NEW SYLLABUS (2025-2027)

SPECIMEN PAPERS BOOKLET

SPECIMEN PAPER A (P1,P2,P3,P4)
SPECIMEN PAPER B (P1,P2,P3,P4)
PRACTICE PAPER 2025 (P1,P2,P3,P4)

IGCSE 0580 MATHEMATICS

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/01**

Paper 1 Non-calculator (Core) **For examination from 2025**

SPECIMEN PAPER **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **18** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

Calculators must **not** be used in this paper.

1 Kim takes part in a race that covers a total distance of 20 000 m.
She cycles 17 875 m and runs the remaining distance.

(a) Work out the distance Kim runs.

..... m [1]

(b) Write the number 17 875 in words.

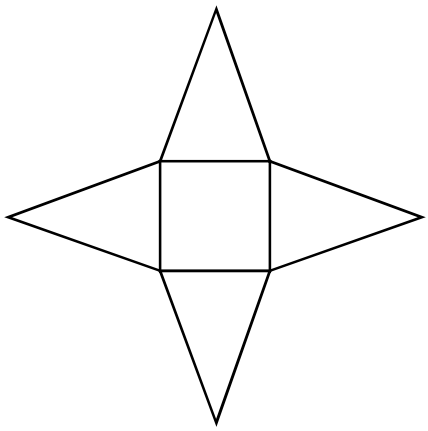
.....

..... [1]

(c) Write the number 17 875 correct to the nearest hundred.

..... [1]

2 The diagram shows the net of a solid.



(a) What is the mathematical name of the solid?

..... [1]

(b) For this solid, write down the number of vertices.

..... [1]

3 The number N is both a multiple of 12 and a square number.

Find the smallest possible value of N.

..... [2]

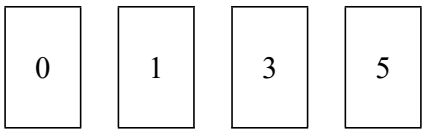
4 A coin is made from a mixture of tin, copper and zinc.
The table shows the percentage of each metal used.

Metal	Tin	Copper	Zinc
Percentage	0.4%	96.5%	k%

Work out the value of k.

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

5 Here are four number cards.



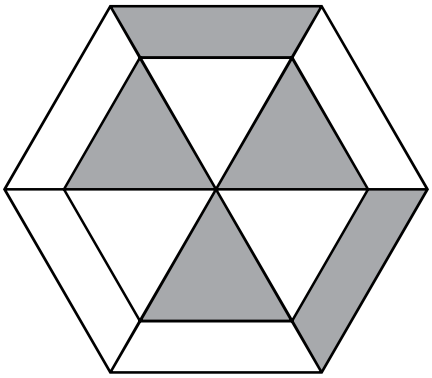
Using each card once, write down one number between 3020 and 3200.

..... [1]

6 Write the ratio $90 : 120$ in its simplest form.

..... : ..... [1]

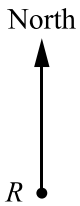
7 The diagram shows a shape with five shaded sections.



Shade one more section on the diagram so that it has rotational symmetry of order 3. [1]

8 The scale drawing shows the position of a rock, R.
The scale is 1 centimetre represents 30 metres.
A lighthouse, L, is 210 m from R, on a bearing of 125°.

On the scale drawing, mark the position of L.



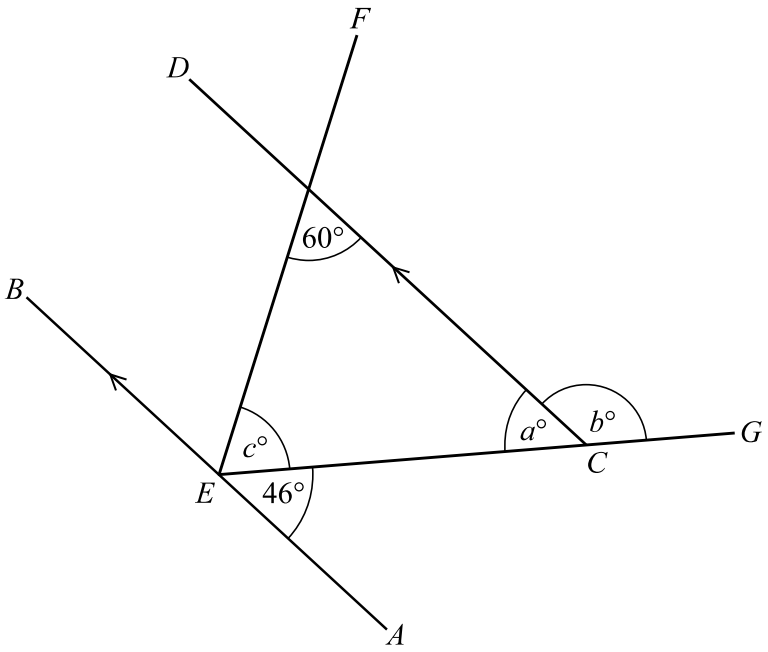
Scale: 1 cm to 30 m
[2]

9 A cake has a mass of 600 g.
Joe eats $\frac{1}{5}$ of the cake.

Find the mass of the cake that is left.

..... g [2]

10



NOT TO SCALE

Lines *AB* and *CD* are parallel.
EF and *EG* are straight lines.

(a) Find the value of *a*.
Give a geometrical reason for your answer.

a = ... because ..... [2]

(b) Find the value of *b*.
Give a geometrical reason for your answer.

b = ... because .....

..... [2]

(c) Find the value of *c*.
Give a geometrical reason for your answer.

c = ... because .....

..... [2]

11 Work out.

(a) $7 + 9 \times 3$

..... [1]

(b) $-6 - (-12)$

..... [1]

(c) 10^{-2}

..... [2]

12 **(a)** Factorise.

$9x + 12$

..... [1]

(b) Solve.

$6x - 5 = 2x + 13$

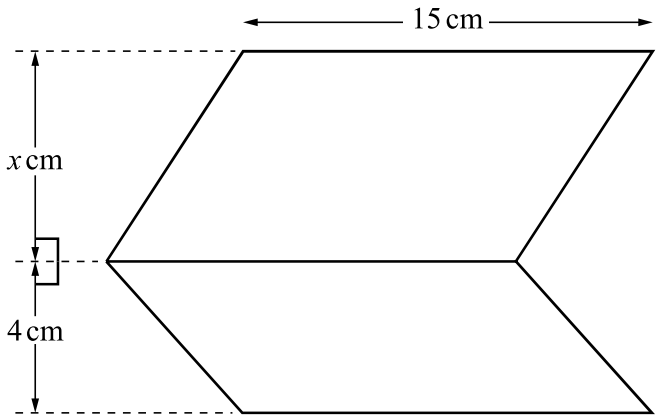
$x =$ ..... [2]

13 A plane flies from London to Colombo.
The time in London when the plane leaves is 08 20 on Saturday.
The time in Colombo when the plane arrives is 02 15 on Sunday.
The flight time is 13 hours 25 minutes.

Find the time difference between London and Colombo.
State whether the time in Colombo is ahead or behind the time in London.

[3]

14 The diagram shows a shape made from two different parallelograms.
The shape has a total area of $210\,cm^2$.



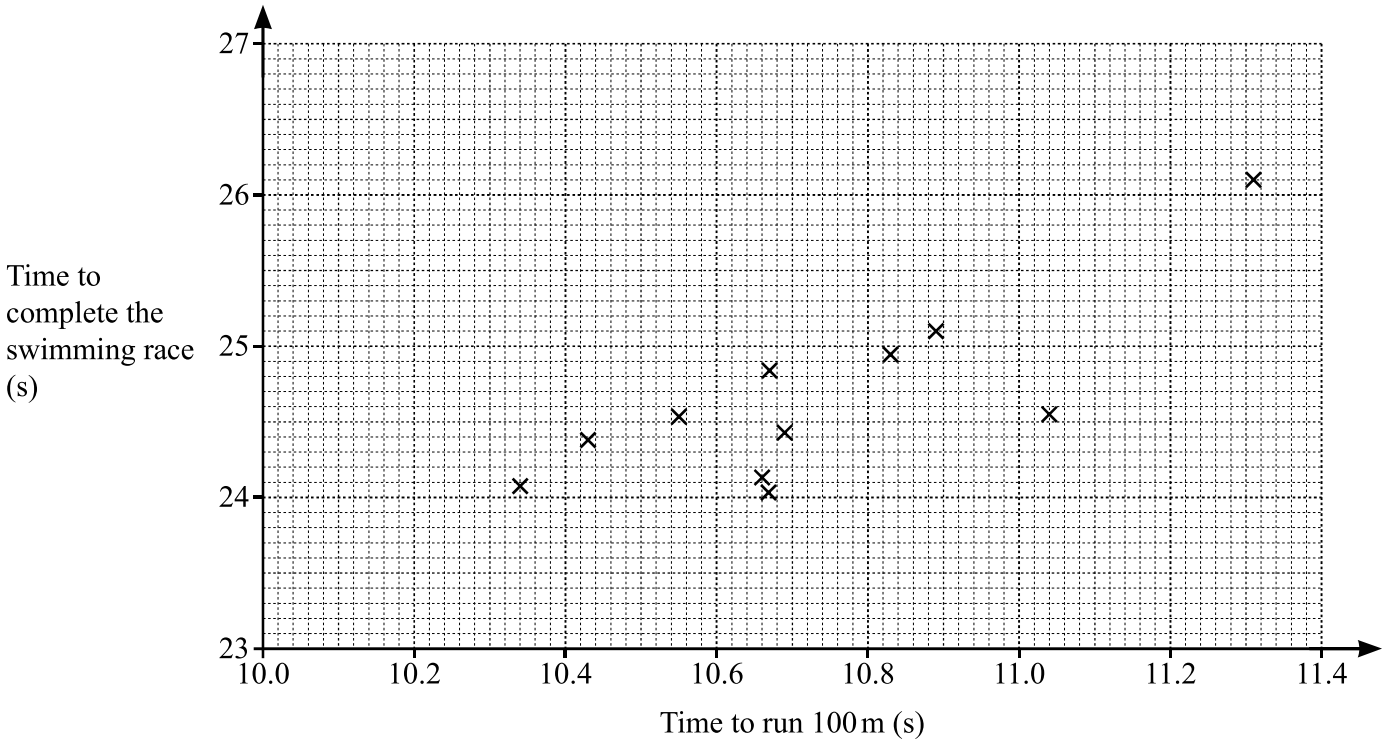
NOT TO SCALE

Find the value of x.

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

15 (a) As part of a sports competition, 14 athletes run 100 m and complete a swimming race.

The scatter diagram shows the times, in seconds, to run 100 m and the times, in seconds, to complete the swimming race, for 11 of these athletes.



The table shows the times for the other 3 athletes.

Time to run 100 m (s)	10.20	10.86	11.04
Time to complete the swimming race (s)	23.5	25.4	24.9

(i) On the scatter diagram, plot these three points. [2]

(ii) State the type of correlation shown in the scatter diagram.

..... [1]

(iii) On the scatter diagram, draw a line of best fit. [1]

(iv) Another athlete completes the swimming race in 23.8 seconds.

Use your line of best fit to estimate the athlete's time to run 100 m.

..... s [1]

(b) The table shows the diameter, in centimetres, and the mass, in grams, of nine medals.

Diameter (cm)	85	85	70	60	68	70	70	60	66
Mass (g)	500	412	200	135	180	181	231	152	102

(i) Write down the mode of the diameters.

