Cambridge Assessment International Education

Cambridge Lower Secondary Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

9366560238

MATHEMATICS **0862/02**

Paper 2 **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 may 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. Any blank pages are indicated.

1 The nth term of a sequence is n^3.

Find the value of the 5th term of this sequence.

..... [1]

2 Draw a ring around the number that is 0.058 written in standard form.

5.8×10^2 0.58×10^{-1} 5.8×10^{-2} 58×10^{-3}

[1]

3 It will take 3 teachers 4 hours to mark some exam papers.

Find how many teachers are needed to mark these exam papers in 2 hours.

..... [1]

4 Calculate the size of the interior angle of a regular octagon.

..... ° [2]

5 Calculate.

$$15.66 - \left(\frac{1}{4} + 3.15\right)^2$$

..... [1]

6 **(a)** Write down the equations of two **different** lines that are parallel to the line $y = 5x + 2$

$y =$ .....

$y =$ .....

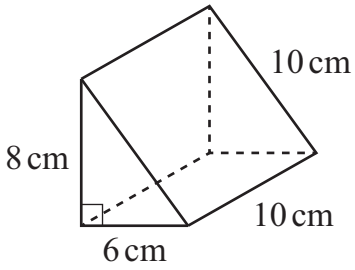
[1]

(b) A line has the equation $11x - y = 3$

Find the y-intercept of this line.

..... [1]

7 The diagram shows a triangular prism.



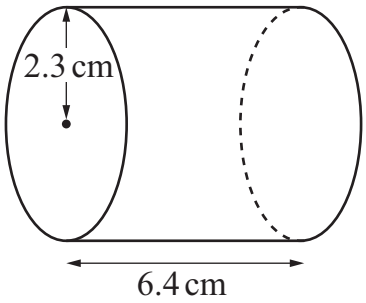
NOT TO SCALE

Tick (✓) to show if each of these statements about the prism is true or false.

	True	False
The largest face has an area of 100 cm^2.	☐	☐
The total area of the two triangular faces is 96 cm^2.	☐	☐

[1]

8 The diagram shows a cylinder with a radius of 2.3 cm and length of 6.4 cm.

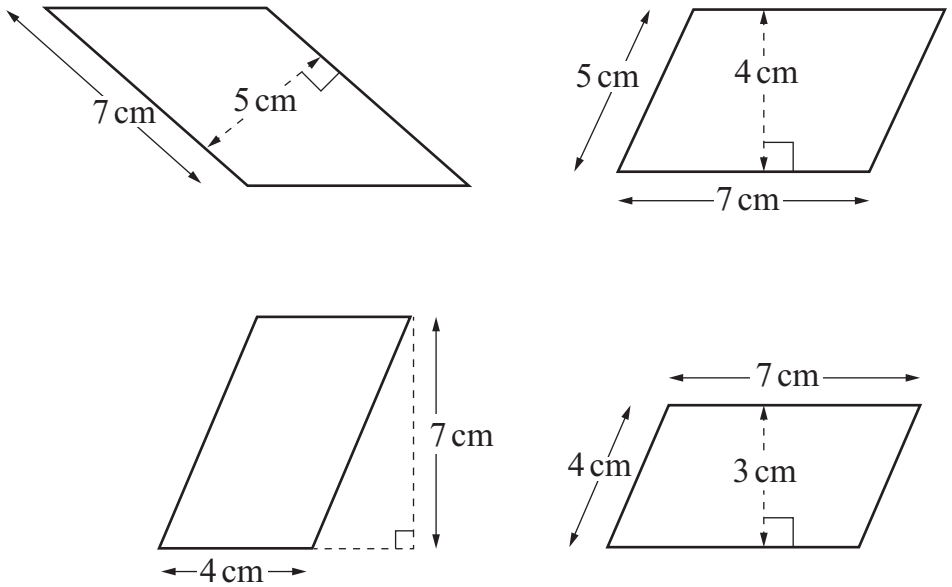


NOT TO SCALE

Calculate the volume of the cylinder.
Give your answer correct to 3 significant figures.

