Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

5194493782

MATHEMATICS **0862/01**

Paper 1 **April 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 **12** pages.

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1 Youssef thinks of a number, n.
He adds 3
His answer is greater than or equal to –5 and less than 17

Write the correct inequality signs to complete the inequality.

$$-5 \quad \ldots\ldots\ldots\ldots \quad n + 3 \quad \ldots\ldots\ldots\ldots \quad 17$$

[1]

2 $200^{-3} = \dfrac{1}{200^{w}}$

Write the value of w.

$w =$ ..... [1]

3 Solve the simultaneous equations.

$$x - 2y = 2$$
$$5x + 2y = 58$$

$x =$ .....

$y =$ .....

[2]

4 Find the exterior angle of a regular 10-sided polygon.

..... ° [1]

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5 Here is a sequence of calculations.

$1 \times 7 - 2 \times 1 = 5$
$3 \times 8 - 4 \times 2 = 16$
$5 \times 9 - 6 \times 3 = 27$
$7 \times 10 - 8 \times 4 = 38$
$9 \times 11 - 10 \times 5 = 49$

Complete the next calculation in this sequence.

11 × 12 – ..... × ..... = ...

[1]

6 A regular polygon has k lines of symmetry.

Tick (✓) the correct statement about the order of rotational symmetry of the polygon.

The order of rotational symmetry is 1	☐
The order of rotational symmetry is clockwise	☐
The order of rotational symmetry is k	☐
The order of rotational symmetry is $k + 1$	☐

[1]

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7 **(a)** Mike and Pierre are each asked to write the equations of two lines that have a **positive** y-intercept.

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

	Both equations have a positive y-intercept	
	Correct	Not correct
Mike $y = -x + 3$ $\quad$ $y = 2 - x$	☐	☐
Pierre $y = x + 0.5$ $\quad$ $y = 7 - 5x$	☐	☐

[1]

(b) The equation of a line is $7 = 3x + y$

Find the gradient and the y-intercept of this line.

gradient = ...

y-intercept = ...

[2]

8 Tick (✓) to show if each conversion is correct or not correct.

	Correct	Not correct
60 nm = 6 mm	☐	☐
2000 GB = 2 MB	☐	☐

[1]

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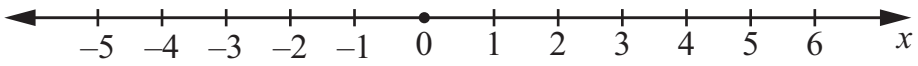
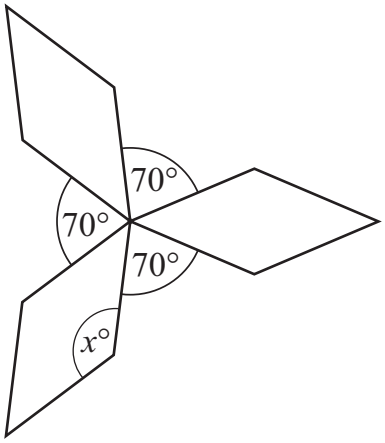
9 Represent $-2 < x \leq 4$ on the number line.



[1]

10 The diagram shows a shape made with three identical rhombuses.



NOT TO SCALE

Find the value of x.

$x =$ ..... [4]

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11 Gabriella collects the heights of 11 indoor plants and 12 outdoor plants.
The table and the incomplete back-to-back stem-and-leaf diagram show information about her results.

Outdoor plants	
Modal height	39 cm
Minimum height	17 cm
Range	26 cm

Indoor plants							**Outdoor plants**					
			9	8	7	**0**						
		9	9	5	4	**1**						
			9	8	6	**2**	3	7	7			
					0	**3**	4	5	8	9		
						4	1					

Key: 6 | **2** | 3 represents indoor plant height of 26 cm and outdoor plant height of 23 cm

(a) Use the information in the table to complete the back-to-back stem-and-leaf diagram.

[3]

(b) Calculate the range of heights for the indoor plants.

..... cm [1]

12 Work out the value of $\frac{n^4+29}{n+7}$ when $n = 3$

..... [2]

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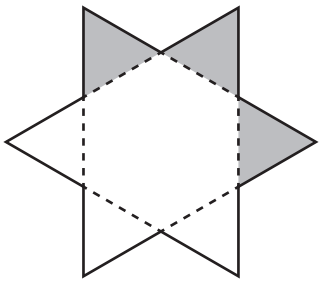
13 **(a)** Write 62 000 in standard form.

..... [1]

(b) Write 8.1×10^{-3} as an ordinary number.

..... [1]

14 The diagram shows a shape made from 6 congruent equilateral triangles and a regular hexagon.



The regular hexagon has an area of 140 cm^2.

Calculate the shaded area.