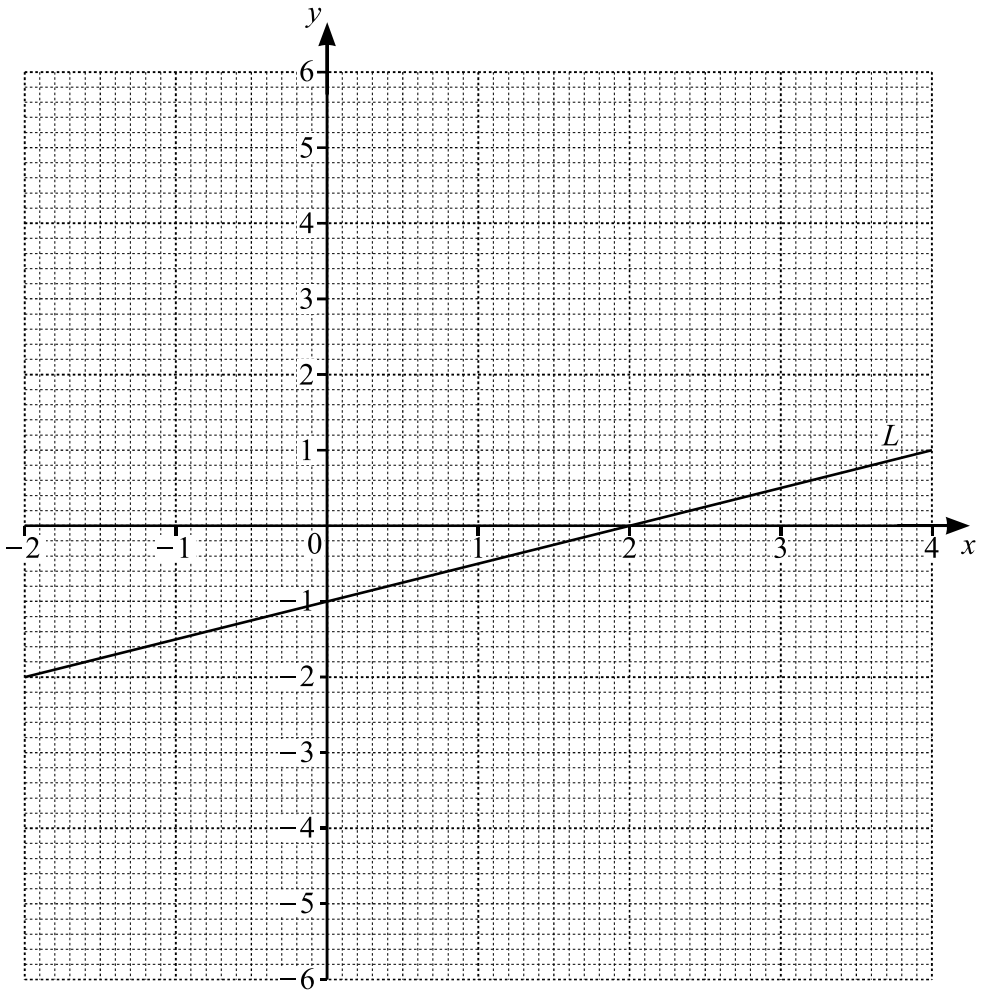
..... cm [1]

(ii) Find the median of the masses.

..... g [2]

[Turn over

16 The line L is shown on the grid.



(a) Find the equation of line L in the form $y = mx + c$.

$y =$ ..... [3]

(b) The table shows some values for $y = x^2 - 2x - 3$.

x	–2	–1	0	1	2	3	4
y		0	–3		–3	0	

(i) Complete the table. [2]

(ii) On the grid, draw the graph of $y = x^2 - 2x - 3$ for $-2 \leqslant x \leqslant 4$. [4]

(c) Write down the equation of the line of symmetry of the graph of $y = x^2 - 2x - 3$.

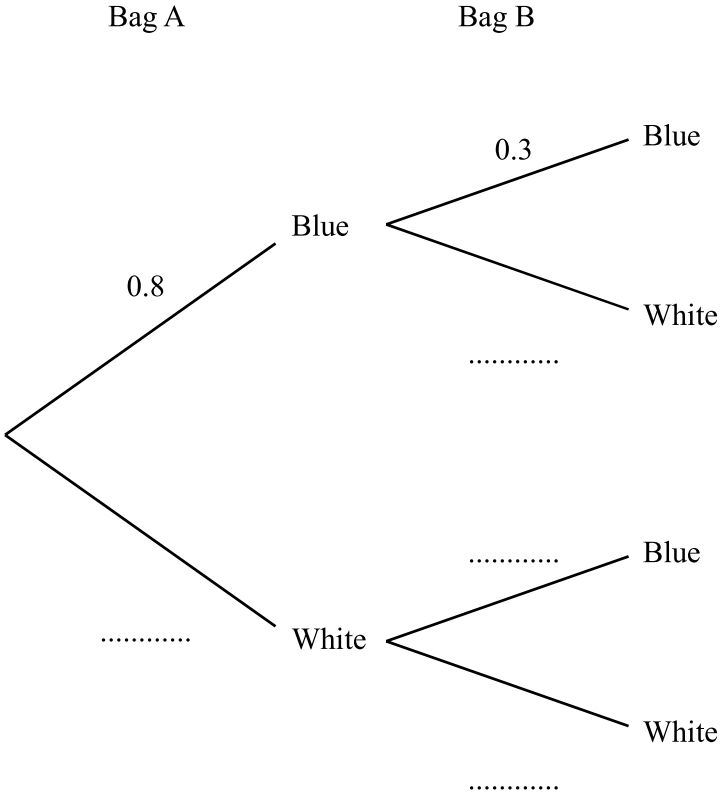
..... [1]

(d) Write down the negative value of x where the line L and the graph of $y = x^2 - 2x - 3$ intersect.

$x =$ ..... [1]

17 Two bags, A and B, each contain blue beads and white beads only.
The probability of taking a blue bead at random from bag A is 0.8 .
The probability of taking a blue bead at random from bag B is 0.3 .

(a) Complete the tree diagram.



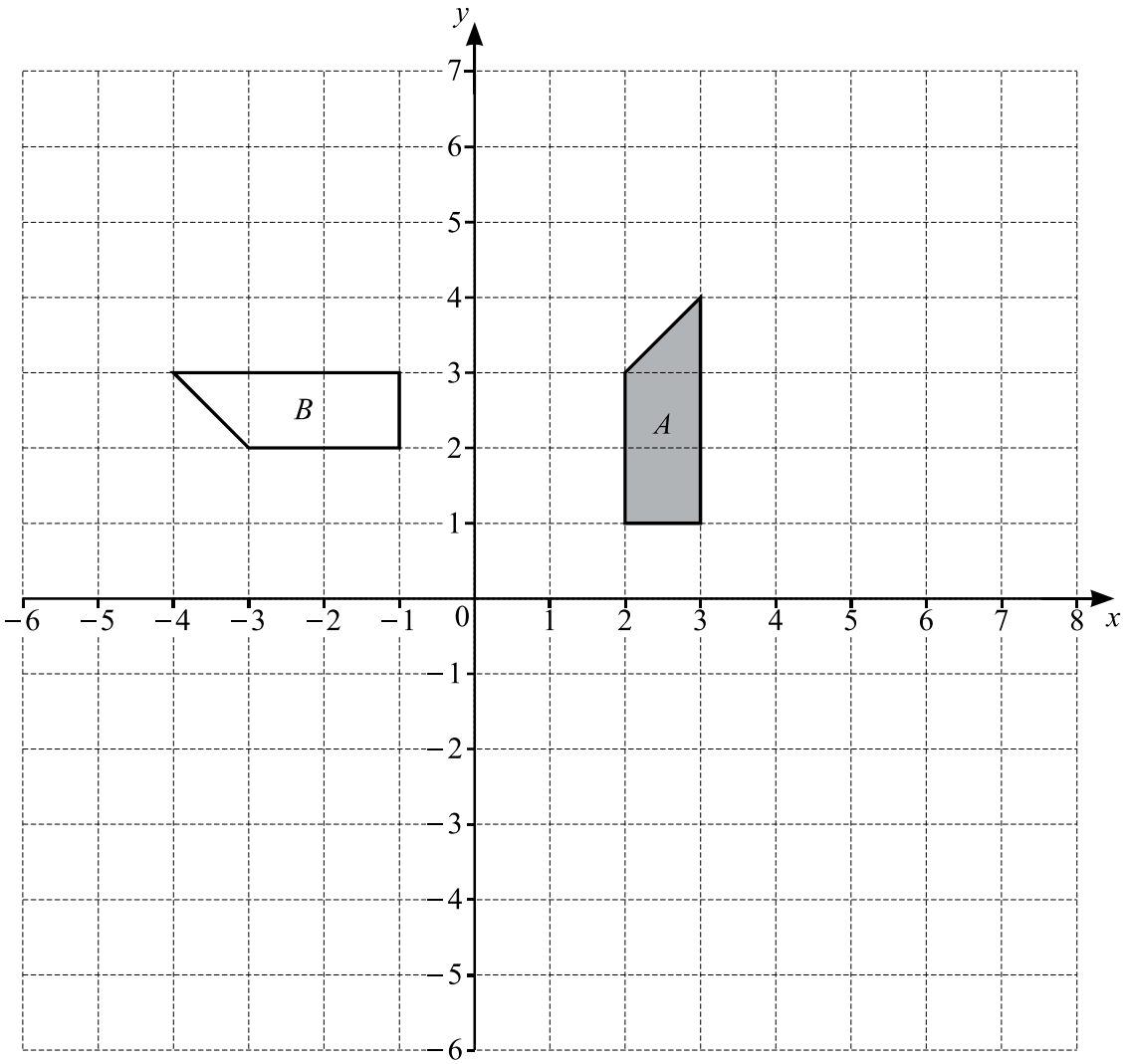
[2]

(b) A student takes one bead at random from bag A and one bead at random from bag B.

Find the probability that both beads are white.

..... [2]

18



(a) Describe fully the **single** transformation that maps shape *A* onto shape *B*.

.....

..... [3]

(b) On the grid, draw the image of

(i) shape *A* after a translation by the vector $\begin{pmatrix}-5\\-6\end{pmatrix}$. [2]

(ii) shape *A* after an enlargement by scale factor 3, centre (1, 4). [2]

19 Rearrange the formula to make t the subject.

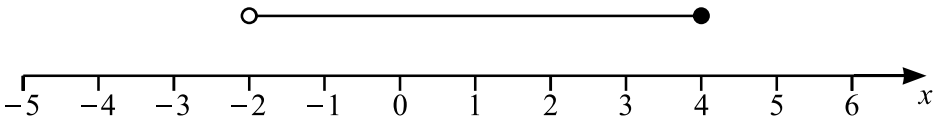
$w = 7t - 5$

$t =$ ..... [2]

20 **(a)** Write down the smallest **even** integer that satisfies the inequality $y > 2.5$.

$y =$ ..... [1]

(b) Write an inequality, in terms of x, to represent the interval shown on this number line.