..... cm^3 [3]

9 Here are four parallelograms.



NOT TO SCALE

Draw rings around the **two** parallelograms that have the same area.

[1]

10 The cost of hiring a car is a \$40 fixed charge and an additional charge of \$12 per day. Mike writes a function using C to represent the total cost, in dollars, to hire the car for d days.

Tick (✓) to show if each of these statements is true or false.

	True	False
The total cost to hire the car for 7 days is \$124	☐	☐
The correct function is $C = 40d + 12$	☐	☐

[1]

11 The table gives information about the masses of 20 sheep.

Mass (m kg)	Frequency (f)	Midpoint	Midpoint × f
$40 \leq m < 60$	4		
$60 \leq m < 80$	6		
$80 \leq m < 100$	8		
$100 \leq m < 120$	2		
	Total = 20		Total =

(a) Calculate an estimate of the mean mass of these sheep.
You may use the table to help you.

..... kg [3]

(b) Give a reason why it is only possible to calculate an **estimate** of the mean mass of these sheep.

.....

..... [1]

12 Simplify these algebraic fractions.

$\frac{8x^2}{x}$

.....

$\frac{12y+8}{4}$

.....

[2]

13 Solve these inequalities.

$4 < x - 1 < 9$

.....

$3n + 12 \leq 18$

.....

[3]

14 A bag contains sweets of four different colours.
Here are some of the probabilities of picking a sweet of each colour.

	Red	**Yellow**	**Pink**	**Green**
Probability	0.25	0.1		

The probability of picking a yellow sweet or a pink sweet is 0.4

Complete the table.

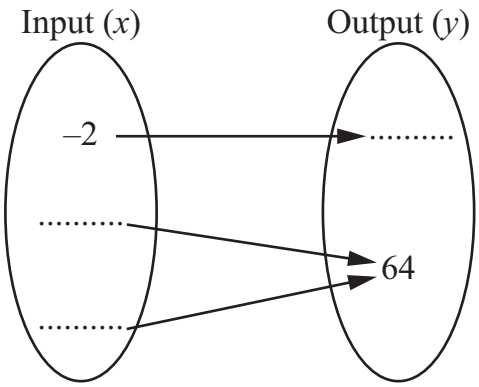
[2]

15 A bike has a value of $8000
The bike decreases in value by 5% each year.

Calculate the value of the bike at the end of 3 years.

$ ..... [2]

16 Here is a mapping diagram for the function $y = (1 + x)^2$



Complete the mapping diagram with three **different** values.

[3]

17 Chen has a box containing coloured pencils in the ratio

blue	:	red	:	green
11	:	8	:	3

There are more than 70 pencils in the box.

Find the smallest possible number of **red** pencils in the box.

..... [2]

18 The scale drawing shows the positions of town A and town B.

Town C is on a bearing of 040° from town A and on a bearing of 305° from town B.

Mark the position of town C on the diagram. [2]

19 Here is a formula.

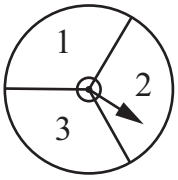
$$t = \sqrt{p+3}$$

Draw a ring around the correct rearrangement of the formula.

$p = \sqrt{t+3}$ $\quad$ $p = \sqrt{t} - 3$ $\quad$ $p = t^2 - 3$ $\quad$ $p = (t-3)^2$

[1]

20 Lily spins this fair spinner once every day for 135 days.



If she spins a 1 she saves \$10 of her earnings for that day.
If she spins a 2 she saves \$20 of her earnings for that day.
If she spins a 3 she saves \$30 of her earnings for that day.

Calculate the total amount of money Lily should expect to save over the 135 days.

\$ ..... [2]

21 Triangle PQR has vertices $P = (3, 5)$, $Q = (3, 2)$ and $R = (5, 2)$.
Triangle PQR is translated to triangle $P'Q'R'$.

(a) Find the coordinates of R' when $P' = (4, 5)$ and $Q' = (4, 2)$.