..... cm^2 [1]

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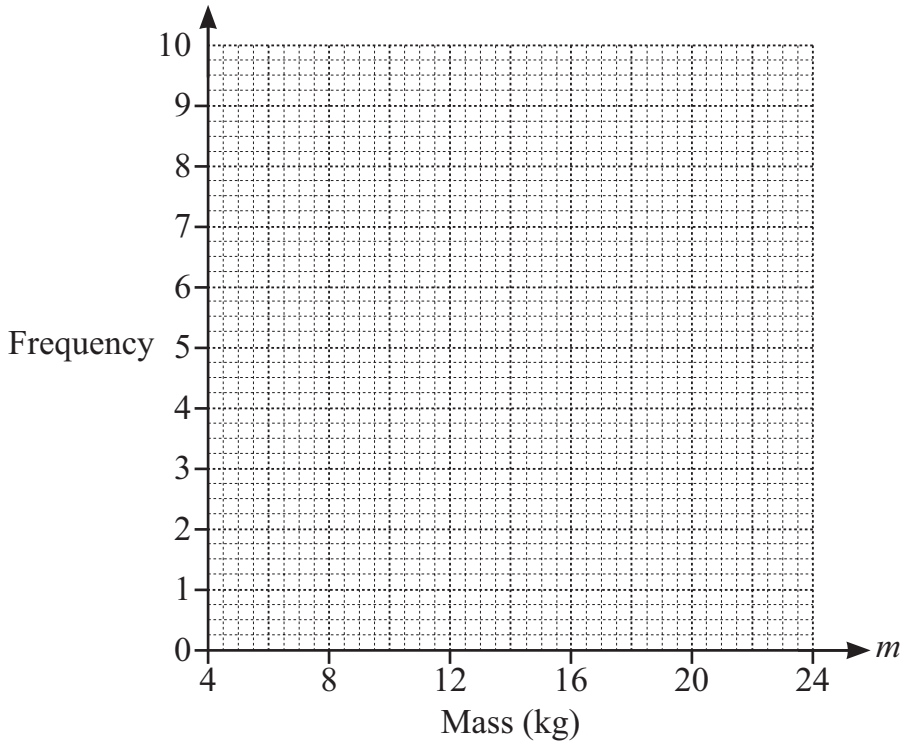
15 The table shows information about the mass of each of 23 boxes.

Mass (m, kg)	$4 \leq m < 8$	$8 \leq m < 12$	$12 \leq m < 16$	$16 \leq m < 20$	$20 \leq m < 24$
Frequency	8	7	3	2	3

(a) On the grid, draw a frequency polygon to show this information.



[3]

(b) Draw a ring around the interval that contains the median mass.

$4 \leq m < 8$ $8 \leq m < 12$ $12 \leq m < 16$ $16 \leq m < 20$ $20 \leq m < 24$

[1]

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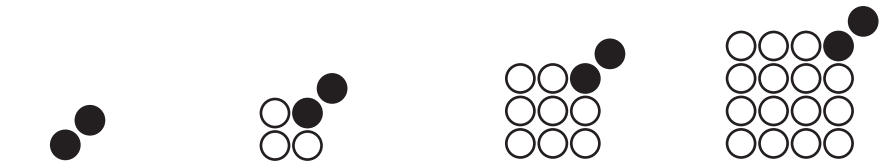
16 $\frac{1}{9} = 0.\dot{1}$

Use this fact to convert $\frac{7}{9}$ to a decimal.

Give your answer correct to 3 decimal places.

..... [2]

17 Jamila makes this sequence of patterns using white counters and black counters.



Pattern 1 Pattern 2 Pattern 3 Pattern 4

(a) Complete these sentences.
The first one has been done for you.

The number of white counters in pattern 4 is .....15.....

The number of white counters in pattern 5 is .....

The number of white counters in pattern 100 is .....

[2]

(b) Write an expression, in terms of n, for the **total** number of counters in pattern n.

..... [2]

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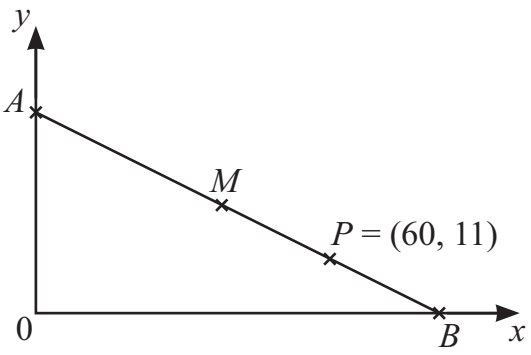
18 Tick (✓) to show if each of the calculations is equivalent to 37×10^{-3} or not.

Calculation	Equivalent to 37×10^{-3}	Not equivalent to 37×10^{-3}
3.7×0.01	☐	☐
3.7×10^{-2}	☐	☐
3.7×10^{-4}	☐	☐
$37 \div 10^{3}$	☐	☐

[2]

19 Point A lies on the y-axis and point B lies on the x-axis.



NOT TO SCALE

M is the midpoint of AB.
P is the midpoint of MB.

Find the coordinates of point A and the coordinates of point B.

$A = ($ ..... , ... $)$

$B = ($ ..... , ... $)$

[2]

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20 x is an integer and $1 < \sqrt[3]{x} < 2$

Complete these sentences about x.

One possible value of x is .....

There is a total of ..... possible values of x.

[2]

21 Point P lies on the line $y = 5 - 2x$
The x-coordinate of P is a negative integer.
The y-coordinate of P is a prime number.

Find a possible pair of coordinates for point P.

$P = ($ ..... , ... $)$ [2]

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22 Work out.

$$\frac{8}{9} + 1\frac{1}{3} \div 4\frac{4}{5}$$

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

..... [4]

23 A square has a side length of x cm.
Mia enlarges this square by increasing each side length of the square by 200%.

(a) The side length of her enlarged square measures kx cm.

Draw a ring around the value of k.

2 3 4 200 300

[1]

(b) Find the percentage increase in the area of the square after enlargement.

..... % [2]

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