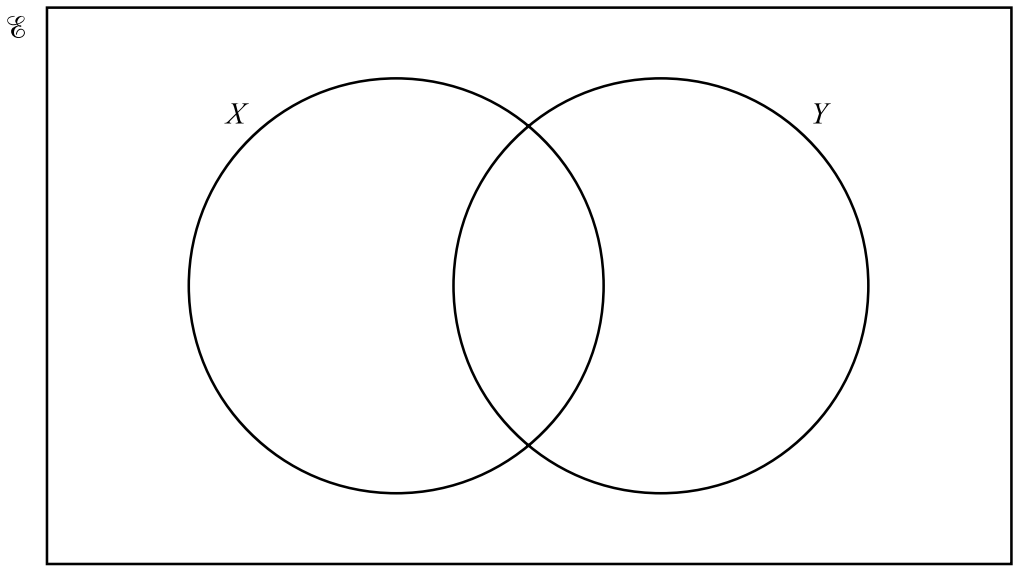
..... [2]

21 $\mathscr{E}$ = {a, b, d, e, f, h, i, m, p, t, u}

X = {a, e, i, u}

Y = {d, e, m, p, t, u}

(a) Use this information to complete the Venn diagram.



[2]

(b) List the elements of $X \cap Y$.

..... [1]

(c) Find n(X').

..... [1]

22 The length, L, of a road is 39 700 m, correct to the nearest 50 m.

Complete this statement about the value of L.

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

23 Solve the simultaneous equations.

$$3x - 5y = 22$$
$$7x + 10y = 8$$

$x =$ .....

$y =$ .....
[3]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/02**

Paper 2 Non-calculator (Extended) **For examination from 2025**

SPECIMEN PAPER **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

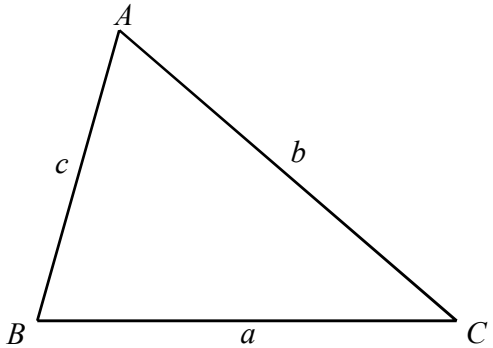
This document has **18** pages. Any blank pages are indicated.

 [Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

Calculators must **not** be used in this paper.

1 Work out $(0.01)^2$.

..... [1]

2 Write 57.3997 correct to 4 significant figures.

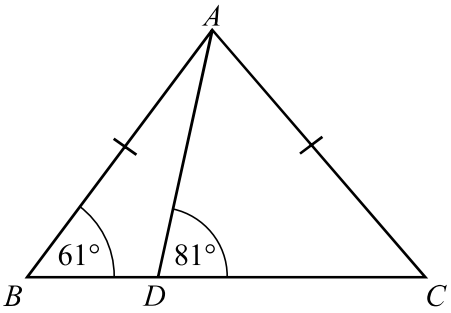
..... [1]

3 Aimee changes 250 euros into dollars.
The exchange rate is 1 euro = \$1.10 .

Calculate the number of dollars Aimee receives.

\$ ..... [1]

4 The diagram shows two triangles, *ABD* and *ADC*.



NOT TO SCALE

BDC is a straight line, *AB* = *AC*, angle *ABD* = 61º and angle *ADC* = 81º.

Work out angle *DAC*.

Angle *DAC* = ... [2]

[Turn over

5 Convert $0.17\,m^2$ into cm^2.

.....cm^2 [1]

6 The mass of a solid metal cuboid is 4 kg. The volume of the cuboid is $600\,cm^3$.

Calculate the density of the metal, giving your answer in **g/cm^3**.
[Density = mass ÷ volume]

..... g/cm^3 [2]

7 $\mathbf{u} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ $\mathbf{v} = \begin{pmatrix} -12 \\ 5 \end{pmatrix}$

(a) Find $\mathbf{u} - 2\mathbf{v}$.

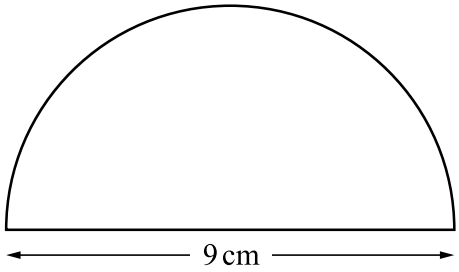
$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$

[2]

(b) Find $|\mathbf{v}|$.

..... [2]

8



NOT TO SCALE

The diagram shows a semicircle with diameter 9 cm.

Calculate the total perimeter of this semicircle.
Give your answer in exact form.

..... cm [3]

9 In a sequence

$$T_1 = 17 \qquad T_2 = 12 \qquad T_3 = 7 \qquad T_4 = 2.$$

Find

(a) T_5

..... [1]

(b) T_n .

..... [2]

10 Work out $2\frac{2}{3} + 3\frac{1}{2}$.
Give your answer as a mixed number in its simplest form.

..... [3]

11 Find the value of $64^{\frac{2}{3}}$.

..... [2]

12 Work out, giving your answer in standard form,

(a) $(7.1 \times 10^{-15}) \times (2 \times 10^{3})$

..... [2]

(b) $(5.2 \times 10^{7}) + (5.2 \times 10^{6})$.

..... [2]

13 Find the number of sides of a regular polygon with interior angle 162°.

..... [2]

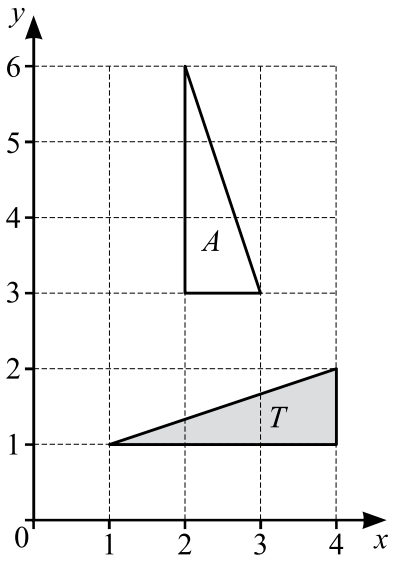
14 The range, mode, median and mean of five positive integers are all equal to 10.

Find one possible set of these five integers.

..... , ... , ... , ... , ... [4]

[Turn over

15



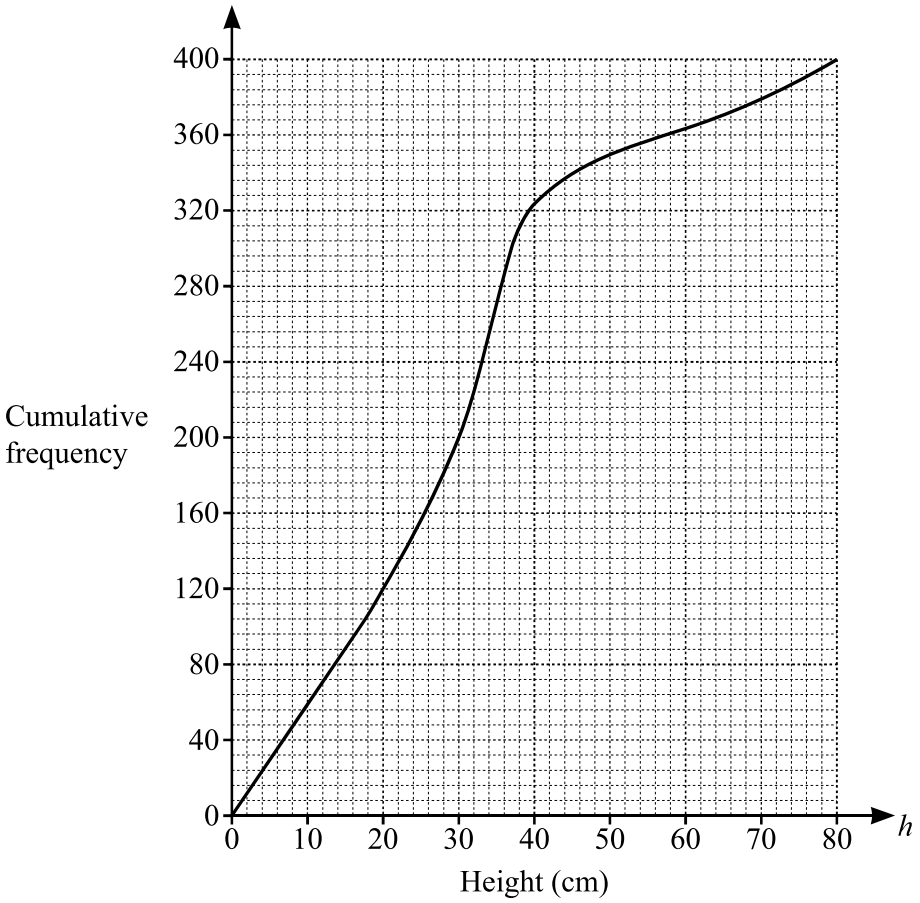
Describe fully the **single** transformation that maps triangle T onto triangle A.

.....

..... [3]

16 A student measures the height, h cm, of each of 400 plants.

(a) The cumulative frequency diagram shows the results.



Use the diagram to find an estimate for

(i) the median

..... cm [1]

(ii) the interquartile range

..... cm [2]

(iii) the 80th percentile

..... cm [2]

(iv) the number of plants with a height greater than 60 cm.

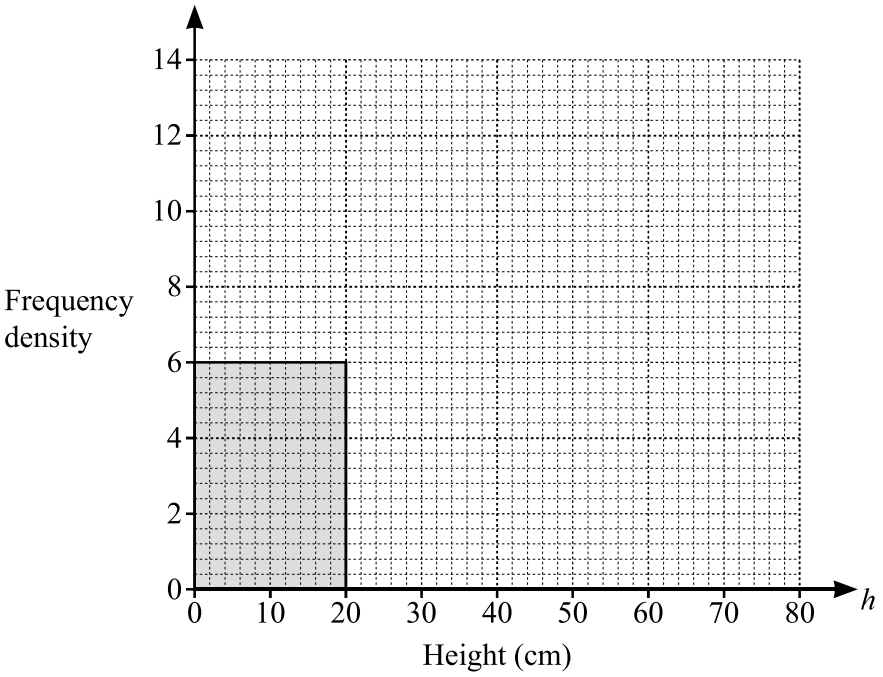
..... [2]

[Turn over

(b) The heights are also shown in the frequency table.

