

Cambridge Lower Secondary Checkpoint

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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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.

$$-5 \dots\dots\dots n + 3 \dots\dots\dots 17 \quad [1]$$

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

Write the value of w .

$$w = \dots\dots\dots [1]$$

- 3 Solve the simultaneous equations.

$$\begin{aligned} x - 2y &= 2 \\ 5x + 2y &= 58 \end{aligned}$$

$$\begin{aligned} x &= \dots\dots\dots \\ y &= \dots\dots\dots \end{aligned} \quad [2]$$

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

$$\dots\dots\dots^\circ [1]$$

- 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.

$$11 \times 12 - \dots \times \dots = \dots$$

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

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

[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	☐	☐

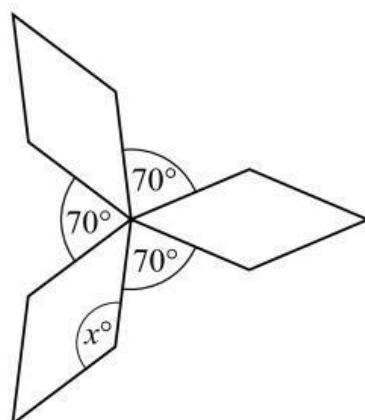
[1]

- 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]

- 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]

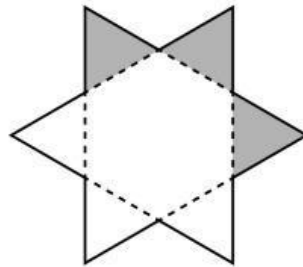
- 13 (a) Write 62 000 in standard form.

..... [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 .

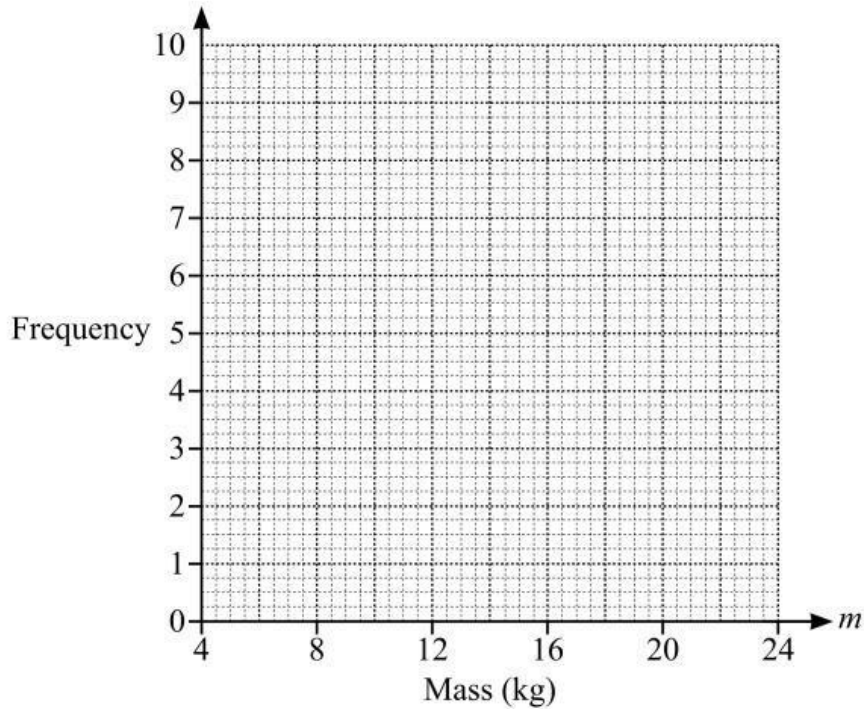
Calculate the shaded area.

..... cm^2 [1]

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]

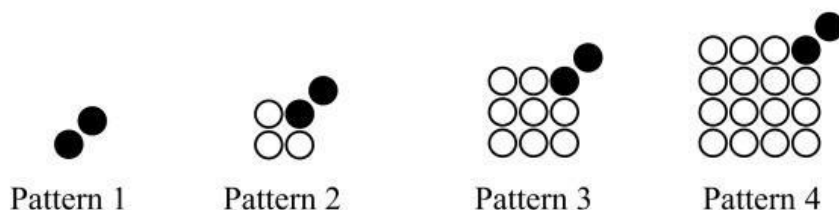
16 $\frac{1}{9} = 0.\dot{1}$

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.



- (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 .

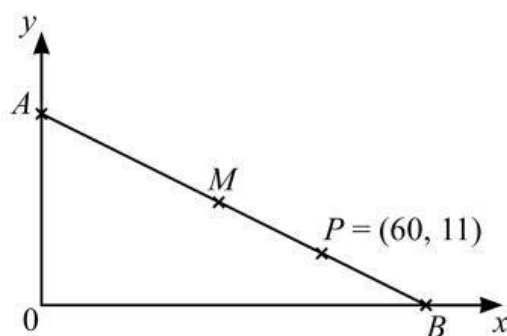
..... [2]

- 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

M is the midpoint of AB .

P is the midpoint of MB .

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

$A = (\dots\dots\dots, \dots\dots\dots)$

$B = (\dots\dots\dots, \dots\dots\dots)$

[2]

- 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 .

$P = (\dots\dots\dots, \dots\dots\dots)$ [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]

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