Cambridge IGCSE™

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 use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Blank pages are indicated.

1 Sean is the manager of a museum.

(a) He buys a Chinese pot costing 1200 yuan.
The exchange rate is $1 = 6.4 yuan.

Work out the cost of this pot in dollars.

$ .... [1]

(b) Sean records the maximum and minimum temperatures, in °C, at the museum.
Some of the results for one week are shown in the table.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Maximum temperature (°C)	8	12	15	14	11	7	4
Minimum temperature (°C)	−5	−2	−4	−1	3		

(i) Find the difference between the maximum temperature and the minimum temperature on Wednesday.

....°C [1]

(ii) The minimum temperature on Saturday was 2 °C higher than the minimum temperature on Monday.

Find the minimum temperature on Saturday.

....°C [1]

(iii) In this week the range of temperatures was 23 °C.

Find the minimum temperature on Sunday.

....°C [1]

(c) These are the opening times for the museum.

Monday to Friday   09 00 to 17 00
Saturday and Sunday   10 00 to 16 00

During opening hours the museum has 4 security guards working.
Each guard works a maximum of 30 hours each week.

Work out the smallest number of guards needed each week.
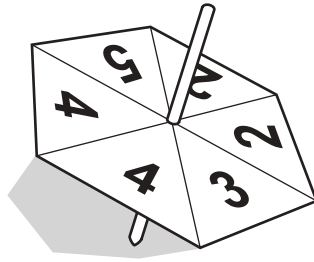
.... [4]

(d) The entry price to the museum is $18.
This price is increased by 28%.

Find the increased entry price.

$ .... [2]

2 **(a)** Jian has a fair spinner in the shape of a regular hexagon.
The spinner is numbered 2, 2, 3, 4, 4, 5.

Jian spins the spinner.

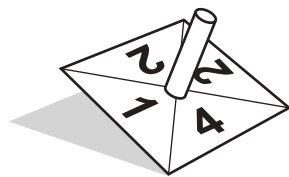Find the probability that the spinner lands on

(i) an even number,

.... [1]

(ii) a number less than 6,

.... [1]

(iii) the number 1.

.... [1]

(b) Mei has two fair square spinners, A and B.
Spinner A is numbered 1, 2, 2, 4 and spinner B is numbered 3, 3, 4, 5.

Spinner A   Spinner B

She spins both spinners and adds the two numbers.

(i) Complete the table to show all the possible outcomes.

A \ B	3	3	4	5
1	4	4		
2	5	5	6	7
2	5	5	6	7
4	7	7		

[2]

(ii) Use the table to write down the probability that the total is

   (a) 5,

   .... [1]

   (b) more than 5.

   .... [1]

(c) Ning has a spinner numbered 1 to 6.
She spins it 50 times and her results are shown in the table.

Number on spinner	Frequency
1	15
2	12
3	9
4	5
5	2
6	7

   (i) Write down the mode.

   .... [1]

   (ii) Find the median.

   .... [1]

   (iii) Work out the mean.

   .... [3]

3 **(a)**

8	15	18	33	39	41	51	57	60	81

From this list, write down

(i) a factor of 54,

.... [1]

(ii) a multiple of 19,

.... [1]

(iii) a prime number.

.... [1]

(b) Write down the reciprocal of 64.

.... [1]

(c) **(i)** Write 4.81×10^{-3} as an ordinary number.

.... [1]

(ii) Write 75 000 in standard form.

.... [1]

(iii) Calculate $\dfrac{6.3 \times 10^2}{7 \times 10^{-3}}$.

Write your answer in standard form.