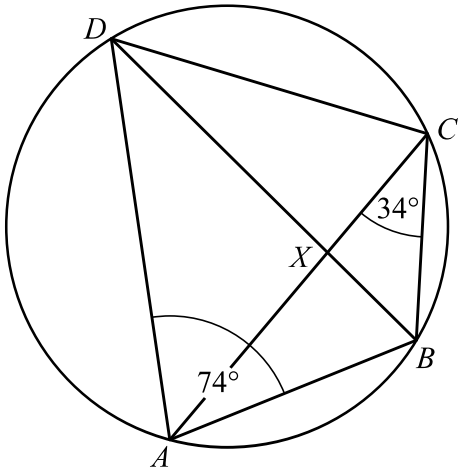
Height (h cm)	$0 < h \leqslant 20$	$20 < h \leqslant 30$	$30 < h \leqslant 40$	$40 < h \leqslant 80$
Frequency	120	80	124	76

Complete the histogram to show this information.



[3]

17



NOT TO SCALE

The diagram shows a cyclic quadrilateral $ABCD$.
BD and AC intersect at X.

(a) Angle $BAD = 74°$ and angle $BCA = 34°$.

Find

(i) angle BDA

Angle BDA = ... [1]

(ii) angle BCD

Angle BCD = ... [1]

(iii) angle ABD.

Angle ABD = ... [1]

(b) In the diagram, triangle ADX is similar to triangle BCX.
$BC = 4.5$ cm, $AD = 9$ cm and $CX = 3.3$ cm.

Work out XD.

XD = ... cm [2]

[Turn over

18 $f(x) = 3 - 2x$ $g(x) = 2x + 3$ $h(x) = 2^x$

(a) (i) Find $f(-3)$.

..... [1]

(ii) Find $gf(-3)$.

..... [1]

(b) Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

(c) Find x when $gg(x) = 7$.

$x =$ ..... [3]

(d) Find x when $h^{-1}(x) = 5$.

$x =$ ..... [2]

19 **(a)** Simplify.

$$\sqrt{32} + \sqrt{98}$$

..... [2]

(b) Rationalise the denominator.

$$\frac{1}{\sqrt{2}+1}$$

..... [2]

20

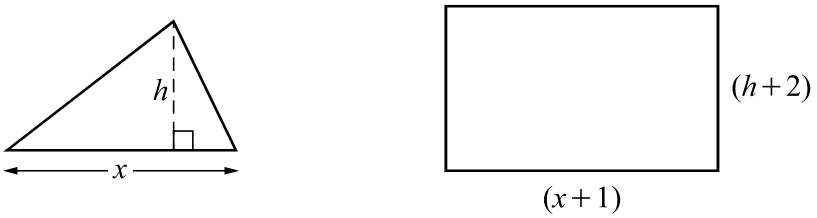
$$y \propto \frac{1}{\sqrt{x}}$$

When $y = 8$, $x = 4$.

Find y when $x = 49$.

$y =$ ..... [3]

21 In this question, all measurements are in centimetres.



NOT TO SCALE

The height of the triangle is h and the height of the rectangle is $(h + 2)$.
The length of the base of the triangle is x and the length of the rectangle is $(x + 1)$.
The area of the triangle is 11 cm^2 and the area of the rectangle is 39 cm^2.

(a) Write down an expression, in terms of x, for the height of the rectangle.

..... [1]

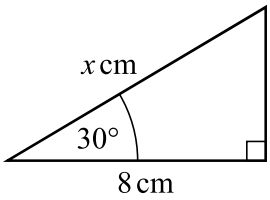
(b) Show that $2x^2 - 15x + 22 = 0$.

[3]

(c) By factorising and solving $2x^2 - 15x + 22 = 0$, find the two possible heights of the triangle.

h = ... or h = ... [5]

22



NOT TO SCALE

Find the exact value of x.

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

23 Write as a single fraction in its simplest form.

$$\frac{3}{x-4} - \frac{4}{x+3}$$

..... [3]

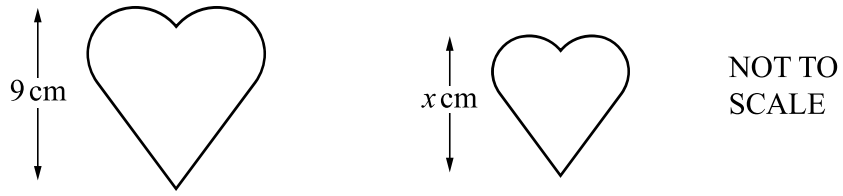
24 **(a)** Write $x^2 - 4x + 7$ in the form $(x - a)^2 + b$.

..... [2]

(b) Write down the coordinates of the turning point of the graph of $y = x^2 - 4x + 7$.

(..... , ...) [1]

25

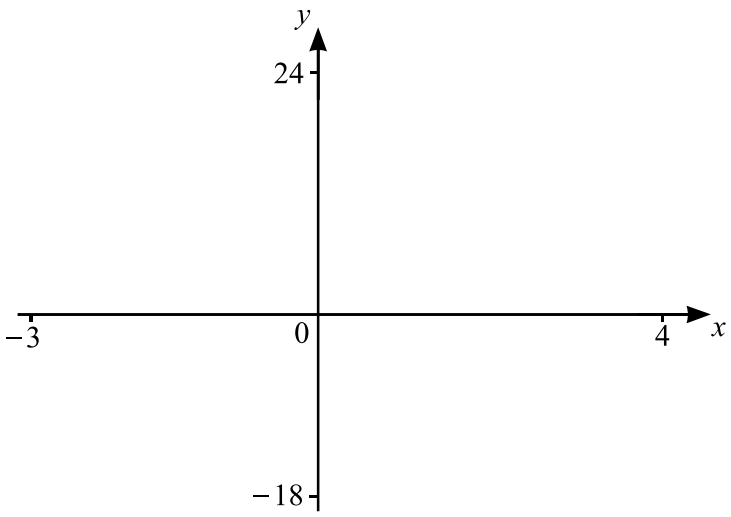


The two shapes are mathematically similar.
The area of the larger shape is 36 cm^2 and the area of the smaller shape is 25 cm^2.
The height of the larger shape is 9 cm and the height of the smaller shape is x cm.

Find the value of x.

$x =$ ..... [3]

26



$f(x) = x(x + 2)(x – 3)$

(a) On the diagram, sketch the graph of $y = f(x)$ for $–3 \leqslant x \leqslant 4$.
Show the values of the intersections with the axes. [3]

(b) Expand and simplify.

$x(x + 2)(x – 3)$

..... [3]

(c) A is the point $(1, –6)$.
The tangent to the graph of $y = f(x)$ at A meets the y-axis at B.

Find the coordinates of B.

(..... , ...) [5]

BLANK PAGE

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/03**

Paper 3 Calculator (Core) **For examination from 2025**

SPECIMEN PAPER **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 80.
- The number of marks for each question or part question is shown in brackets [ ].

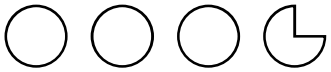
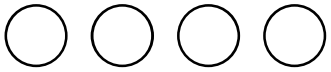
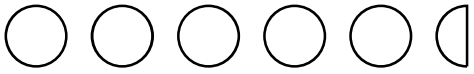
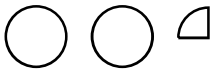
This document has **20** pages.

 [Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

1 The pictogram shows the number of text messages sent by five students in one day.

Name of student	Number of text messages
Kira	
Matt	
Dani	
Hana	
Ramos	

Key: ◯ represents ..... text messages

(a) Kira sent 15 text messages.

Complete the key. [1]

(b) Find the number of text messages sent by Hana.

..... [1]

2 Write down all the factors of 68.

..... [2]

3 Insert one pair of brackets to make this statement correct.

$$4 \times 6 - 2 + 1 = 17$$

[1]

4 Write down the reciprocal of 4.

..... [1]

5 Find the value of

(a) 24^2

..... [1]

(b) $\sqrt[3]{2197}$.

..... [1]

6 The lowest temperature recorded at Scott Base in Antarctica is –57.0 °C.
The highest temperature recorded at Scott Base is 63.8 °C more than this.

Calculate the highest temperature recorded at Scott Base.

..... °C [1]

7 Lee changes $450 into euros.
The exchange rate is $1 = 0.8476 euros.

Calculate the amount in euros that Lee receives.

..... euros [1]

8 $W = \frac{t}{2}(7t - 4)$

Find the value of W when $t = 18$.

$W =$ ..... [2]

9 A triangle has sides 6 cm, 7 cm and 8 cm.

Using a ruler and compasses only, construct the triangle.
The 6 cm line has been drawn for you.
Show all your construction arcs.

[2]

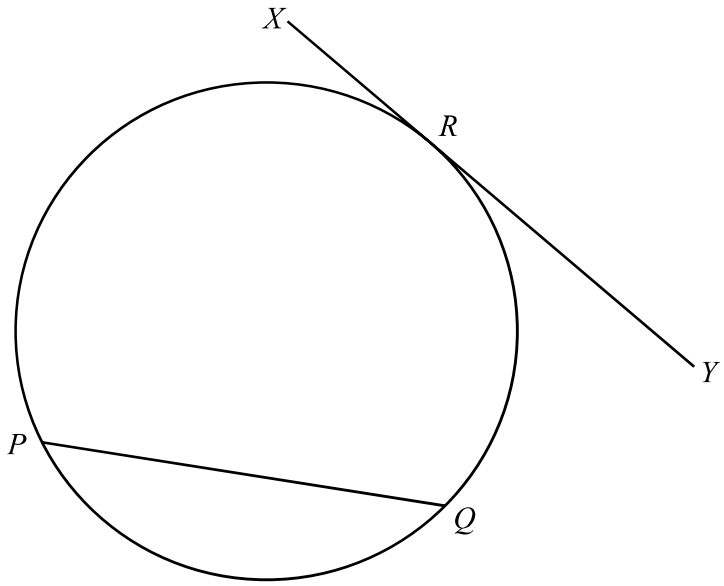
10 Calculate.

$$\frac{13.7 + 14.02}{-0.31 + \sqrt[3]{15.625}}$$

Give your answer correct to 2 decimal places.

..... [2]

11



NOT TO SCALE

(a) The line XY touches the circle at the point R.

Write down the mathematical name for the line XY.

..... [1]

(b) Points P and Q lie on the circle.

Write down the mathematical name for the line PQ.

..... [1]

(c) The area of the circle is $43.5\,cm^2$.

Calculate the radius of the circle.

..... cm [2]

(d) The diameter of a different circle is 6.4 cm.

Calculate the circumference of this circle.
Give your answer in millimetres.

..... mm [3]

12 The stem-and-leaf diagram shows the scores of each of 27 students in a test.

2	8	8	9						
3	2	5	6	6	7	8	8		
4	0	1	1	2	3	4	6	7	9
5	1	3	4	5	5	7	8		
6	2								

Key: 2|8 represents a score of 28

(a) Find the range of the scores.

