Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

9098759783

MATHEMATICS **0862/01**

Paper 1 **October 2024**

1 hour

You must answer on the question paper.

You will need: Geometrical instruments
Tracing paper (optional)

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should show all your working in the booklet.
- You are **not** allowed to use a calculator.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

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1 Safia has this rule.

Start with the number n.
Then cube the number.
Then multiply by 7

Write down an algebraic expression for the rule in terms of n.

..... [1]

2 Write the correct index in each box.

$$\frac{1}{5^3} = 5^{\square}$$

$$6^5 \times 6^{-3} = 6^{\square}$$

[2]

3 A polygon has 5 sides.
The polygon has 4 exterior angles each measuring 75°.

Work out the size of the 5th exterior angle of the polygon.

..... ° [2]

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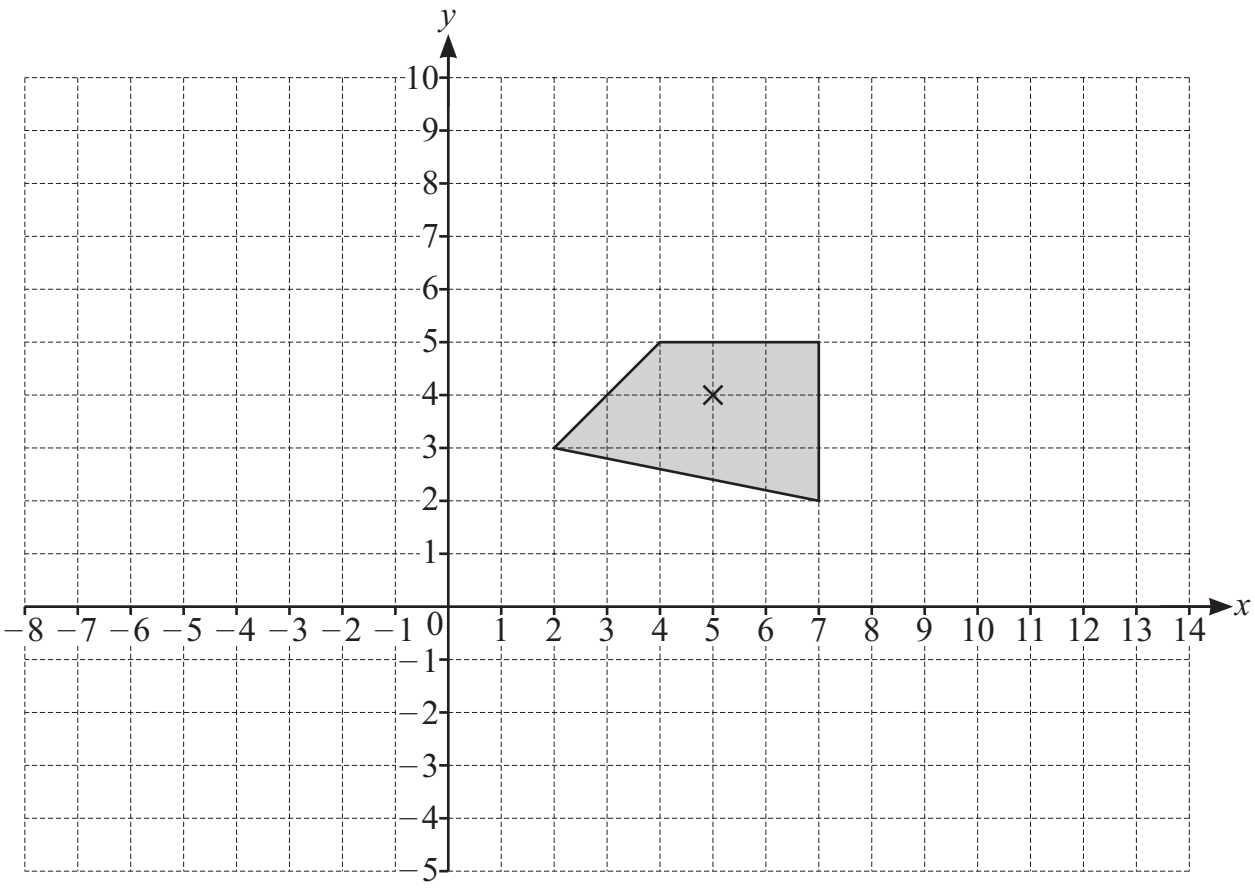
4 The diagram shows a quadrilateral drawn on a coordinate grid.