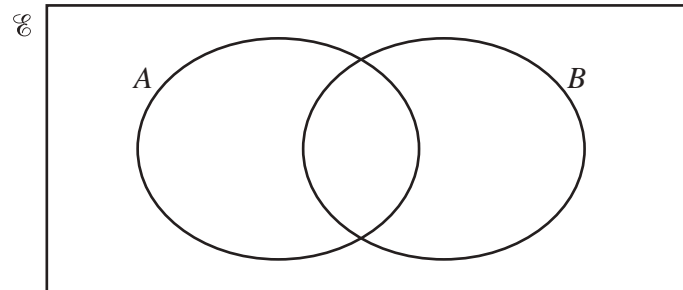.. [2]

(d) (i)

$$\mathscr{E} = \{2, 4, 8, 16, 32, 64\}$$
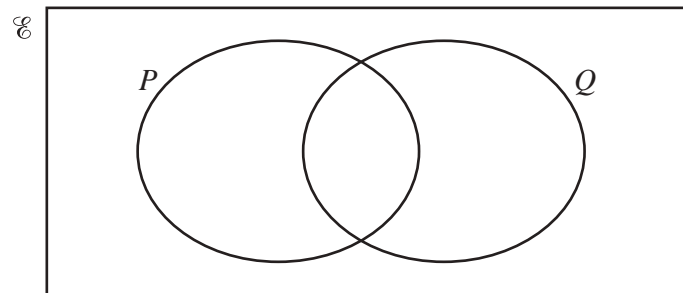$$A = \{\text{square numbers}\}$$
$$B = \{\text{cube numbers}\}$$

Use this information to complete the Venn diagram.

[2]

(ii) On this Venn diagram, shade the region $P \cup Q$.

[1]

4 (a) Simplify.
$$6a - 3b + 2a - 4b$$

.... [2]

(b) Expand.
$$5(x - 3)$$

.... [1]

(c) Solve these equations.

(i) $\frac{x}{3} = 18$

$x = $ .... [1]

(ii) $5x + 18 = 8$

$x = $ .... [2]

(iii) $12x - 3 = 4x + 21$

$x = $ .... [2]

(d) $6^{10} \times 6^x = 6^2$

Find the value of x.

$x = $ .... [1]

(e) The Fraser family and the Singh family go to the cinema.
The Fraser family buys 6 adult tickets and 2 child tickets for $124.
The Singh family buys 3 adult tickets and 5 child tickets for $100.

Find the price of an adult ticket and the price of a child ticket.

Adult ticket $ ....
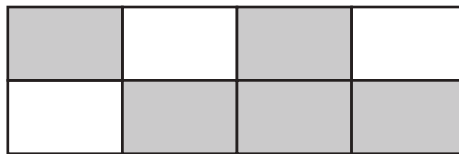
Child ticket $ .... [5]

5 **(a)** Write one hundred and twenty thousand and twenty in figures.

.... [1]

(b) Find the value of $\sqrt{3481}$.

.... [1]

(c)

    (i) Write down the fraction of the rectangle that is shaded.

.... [1]

    (ii) Find the percentage of the rectangle that is **not** shaded.

.... % [1]

(d) Write these numbers in order, starting with the smallest.

$$27\% \qquad \frac{5}{17} \qquad 0.268 \qquad \frac{7}{29}$$

.... $<$ .... $<$ .... $<$ .... [2]
    smallest

(e) Write 0.3728 correct to 1 decimal place.

.... [1]

(f) Write down the value of 19^0.

.... [1]

(g) The height, h metres, of a tower is 128 m, correct to the nearest metre.

Complete the statement about the value of h.

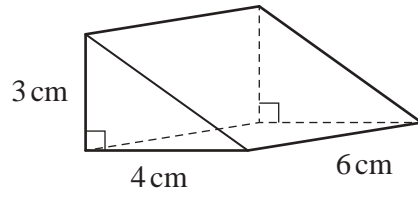.................. $\leqslant h <$ .... [2]

(h) Find the highest common factor (HCF) of 126 and 180.

.... [2]

(i) Write down an irrational number with a value between 6 and 7.

.... [1]

6

NOT TO SCALE

The diagram shows a right-angled triangular prism.