..... [1]

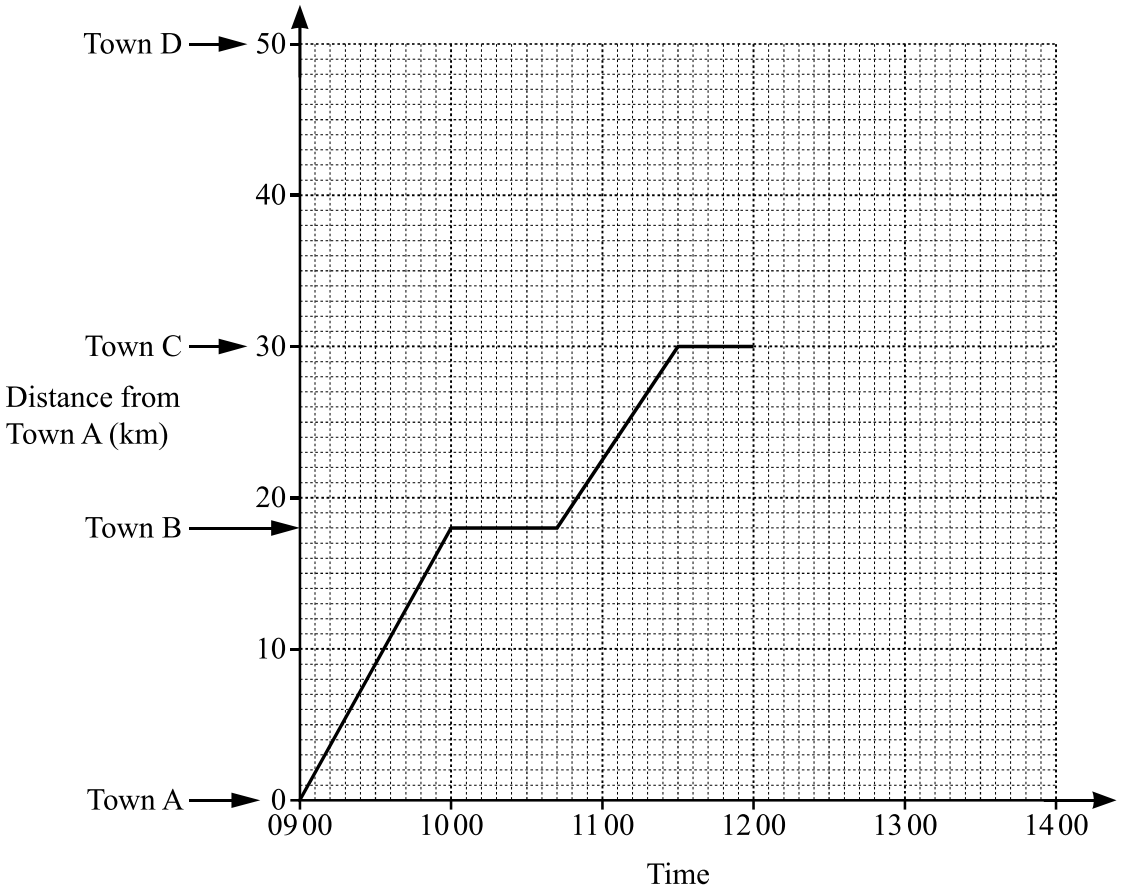
(b) When the score for another student is included in the diagram the new range is 38.

Find the two possible scores for this student.

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

Question 13 is printed on the next page.

13 Jason leaves Town A at 09 00 and cycles to Town C.
The travel graph shows Jason's journey.



(a) Find Jason's average speed, in kilometres per hour, from Town A to Town B.

..... km/h [1]

(b) Jason leaves Town C at 12 00.
Jason continues to Town D at a constant speed of 15 kilometres per hour.

(i) Calculate the time Jason takes to travel from Town C to Town D.
Give your answer in hours and minutes.

..... h ..... min [2]

(ii) On the travel graph, complete Jason's journey. [1]

(c) Find the total time, in minutes, that Jason stopped between Town A and Town D.

..... min [1]

(d) Calculate Jason's overall average speed, in kilometres per hour, from Town A to Town D.

..... km/h [3]

(e) Lisa leaves Town C at 11 00 and arrives at Town A at 13 42.
Lisa cycles at a constant speed on the same road as Jason, without stopping.

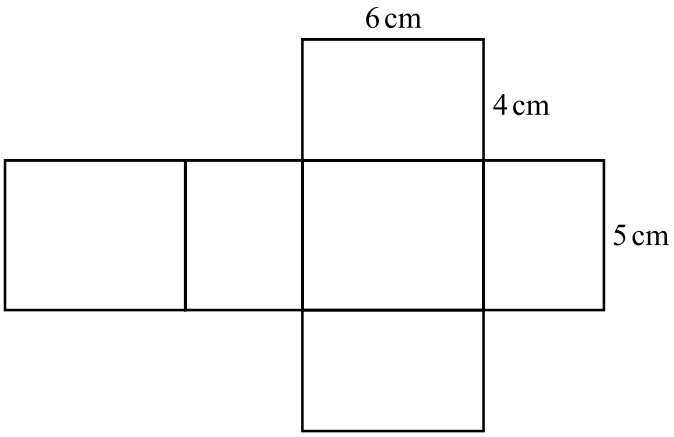
(i) Draw a line on the travel graph to show Lisa's journey. [2]

(ii) Find the distance from Town A when Lisa and Jason pass each other.

..... km [1]

[Turn over

14 (a)



NOT TO SCALE

The diagram shows the net of a cuboid.

(i) Find the volume of the cuboid.

..... cm^3 [2]

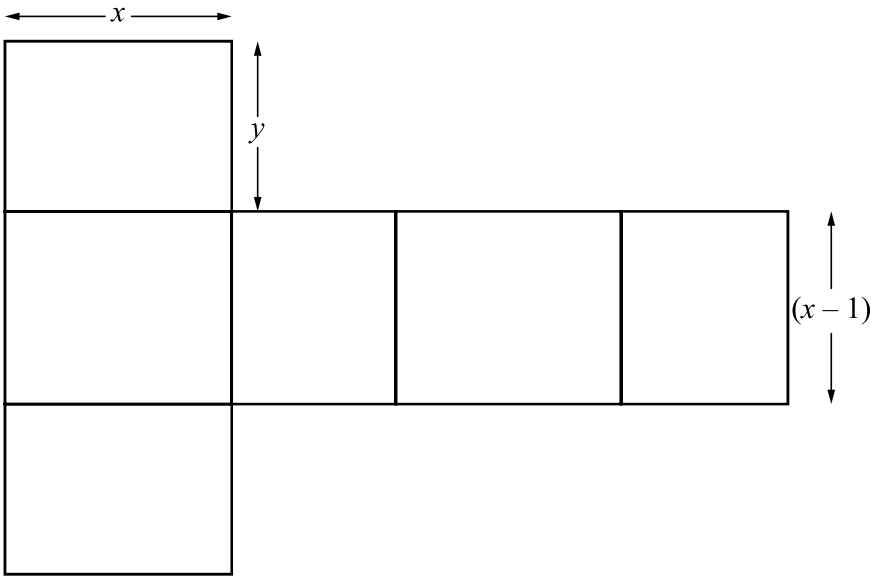
(ii) Show that the total surface area of the cuboid is 148 cm^2.

[2]

(iii) Calculate the total length of the edges of the cuboid.

..... cm [2]

(b) In this part, all measurements are in centimetres.



NOT TO SCALE

This is the net of a cuboid with edges of length x, y and $(x - 1)$.

Find an expression, in terms of x and y, for the perimeter of the net.
Give your answer in its simplest form.

..... [3]

15 A sphere has a surface area of $177\,cm^2$.

(a) Calculate the radius of the sphere.

..... cm [2]

(b) Calculate the volume of the sphere.

..... cm^3 [2]

16 Jo and Mira buy a shop.

(a) They pay for the shop in the ratio Jo : Mira = 7 : 15.
Mira pays $84 000 more than Jo.

Work out how much they each pay.

Jo $ .....

Mira $ .....
[3]

(b) The shop makes a profit of $56 000.
Jo receives 12% of the profit.
Mira receives $14 000 of the profit.
The rest of the profit is put into a bank account.

(i) Calculate how much money Jo receives.

$ ..... [1]

(ii) Calculate the amount put into the bank account as a percentage of the profit.

..... % [2]

(iii) Mira invests $14 000 at a rate of 2.4% per year compound interest.

Calculate the value of this investment at the end of 4 years.

$ ..... [2]

17 The number, N, is written as a product of its prime factors.

$N = 2^4 \times 3^2$

(a) Work out the value of N.

..... [1]

(b) Find the highest common factor (HCF) of 120 and N.

..... [2]

(c) Find the lowest common multiple (LCM) of 120 and N.

..... [1]

18 **(a)** These are the first five terms of a sequence.

$$7 \quad a \quad b \quad c \quad 31$$

In the sequence, the same number is added each time to obtain the next term.

Find the value of each of the terms a, b and c.

$a =$ .....

$b =$ .....

$c =$ .....
[2]

(b) These are the first five terms of another sequence.

$$4 \quad 11 \quad 18 \quad 25 \quad 32$$

(i) Find the nth term of the sequence.

..... [2]

(ii) Show that 361 is a term in the sequence.

[2]

[Turn over

19 In a quiz, the mean score of each of 12 adults is 43.25 .
In the same quiz, the mean score of each of 16 children is 39.75 .

Calculate the mean score of the 28 people.

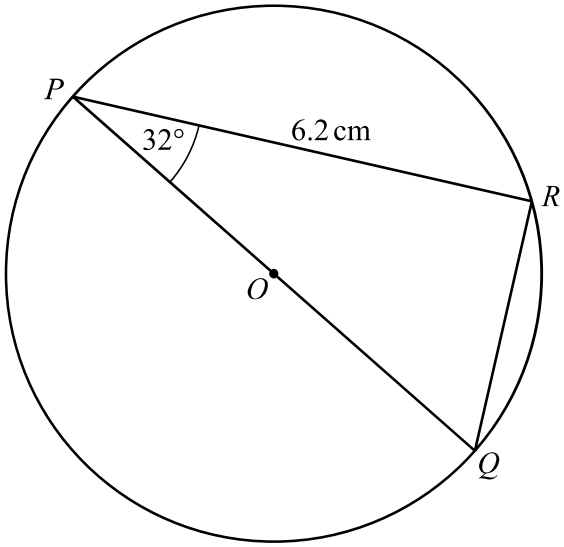
..... [3]

20 Luca walks at a speed of 5.4 kilometres per hour.

Write this speed in metres per second.

..... m/s [2]

21



NOT TO SCALE

The diagram shows a circle, centre O, with diameter PQ.
R is a point on the circumference.

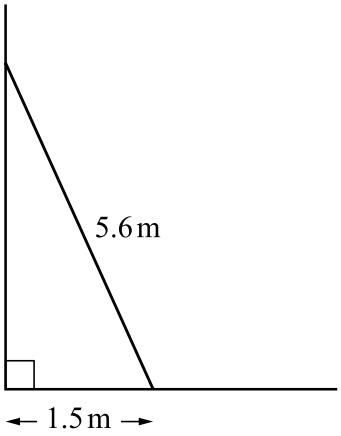
(a) Give a geometrical reason why angle PRQ is 90°.

..... [1]

(b) Calculate the length of PQ.

PQ = ... cm [3]

22



NOT TO SCALE

A ladder of length 5.6 m rests against a vertical wall.
The bottom of the ladder is 1.5 m from the bottom of the wall, on horizontal ground.

Calculate the distance from the top of the ladder to the base of the wall.

..... m [3]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/04**

Paper 4 Calculator (Extended) **For examination from 2025**

SPECIMEN PAPER **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 100.
- The number of marks for each question or part question is shown in brackets [ ].

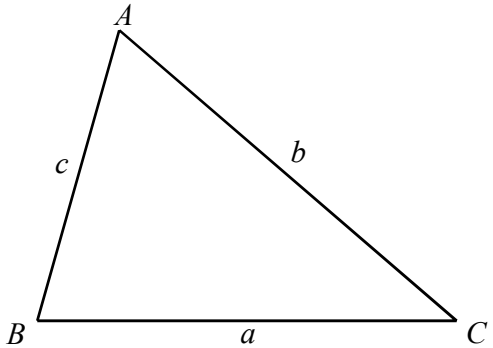
This document has **16** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

1 Write down the integer values of x that satisfy the inequality $-2 \leqslant x < 2$.

..... [2]

2

In triangle PQR, $QR = 10$ cm and $PR = 11$ cm.