$R' = ($ ..... , ... $)$ [1]

(b) Find the coordinates of R' when $P' = (1, 10)$ and $Q' = (1, 7)$.

$R' = ($ ..... , ... $)$ [1]

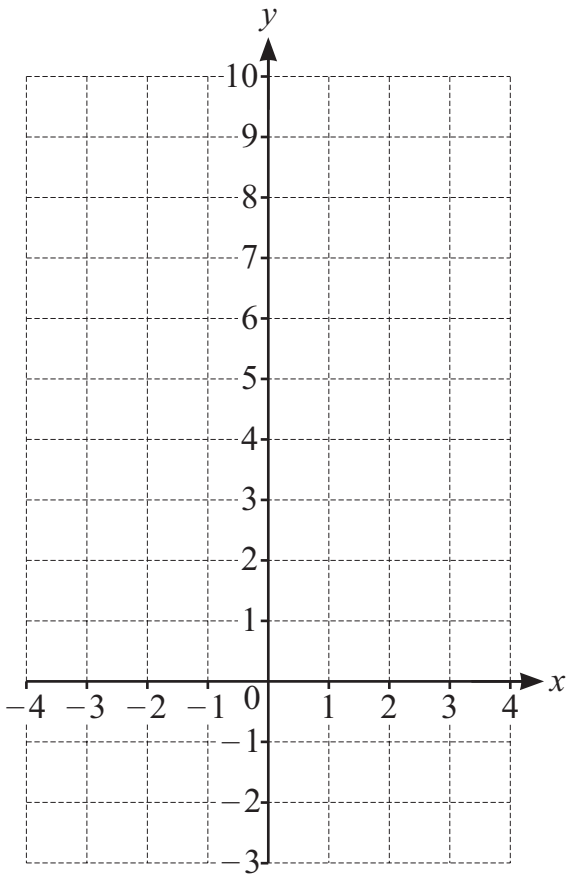
22 A rectangle has an area of $7.5\,\text{cm}^2$.
When the rectangle is enlarged the image has an area of $270\,\text{cm}^2$.

Calculate the value of the scale factor of the enlargement.

..... [1]

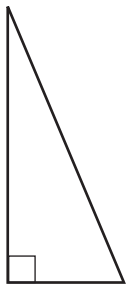
23 By completing the table of values, draw the graph of $y = x^2 - 1$ on the grid for values of x between –3 and 3

x	–3	–2	–1	0	1	2	3
y	8		0	–1	0		



[4]

24 The diagram shows a right-angled triangle with a base length of $(2x+5)$ cm.



NOT TO SCALE

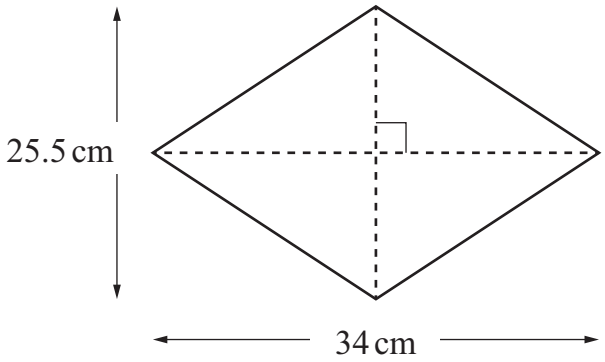
$(2x + 5)$ cm

The area of this right-angled triangle is $(4x^2 + 10x)$ cm^2.
Mia thinks that the perpendicular height of the triangle is kx, where k is a whole number.

Show that Mia is correct by finding the value of k.

$k =$ ..... [2]

25 The diagram shows a cake board in the shape of a rhombus.
The diagonals of the rhombus are of length 25.5 cm and 34 cm.



NOT TO SCALE

Eva wraps ribbon around the perimeter of the cake board.
The ribbon does not overlap.
Ribbon costs 60 cents per **metre**.

Calculate the total cost of the ribbon Eva uses.

..... cents [4]

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