(a) On the 1 cm^2 grid, complete the net of the prism.
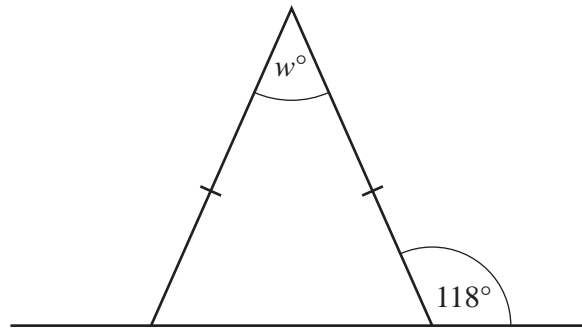One face has been drawn for you.
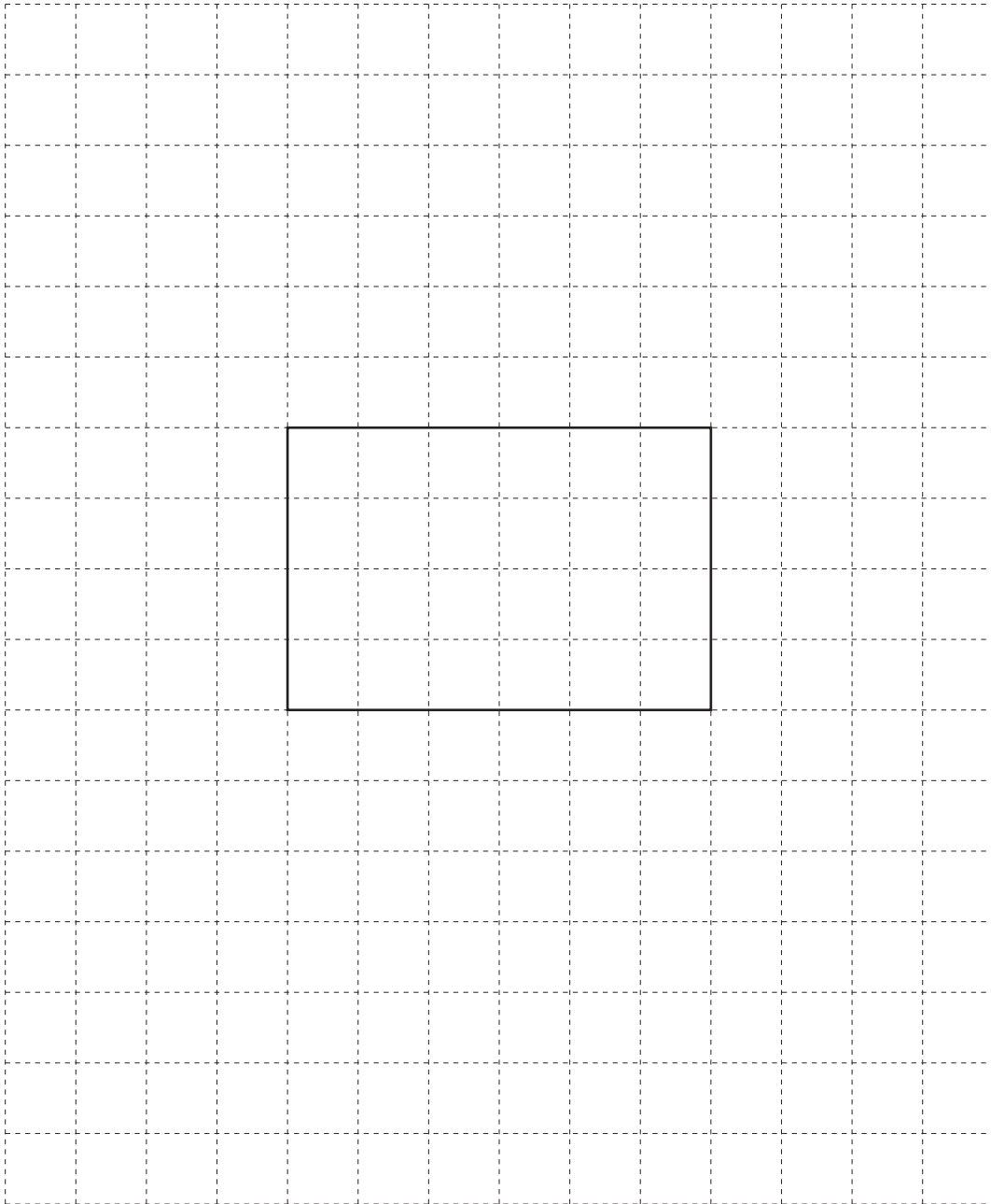
[3]