Using a ruler and compasses only, construct triangle PQR.
The line PQ has been drawn for you. [2]

3 Simplify.

$$(x^8y^7) \div (x^{-1}y^3)$$

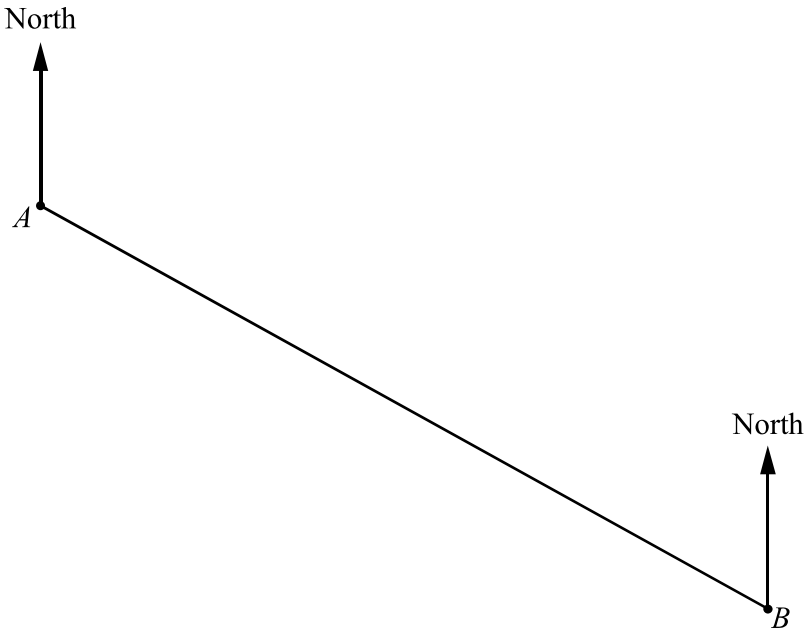
..... [2]

4 $f(x) = 3x - 5$
The domain of $f(x)$ is $\{-3, 0, 2\}$.

Find the range of $f(x)$.

{ ..... } [2]

5



Two towns, A and B, are shown on a map.
The scale of the map is 1 cm to 3 km.

(a) Find the actual distance between A and B.

..... km [1]

(b) Measure the bearing of B from A.

..... [1]

(c) Calculate the bearing of A from B.
You must show all your working.

..... [2]

6 A solid metal cuboid has a volume of $600\,cm^3$.

(a) The base of the cuboid is 10 cm by 12 cm.

Calculate the height of the cuboid.

..... cm [2]

(b) The solid metal cuboid is melted and made into 1120 spheres, each with radius 0.45 cm.

Find the volume of metal **not** used in making these spheres.

..... cm^3 [2]

[Turn over

7 On any day the probability that it rains is $\frac{1}{3}$.

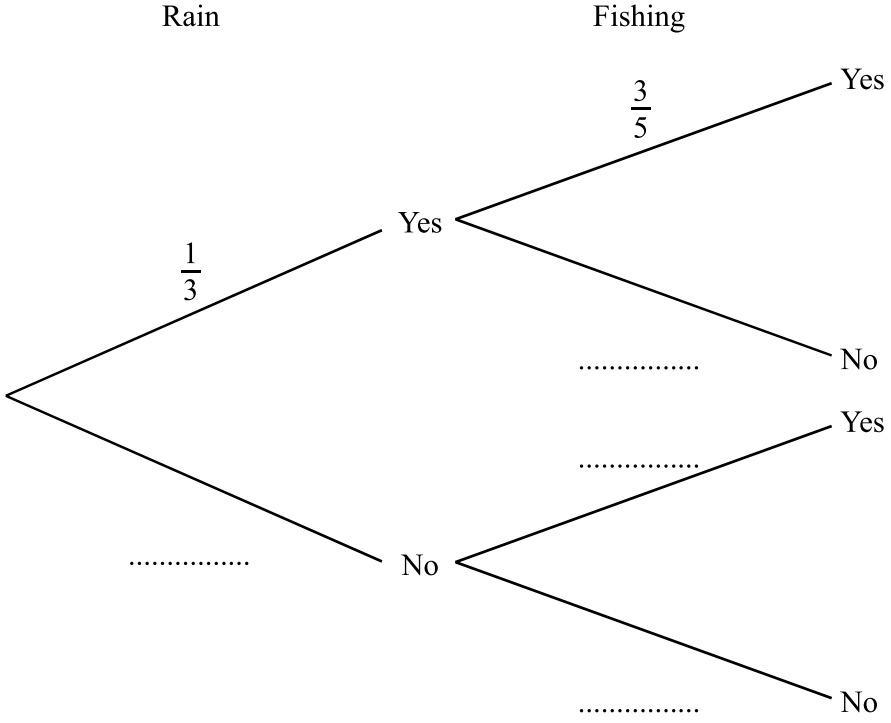
When it rains the probability that Amira goes fishing is $\frac{3}{5}$.

When it does not rain the probability that Amira goes fishing is $\frac{3}{4}$.

(a) In a period of 60 days on how many days is it expected to rain?

..... [1]

(b) Complete the tree diagram.

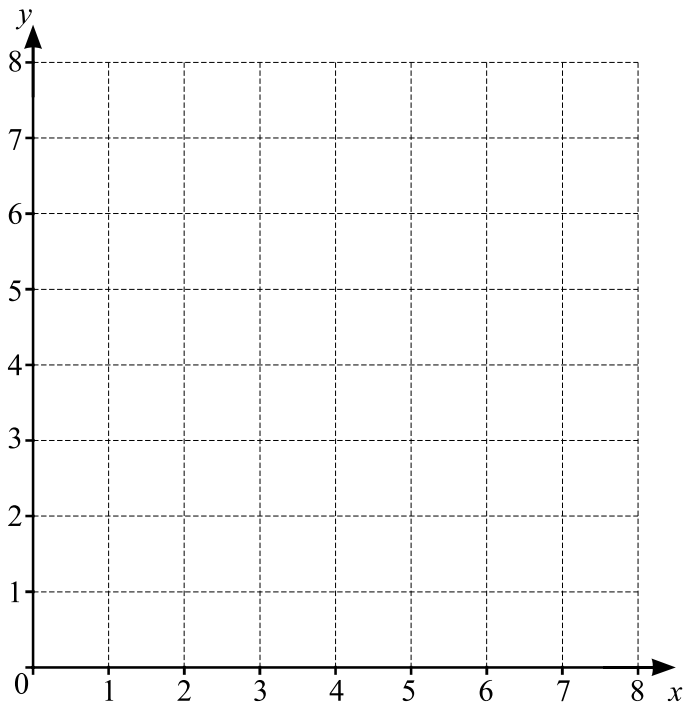


[2]

(c) Find the probability that on any day Amira goes fishing.

..... [3]

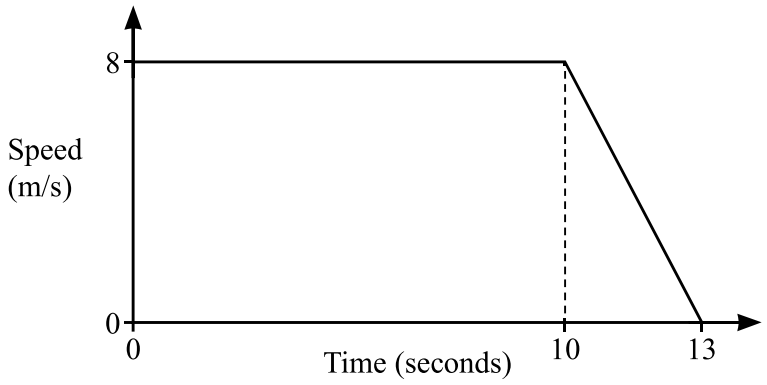
8



(a) On the grid, draw the lines $y = x$ and $x + y = 7$. [3]

(b) Region R satisfies the three inequalities $y \geqslant 0$, $y \leqslant x$ and $x + y \geqslant 7$.
On the grid, label the region R. [1]

9



NOT TO SCALE

The diagram shows the speed–time graph of part of a car journey.

(a) Find the deceleration of the car between 10 and 13 seconds.

..... m/s^2 [1]

(b) Calculate the total distance travelled during the 13 seconds.

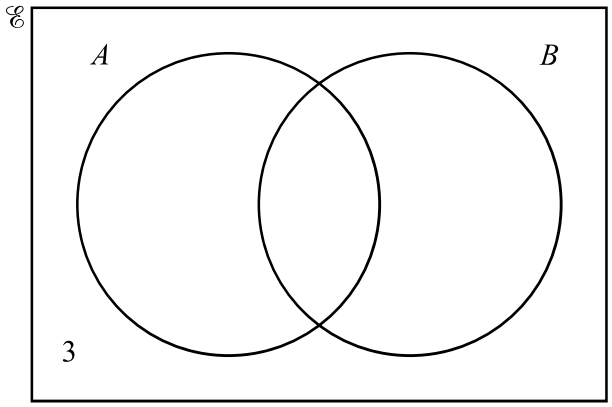
..... m [2]

10 Factorise.

$2x + 6 - 3xy - 9y$

..... [2]

11



$n(\mathscr{E}) = 20$, $n(A \cup B)' = 3$, $n(A) = 10$ and $n(B) = 13$.
The Venn diagram shows some of this information.

Find

(a) $n(A \cap B)$

..... [2]

(b) $n(A' \cap B)$.

..... [1]

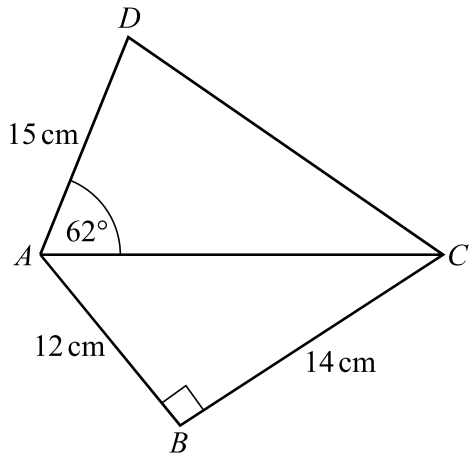
12 The height, h cm, of each of 100 students is measured.
The table shows the results.

Height (h cm)	$100 < h \leqslant 150$	$150 < h \leqslant 160$	$160 < h \leqslant 165$	$165 < h \leqslant 185$
Frequency	7	30	41	22

Calculate an estimate of the mean.

..... cm [4]

13



NOT TO SCALE

The diagram shows a quadrilateral, *ABCD*, formed from two triangles, *ABC* and *ACD*.
ABC is a right-angled triangle.

(a) Calculate angle *BAC*.

Angle *BAC* = ... [2]

(b) Calculate *BD*.

BD = ... cm [4]

(c) Calculate the shortest distance from *D* to *AC*.

..... cm [3]

14 (a) Hong has \$4000 to invest.
She invests \$2000 at a rate of 2.5% per year **simple** interest.
She also invests \$2000 at a rate of 2% per year **compound** interest.

(i) Find the value of each investment at the end of 8 years.

Simple interest investment \$ .....

Compound interest investment \$ .....
[5]

(ii) Find the overall percentage increase in the \$4000 investment at the end of 8 years.

..... % [2]

(iii) Find the number of complete years it takes for the compound interest investment of \$2000 to become greater than \$2500.

..... [3]

(b) Alain invests \$5000 at a rate of r% per year compound interest.
At the end of 15 years, the value of the investment is \$7566.

Find the value of r.

r = ... [3]

15 $y = \sqrt{u^2 x}$

(a) Find the value of y when $u = 7$ and $x = 25$.

y = ... [2]

(b) Rearrange the formula to write x in terms of u and y.

x = ... [2]

16 A is the point (7, 2) and B is the point (−5, 8).

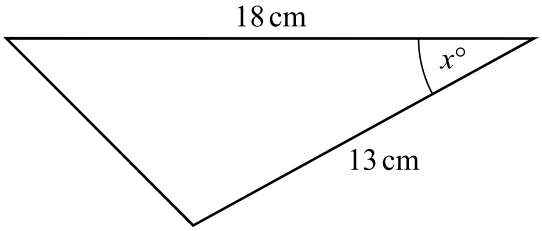
(a) Calculate the length of AB.