Draw the image of the quadrilateral after an enlargement, scale factor 3, centre (5, 4). [2]

5 The first term of a sequence is 3

The term-to-term rule of the sequence is 'square then subtract 5'

Find the 3rd term of this sequence.

..... [2]

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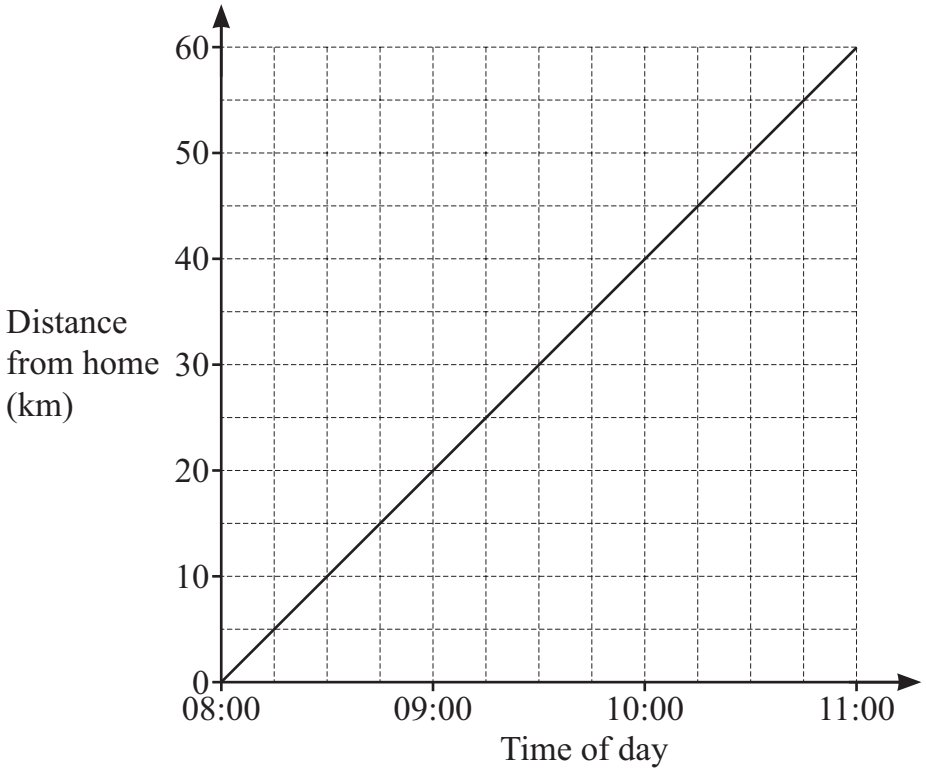
6 Here is a distance–time graph for a journey.



Calculate the speed for this journey.
Give your answer in km/h.

..... km/h [1]

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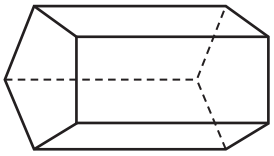
7 A prism has a cross-section that is a regular pentagon.

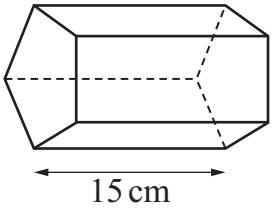


NOT TO SCALE

(a) Find the number of planes of symmetry of this prism.

..... [1]

(b) The prism has a length of 15 cm.



NOT TO SCALE

The area of the cross-section of the prism is 10 cm^2.

Calculate the volume of the prism.

..... cm^3 [1]

8 Here are some measurements of length.

70 cm 500 nm 0.4 m

Write these measurements in order of size, starting with the smallest.