(b) Work out the surface area of the prism.

.... cm^2 [3]

(c) Work out the volume of the prism.

.... cm^3 [2]

7 **(a)**

NOT TO
SCALE

The diagram shows an isosceles triangle and a straight line.

Work out the value of *w*.

$w =$ .... [2]

(b)
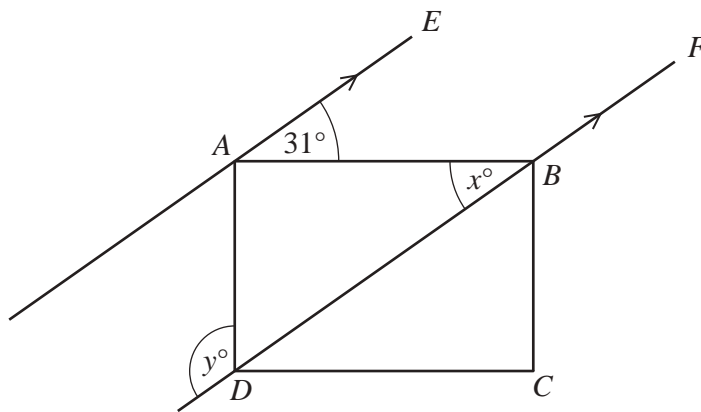
NOT TO
SCALE

ABCD is a rectangle.
AE is parallel to *DBF*.

Find the value of *x* and the value of *y*.

$x =$ ....

$y =$ .... [2]

(c)
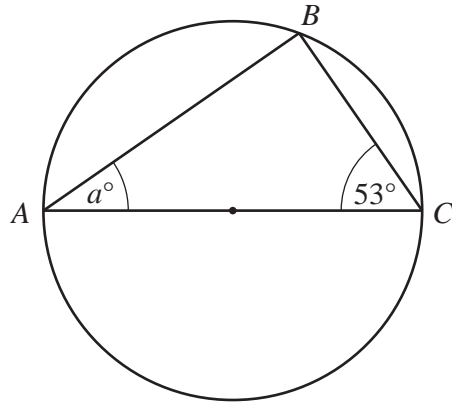
NOT TO
SCALE

A, B and C are points on a circle.
AC is a diameter of the circle.

Find the value of a.

