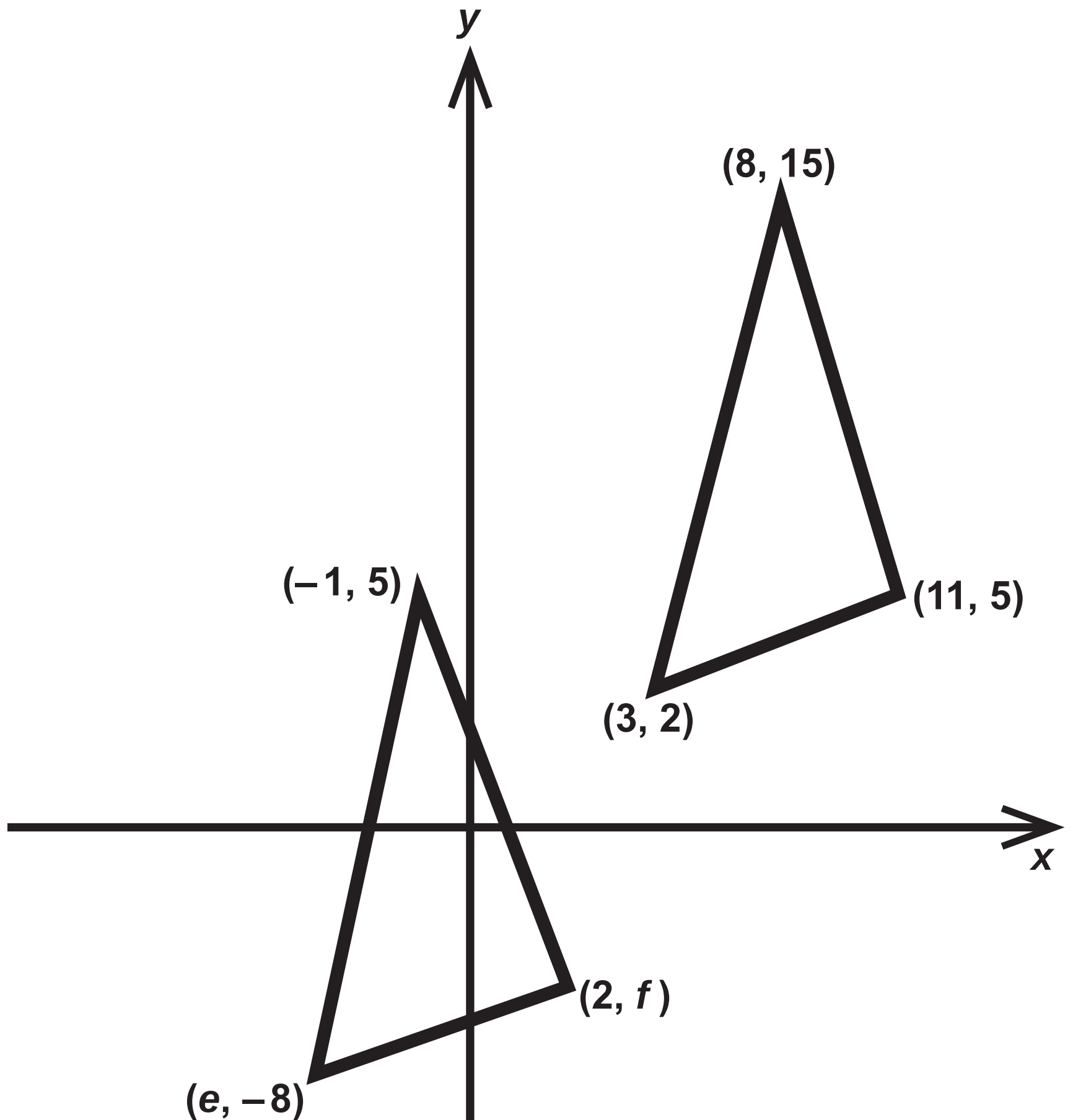
| STATEMENT                                                                         |      |       |
|-----------------------------------------------------------------------------------|------|-------|
| The length of the diameter of a circle is equal to half the length of its radius. | TRUE | FALSE |
| A straight line connecting two points on the perimeter of a circle is a chord.    | TRUE | FALSE |
| The circumference is the special name for the space inside a circle.              | TRUE | FALSE |
| Two circles, each with radius 5 cm, must be congruent.                            | TRUE | FALSE |