....

smallest largest

[1]

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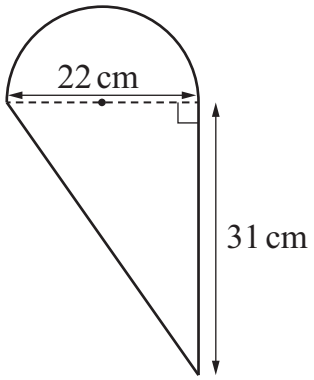
9 The diagram shows a shape made by joining a semicircle to a right-angled triangle.
The diameter of the semicircle is 22 cm.
The lengths of the perpendicular sides of the triangle are 22 cm and 31 cm.



NOT TO SCALE

Complete the calculation for the total area of the shape.

$$\frac{1}{2} \times 22 \times \square + \square \times \pi \times \square^{2} \quad \text{cm}^2$$

[2]

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10 Angelique records the resting heart rates for a group of people before and after taking part in a fitness programme.

Resting heart rate is measured in beats per minute (bpm).

This back-to-back stem-and-leaf diagram shows the results.

Resting heart rate **before** fitness programme						Resting heart rate **after** fitness programme				
					4	8	9			
			2	1	**5**	1	5	8	8	8
	5	5	5	4	**6**	2	4	7	7	8
			8	3	**7**	5	6	7	8	
	9	7	6	5	**8**	2	5			
		5	4	3	**9**	1				

Key: 4 | **6** | 2 represents 64 bpm **before** the fitness programme and 62 bpm **after** the fitness programme.

The tables give information about six values that are missing from Angelique's diagram.

Resting heart rate **before** fitness programme
Five values are missing.
The minimum value is 49
The modal value is 78
The maximum value is 97

Resting heart rate **after** fitness programme
One value is missing.
The range is 45
No person has a resting heart rate less than 48

(a) Complete the back-to-back stem-and-leaf diagram with the **six** missing values.

[4]

(b) Angelique says,

'There is a greater spread of resting heart rates before the fitness programme compared to after the fitness programme.'

Draw a ring around the measure that shows Angelique is correct.

mean median mode range

[1]

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11 The time Pierre takes to solve a puzzle is 12.7 seconds correct to 3 significant figures.

Write down the lower limit for the time Pierre takes to solve the puzzle.

..... s [1]

12 Rajiv substitutes $x = 3$ into the expression $2x^2$ and gets the answer 36

Tick (✓) to show if Rajiv is correct or not correct.

Correct ☐ Not correct ☐

Explain why.

.....

.....

[1]

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13 Four students each start to solve a different calculation involving fractions.

For each student's work, tick (✓) to show if their statements are true or false.

Student 1's work

$7 \div \frac{1}{8}$

$= 7 \times 8$

True ☐ False ☐

Student 2's work

$15 \div \frac{3}{4}$

$= \frac{1}{15} \times \frac{4}{3}$

True ☐ False ☐

Student 3's work

$27 \times 2\frac{5}{8}$

$= 27 \times 2 + 27 \times \frac{5}{8}$

True ☐ False ☐

Student 4's work

$3\frac{5}{7} \times 6$

$= 3 \times 6 \times \frac{5}{7} \times 6$

True ☐ False ☐

[2]

14 Work out the value of $\frac{p^5 + 10}{3 + 2p}$ when $p = 2$

..... [2]

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15 Youssef draws this table to record the length of each leaf in a sample of leaves.

Leaf length (l cm)	Tally	Frequency
$l < 10$		
$10 < l < 20$		
$20 < l < 30$		
$l > 30$		

Youssef has made some mistakes in the class intervals.

Write down class intervals that allow Youssef to record every leaf length.
Two have been done for you.

Leaf length (l cm)
$l < 10$
$l \geq 30$

[1]

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16 Work out.

(a) $1 - \frac{7}{10} \div 7$

Give your answer as a fraction in its simplest form.

..... [2]

(b) $1\frac{3}{5} \times 4\frac{1}{8}$

Give your answer as a mixed number in its simplest form.

..... [3]

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17 Solve the simultaneous equations.

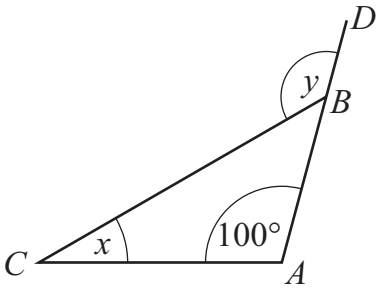
$3x + y = 14$
$5x + 2y = 25$

$x =$ .....