..... [3]

(b) Find the equation of the line that is perpendicular to AB and that passes through the point (−1, 3). Give your answer in the form $y = mx + c$.

y = ... [4]

17



NOT TO SCALE

The area of the triangle is $50\,\text{cm}^2$.

Calculate the value of $\sin x$.

$\sin x =$ ..... [2]

18 Solve.

$$\frac{3y}{2y-1} = \frac{3}{4}$$

$y =$ ..... [3]

19 The cross-section of a prism is an equilateral triangle of side 6 cm.
The length of the prism is 20 cm.

Calculate the total surface area of the prism.

..... cm^2 [4]

20 $y = 2x^k + ux^7$ and $\frac{dy}{dx} = 18x^{k-1} + 21x^6$

Find the value of k and the value of u.

$k =$ .....

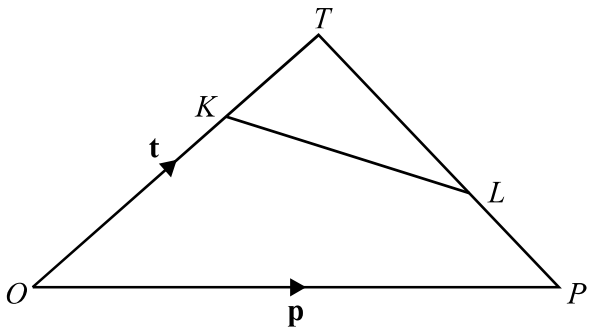
$u =$ .....
[2]

21 Simplify.

$$\frac{5p^2 - 20p}{2p^2 - 32}$$

..... [3]

22 The diagram shows triangle OPT.



NOT TO SCALE

In the diagram $\overrightarrow{OT} = \mathbf{t}$ and $\overrightarrow{OP} = \mathbf{p}$.
$OK : KT = 2 : 1$ and $TL : LP = 2 : 1$.

(a) Find, in terms of **t** and **p**, in its simplest form

(i) $\overrightarrow{PL}$

..... [2]

(ii) $\overrightarrow{KL}$.

..... [2]

(b) KL is extended to the point M.
$\overrightarrow{KM} = -\frac{2}{3}\mathbf{t} + \frac{4}{3}\mathbf{p}$.

Show that M lies on OP extended.

[2]

23 Serge walks 7.9 km, correct to the nearest 100 metres.
The walk takes 133 minutes, correct to the nearest minute.

Calculate the maximum possible average speed of Serge's walk.
Give your answer in kilometres/hour.

..... km/h [3]

24 The straight line $y = 2x + 1$ intersects the curve $y = x^2 + 3x - 4$ at the points A and B.

Find the coordinates of A and B.
Give your answers correct to 2 decimal places.

A (..... , ...)

B (..... , ...)
[6]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/01**

Paper 1 Non-calculator (Core) **For examination from 2025**

SPECIMEN PAPER B **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

Calculators must **not** be used in this paper.

1

3	4	10	23	25	27	37	120	130

From this list, write down

(a) a multiple of 30

..... [1]

(b) a factor of 50 that is a square number

..... [1]

(c) a common factor of 12 and 20

..... [1]

(d) a prime number between 20 and 30.

..... [1]

2 Find the reciprocal of 0.5 .

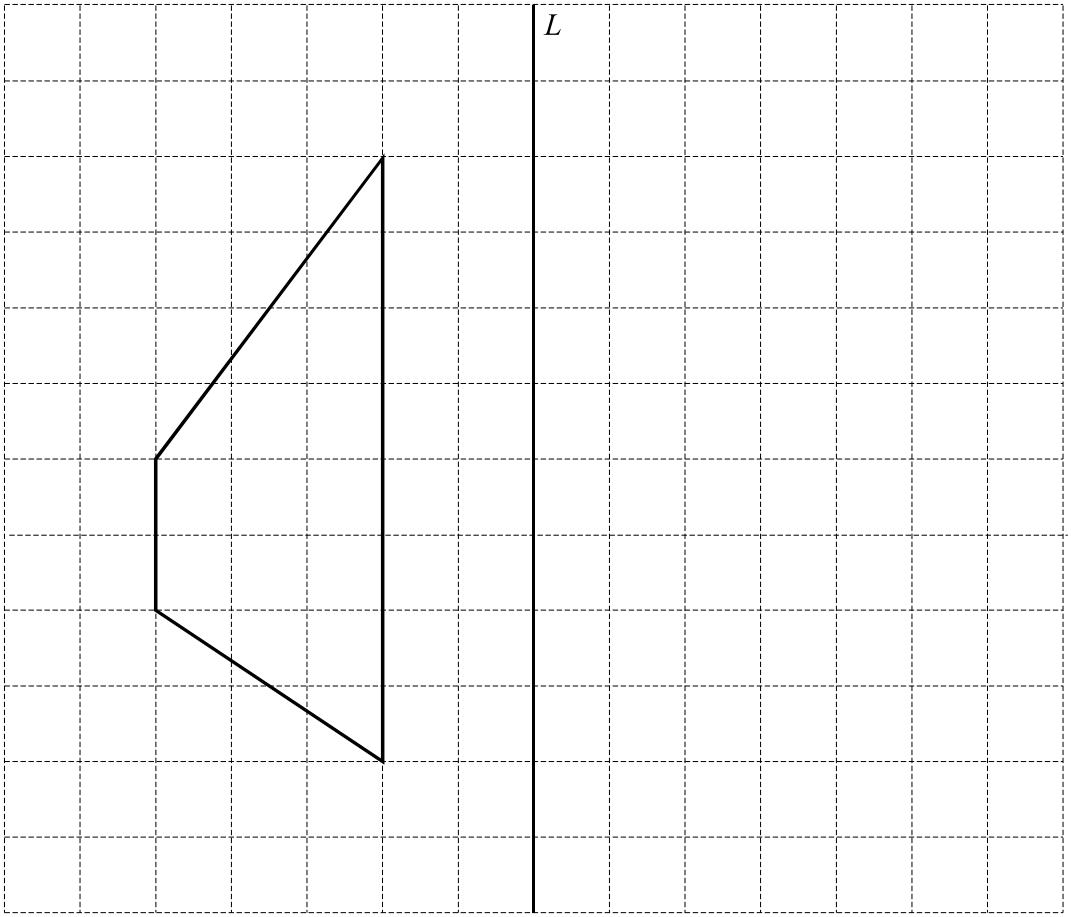
..... [2]

3 Sam has some money.
He spends 36% of the money and gives 22% of the money to his friend.

Find the percentage of the money that Sam has left.

..... % [2]

4 The grid shows a trapezium and a line L.



On the grid, draw the image of the trapezium after a reflection in line L.

[1]

5 Here is some information about five positive integers.

- The median is 7.
- The mode is 13.
- The range is 10.
- They add up to 40.

Find the five integers.

..... , ... , ... , ... , ... [3]

6 **(a)** Write down the value of the 5 in the number 1 252 800.

..... [1]

(b) Write 72.5796 correct to 3 decimal places.

..... [1]

(c) $0.28 \times 9.6 = 2.688$

Use this information to find the value of 28×9.6 .

..... [1]

7 $T = 2a - 3b$

Find the value of T when $a = 12$ and $b = 5$.

$T =$ ..... [2]

8 Lee sells books and magazines.

(a) He records the number of books he sells to each of 16 people.

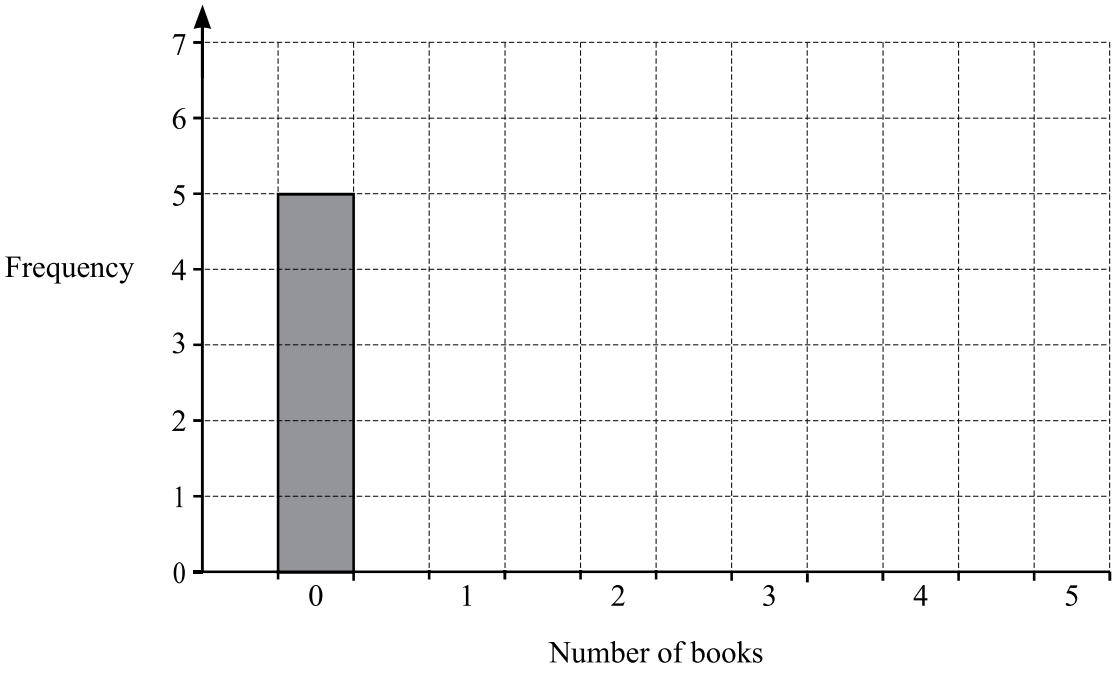
1	2	0	4	2	2	3	0
0	3	4	0	5	2	0	3

(i) Complete the table.
The first row has been completed for you.

Number of books	Tally	Frequency
0	𝍸	5
1		
2		
3		
4		
5		

[3]

(ii) Use your table to complete the bar chart.



[2]

(b) Lee records the number of magazines he sells to each of 20 people.
The results are shown in the table.

Number of magazines	Frequency
1	8
2	2
3	4
4	2
5	4

(i) Work out the mean.

..... [3]

(ii) Lee says 'The mode is 8.'

Explain why Lee is wrong.

.....

..... [1]

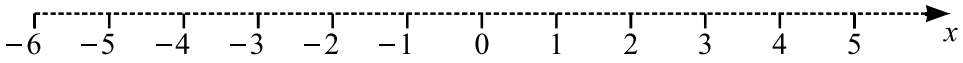
9 **(a)** Convert 600 m into km.

..... km [1]

(b) Convert 3 m^2 into cm^2.

..... cm^2 [1]

10 Represent the inequality $x > -2$ on the number line.



[1]

11 Shirts cost \$28.40 each.
Scarves cost \$5.25 each.
Anna buys 6 shirts and 4 scarves.

By writing the cost of each item correct to 1 significant figure, work out an estimate for the amount Anna pays.