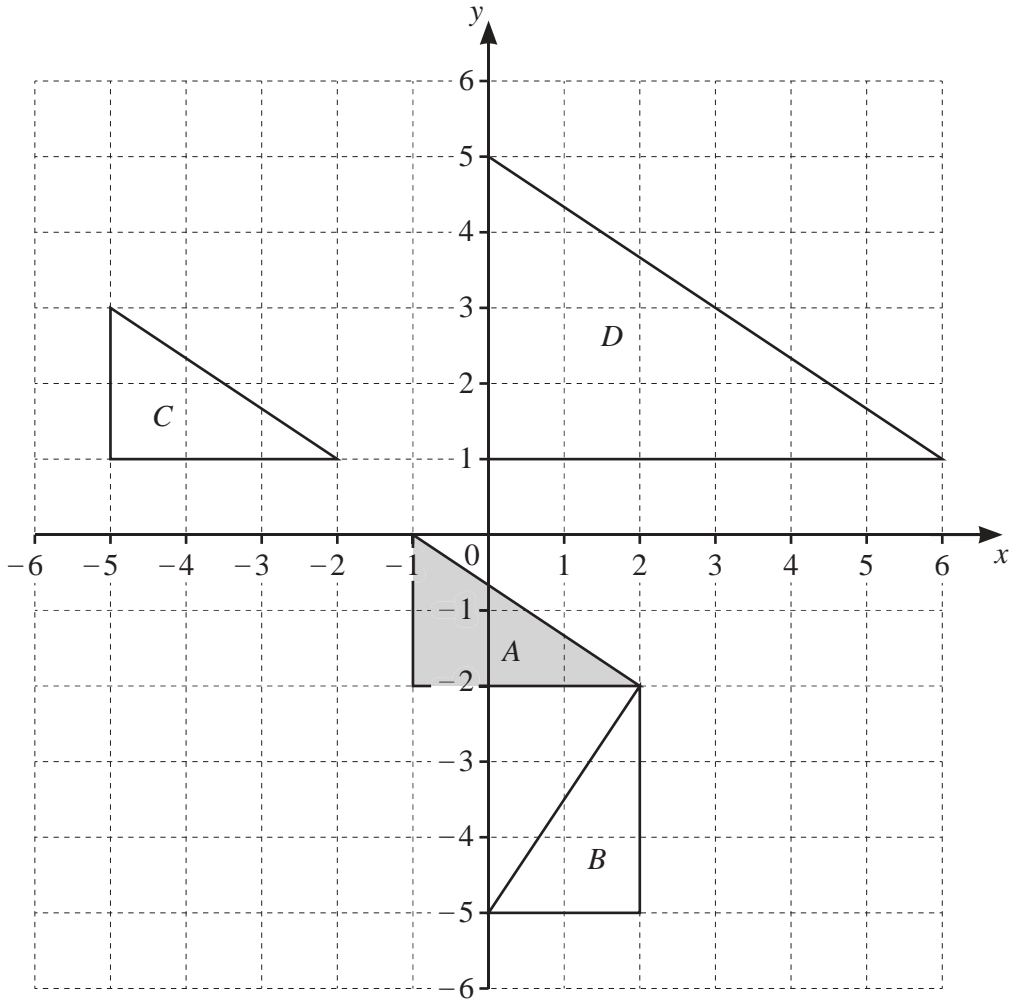a = ... [2]

(d)
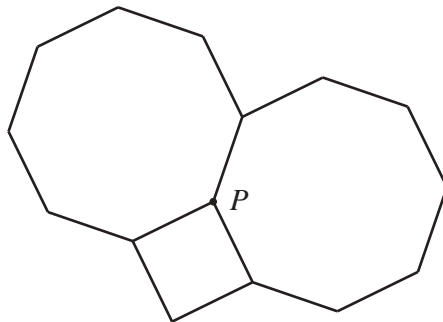
NOT TO
SCALE

Two regular octagons and a square meet at point P.

Show, by calculation, that the three interior angles at P add up to 360°.

[3]

8

(a) Describe fully the **single** transformation that maps

    (i) triangle A onto triangle B,

    ....

    .... [3]

    (ii) triangle A onto triangle C,

    ....

    .... [2]

    (iii) triangle A onto triangle D.

    ....

    .... [3]

(b) On the grid, draw the image of triangle A after a reflection in the line $x = -2$.   [2]

9 **(a)** Complete the table of values for $y = \dfrac{15}{x}$.

x	-5	-3	-2	-1		1	2	3	5
y				-15		15			

[3]