$y =$ .....

[3]

18 The diagram shows a triangle ABC.
ABD is a straight line.



NOT TO SCALE

Angle x is acute and angle y is obtuse.

Find **one possible** pair of values for angle x and angle y.

$x =$ ..... °

$y =$ ..... °

[1]

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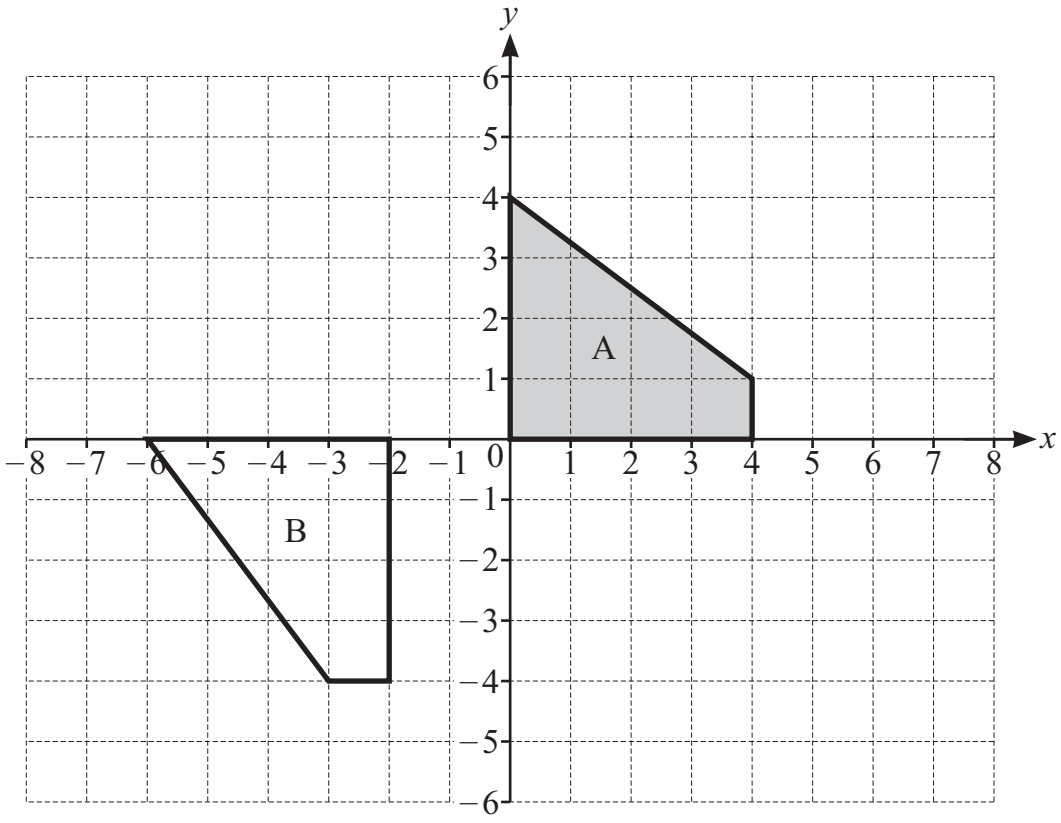
19 The diagram shows shape A and shape B on a coordinate grid.



Shape A is transformed onto shape B by a combination of **two** single transformations.
The first transformation is a rotation of 90° clockwise about (0, 0).

Describe fully the **second** transformation.

.....

..... [2]