### Question 8 (a)

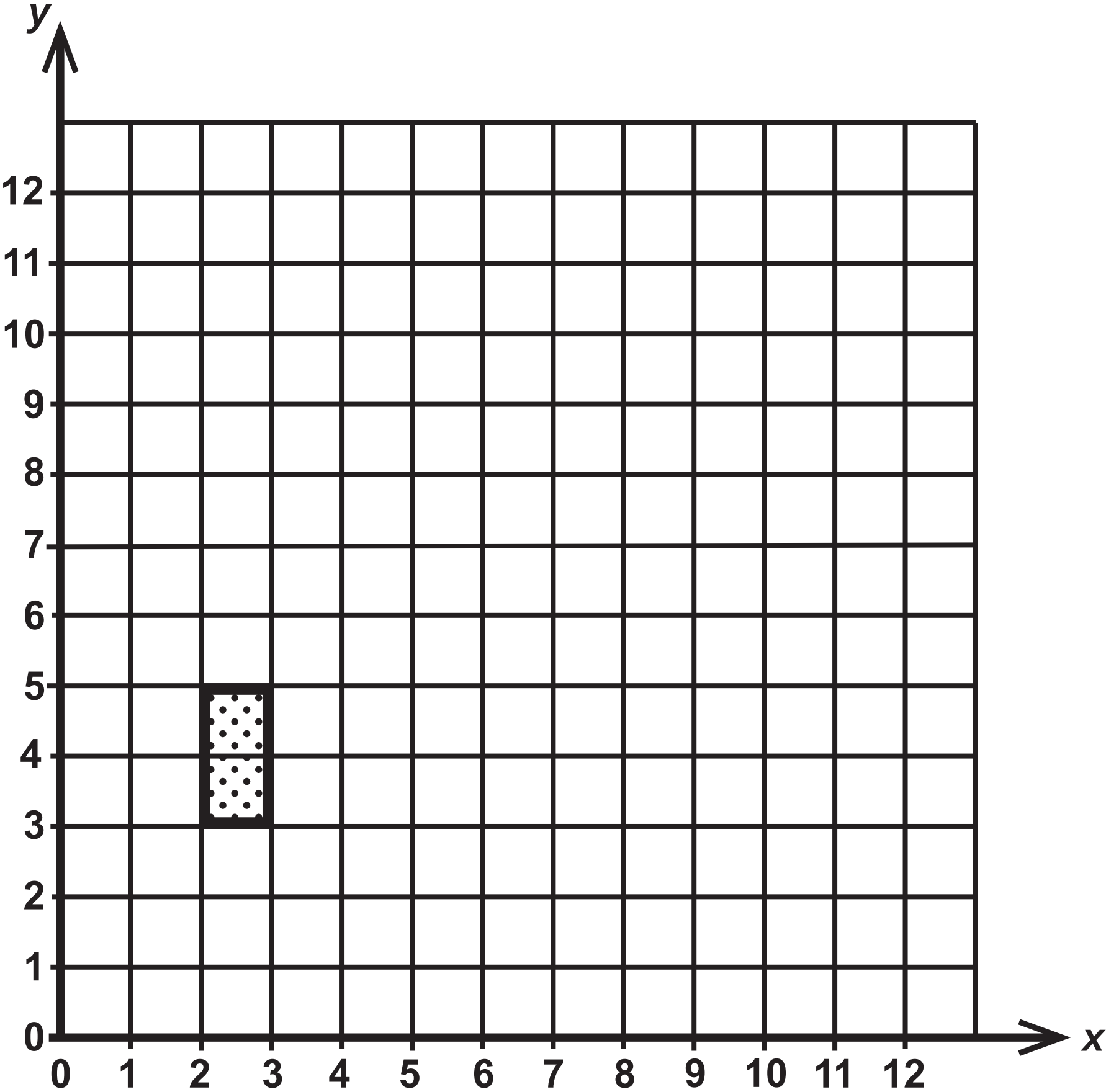


Question 16 (a)

Diagram NOT drawn to scale



Question 16 (b)



Question 17

Alison's cards

C

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E

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Sarfraz's cards

A

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**GCSE  
MATHEMATICS  
and  
NUMERACY**



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

