Cambridge Lower Secondary Checkpoint

CANDIDATE
NAME

CENTRE
NUMBER

CANDIDATE
NUMBER

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.

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.

    $$-5 \text{ .... } n+3 \text{ .... } 17$$

    [1]

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

    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]

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.

$11 \quad \times \quad 12 \quad - \quad$ .... $\times$ .... $=$ ....

[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]

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

Tick ($\checkmark$) to show if each student is correct or not correct.

Both equations have a
positive y-intercept

| | Correct | Not correct |

| Mike |
| $y = -x + 3$ $\qquad$ $y = 2 - x$ |

☐ ☐

| Pierre |
| $y = x + 0.5$ $\qquad$ $y = 7 - 5x$ |

☐ ☐

[1]

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

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

gradient = ...

y-intercept = ...

[2]

8 Tick ($\checkmark$) to show if each conversion is correct or not correct.

| | Correct | Not correct |

$60\,\text{nm} = 6\,\text{mm}$ ☐ ☐
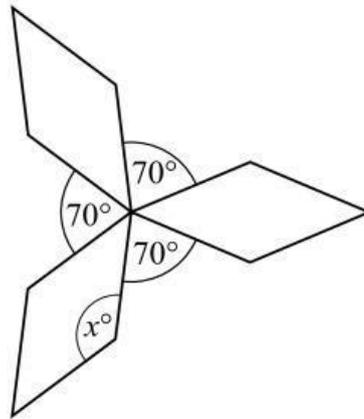
$2000\,\text{GB} = 2\,\text{MB}$ ☐ ☐

[1]

9   Represent $-2 < x \le 4$ 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]

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 $\dfrac{n^4 + 29}{n + 7}$ when $n = 3$

.... [2]

LIVEWORKSHEETS

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.
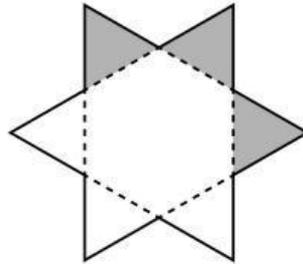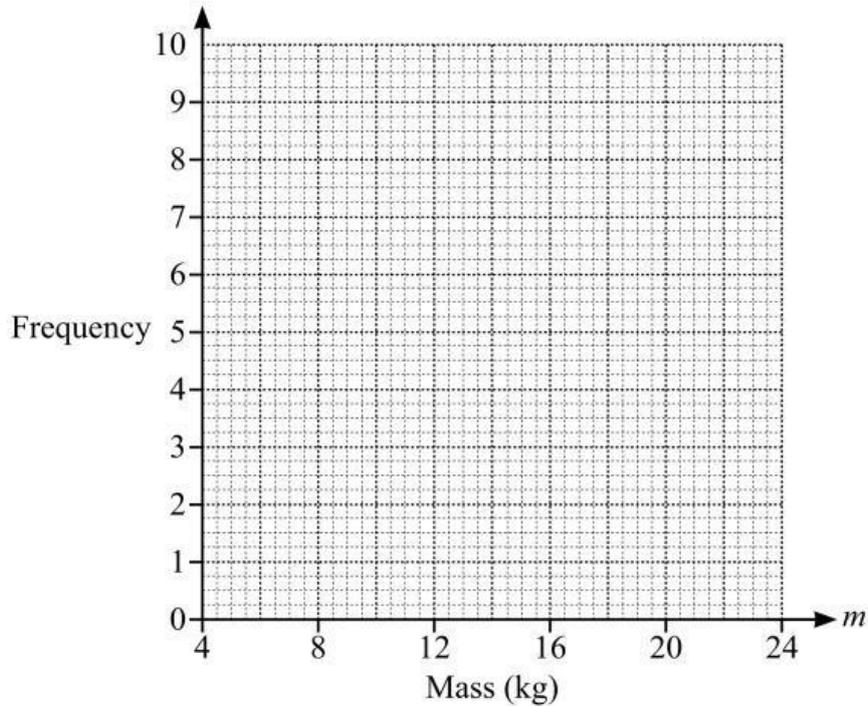

The regular hexagon has an area of $140\,\text{cm}^2$.

Calculate the shaded area.

.... cm^2 [1]

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

Mass (*m*, kg)	$4 \le m < 8$	$8 \le m < 12$	$12 \le m < 16$	$16 \le m < 20$	$20 \le m < 24$
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.

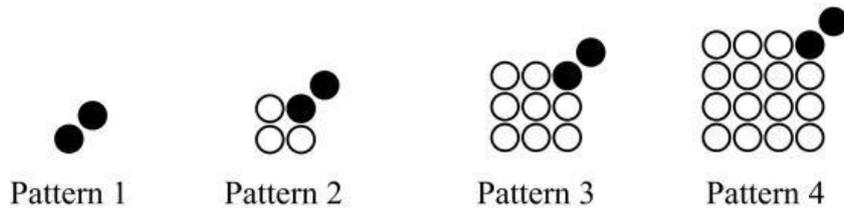 $4 \le m < 8$ $8 \le m < 12$ $12 \le m < 16$ $16 \le m < 20$ $20 \le m < 24$

[1]

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]

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

$P = (60, 11)$
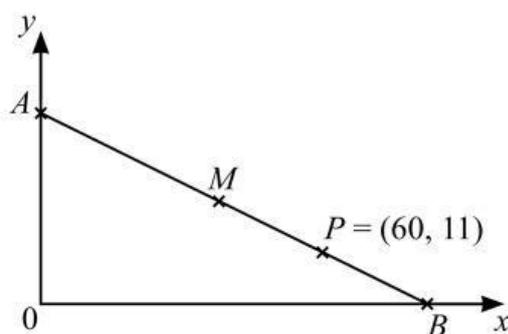
M is the midpoint of AB.
P is the midpoint of MB.

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

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

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

[2]

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

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 $\quad y = 5 - 2x$
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]

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]

LIVEWORKSHEETS