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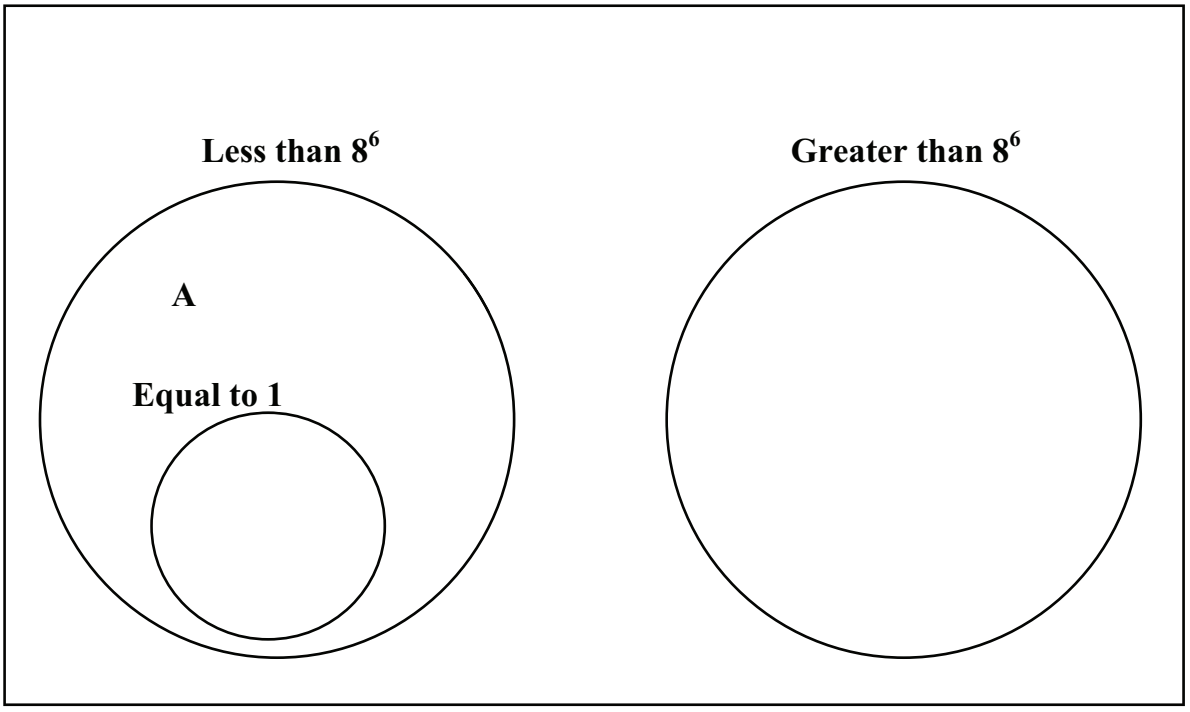
20 Write the letter for each calculation in the correct place on the Venn diagram.
One has been done for you.

A	B	C	D	E	F
$8^2 \times 8^2$	$8^2 \times 8^3$	$8^{15} \div 8^5$	8^0	$8 \times 8^5 \times 8$	$(8^2)^3$



[2]

21 Jamila writes these rules about fractions and their decimal equivalents.

Tick (✓) to show if each of Jamila's rules is true or false.

	True	False
Fractions with an even denominator will **always** be equivalent to a terminating decimal.	☐	☐
Fractions with a denominator which is a multiple of 9 will **always** be equivalent to a recurring decimal.	☐	☐

[1]

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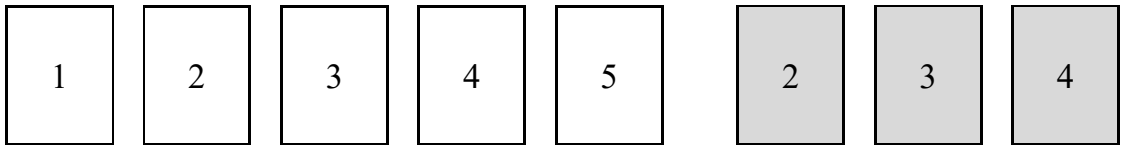
22 **(a)** Naomi has a bag containing 5 counters, each with a different **number** written on it.
She also has a bag containing 10 counters, each with a different **letter** written on it.
Naomi picks one counter at random from each bag.
One possible outcome is 3F.

Find the total number of possible outcomes.

..... [1]

(b) Naomi has these 5 white cards and these 3 grey cards.



Naomi picks one white card at random and one grey card at random.

Calculate the probability that both cards show a number greater than 3

..... [2]

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23 It is given that

$$0.71 \times 10^n = 71 \quad \text{and} \quad 2.3 \times 10^p = 0.00023$$

Find the value of $0.067 \div 10^{n+p}$

..... [3]

24 Here is an algebraic statement.

$$(x + 3)^2 + c = (x - 3)(x + 5) + 4x$$

Find the value of c.

$c =$ ..... [3]

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