(b) On the grid, draw the graph of $y = \dfrac{15}{x}$ for $-5 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 5$.
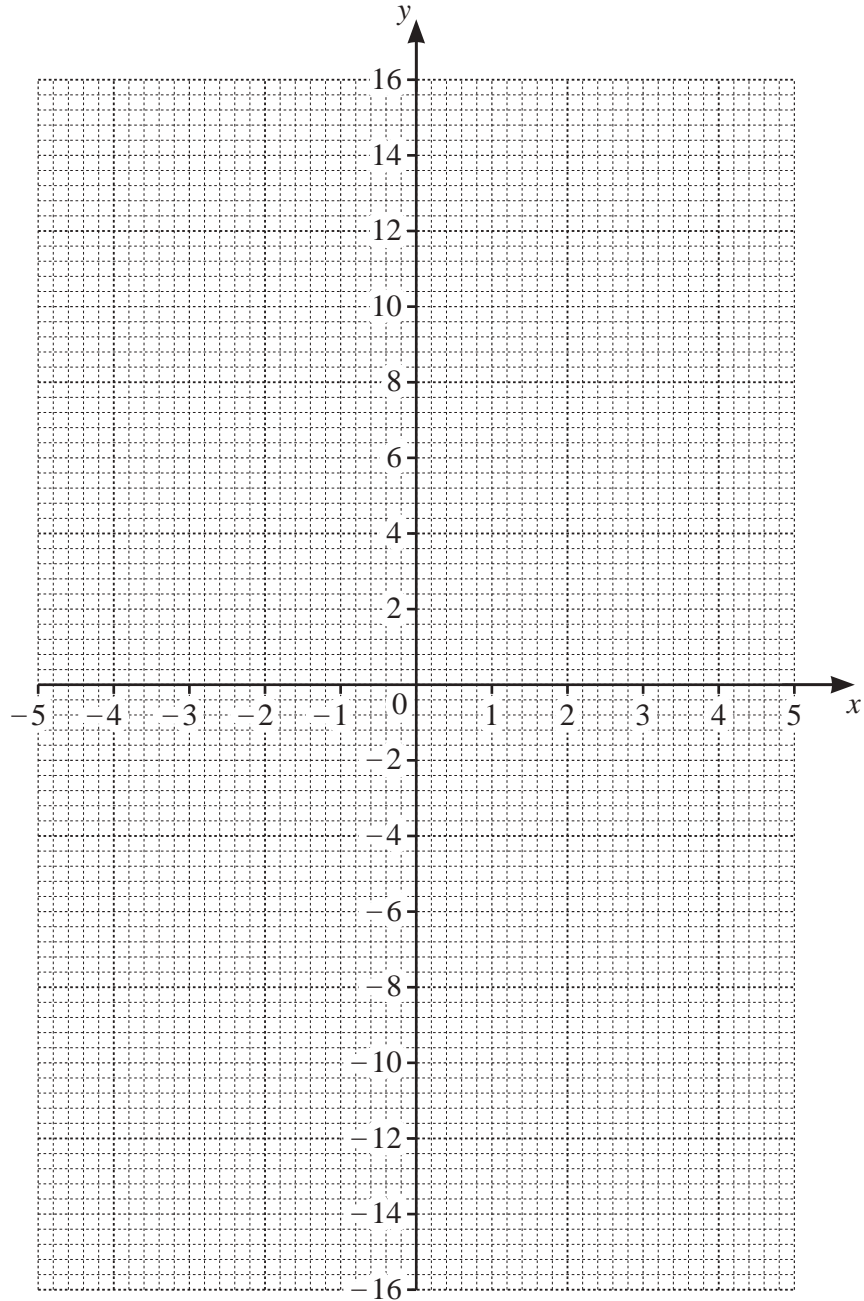
[4]

(c) On the grid, draw the line $y = 6$. [1]

(d) Use your graph to solve $\dfrac{15}{x} = 6$.

$x = $ .... [1]

10 (a) These are the first four terms of a sequence.

   8   15   22   29

   (i) Write down the next term.

.... [1]

   (ii) Write down the term to term rule for continuing this sequence.

.... [1]

   (iii) Find an expression for the nth term.

.... [2]

(b) Find the next term in each of these sequences.

   (i)   18,   21,   26,   33,   42,   …

.... [1]

   (ii)   18,   20,   24,   32,   48,   …

.... [1]

(c) Find the first three terms of the sequence with *n*th term $n^2 + 5n$.

.... , ... , ... [2]

20

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