\$ ..... [2]

12 Work out.

$-8 \times 2 + 3$

..... [1]

13 Find the value of

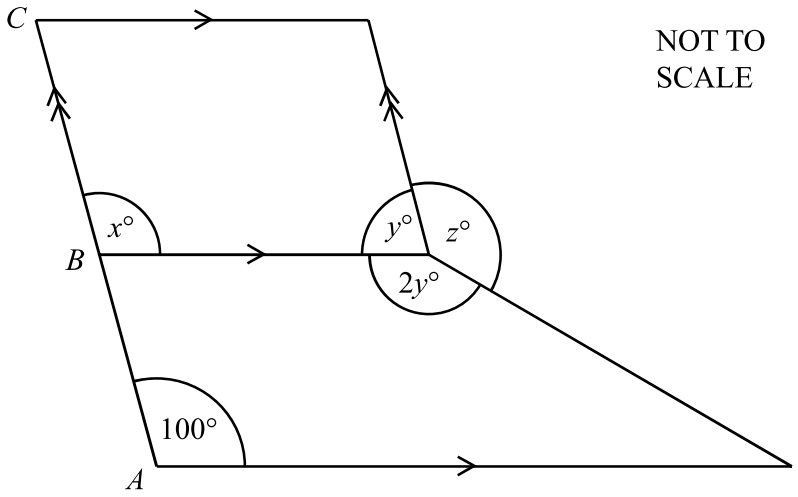
(a) 5^{-1}

..... [1]

(b) $\left(\sqrt{16}\right)^3$.

..... [2]

14



The diagram shows a parallelogram and a trapezium.
The parallelogram and the trapezium are joined along a common side.
ABC is a straight line.

(a) Find the value of x.
Give a geometrical reason for your answer.

x = ... because .....

..... [2]

(b) Find the value of y.
Give a geometrical reason for your answer.

y = ... because .....

..... [2]

(c) Find the value of z.

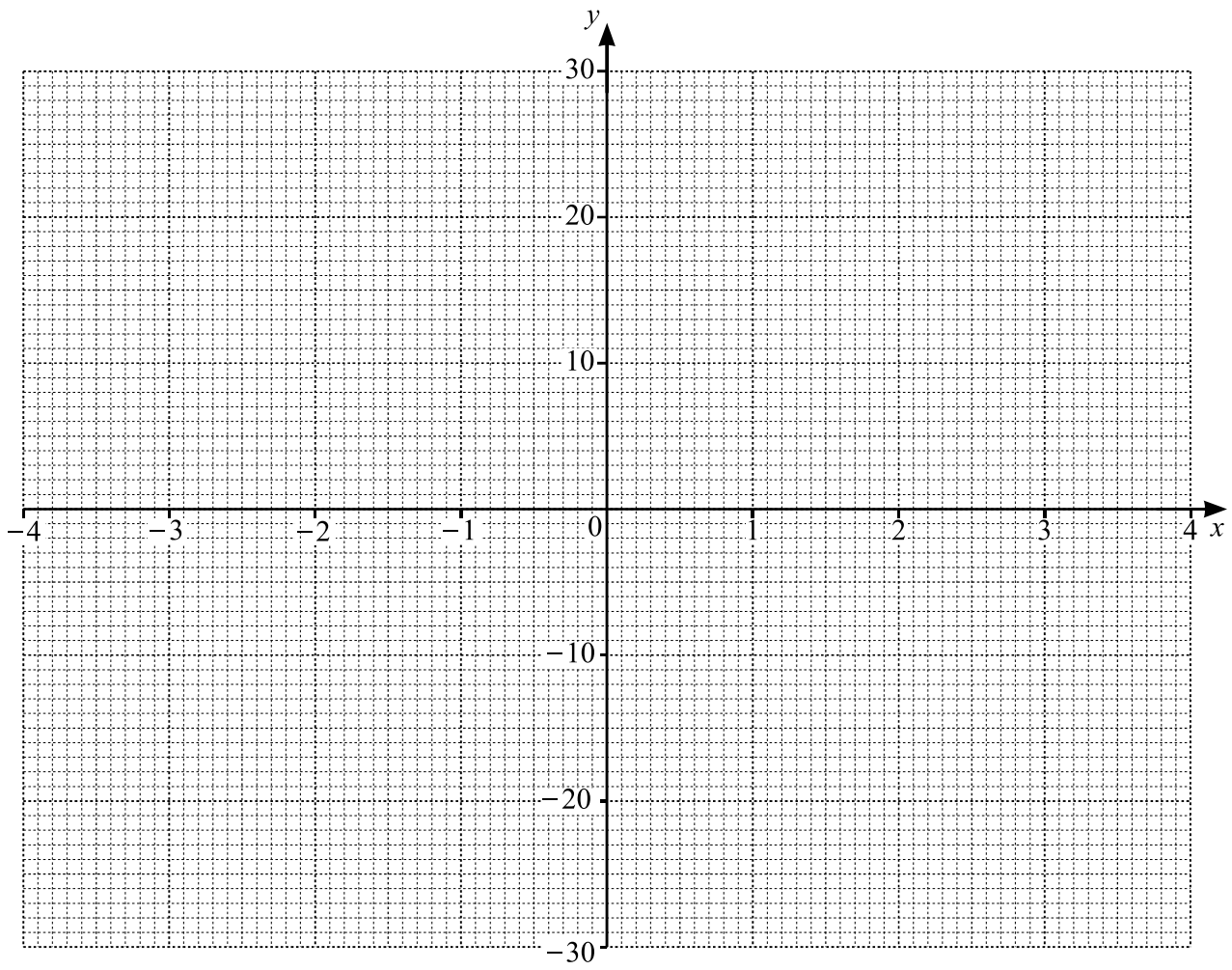
z = ... [2]

15 **(a)** Complete the table of values for $y = \frac{30}{x}$.

x	–4	–3	–2	–1		1	2	3	4
y	–7.5								7.5

[3]

(b) On the grid, draw the graph of $y = \frac{30}{x}$ for $-4 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 4$.



[4]

(c) Write down the order of rotational symmetry of the graph.

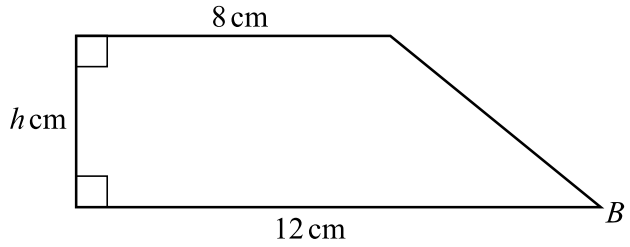
..... [1]

(d) (i) On the grid, draw the line $y = 25$. [1]

(ii) Use your graph to solve $\frac{30}{x} = 25$.

$x =$ ..... [1]

16 The diagram shows a trapezium.



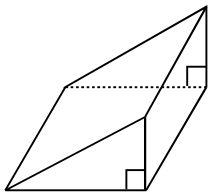
NOT TO SCALE

The area of the trapezium is $60\,\text{cm}^2$.

Find the value of h.

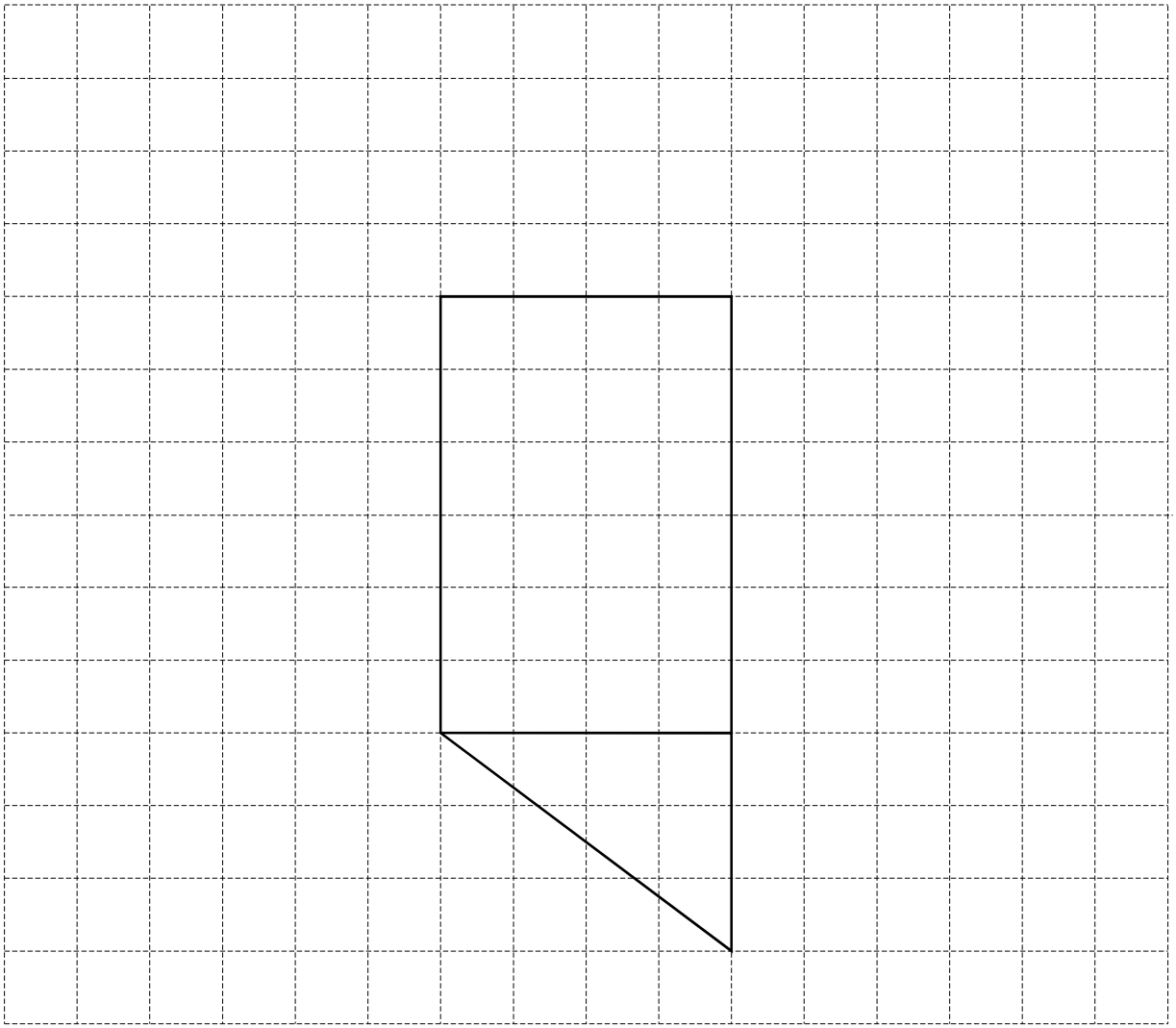
$h =$ ..... [2]

17 **(a)** The diagram shows a triangular prism.



NOT TO SCALE

On the 1 cm^2 grid, complete a net of the triangular prism.
Two faces have been drawn for you.



[3]

(b) Work out the volume of this triangular prism.
Give the units of your answer.

.... [4]

18 **(a)** Find the fraction that lies exactly halfway between $\frac{2}{5}$ and $\frac{4}{7}$.

..... [2]

(b) Work out.

$$3\frac{2}{3} - 1\frac{2}{5}$$

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

..... [3]

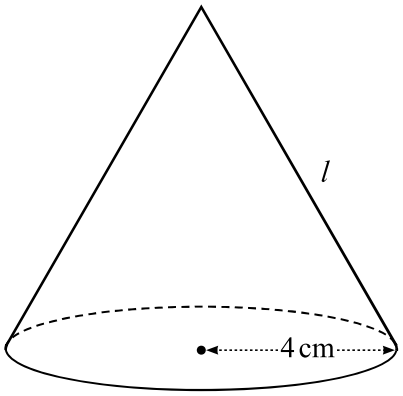
19 Work out.

$$4000 \times 70$$

Give your answer in standard form.

..... [2]

20



NOT TO SCALE

The diagram shows a solid cone with a radius of 4 cm.
The **total** surface area of the cone is $56\pi\,\text{cm}^2$.

Work out the length, l, of the sloping edge of the cone.

$l =$ ..... cm [3]

21 Expand and simplify.

$$(y - 6)(y + 5)$$

..... [2]

22 **(a)** $8^3 \times 8^b = 8^{12}$

Find the value of b.

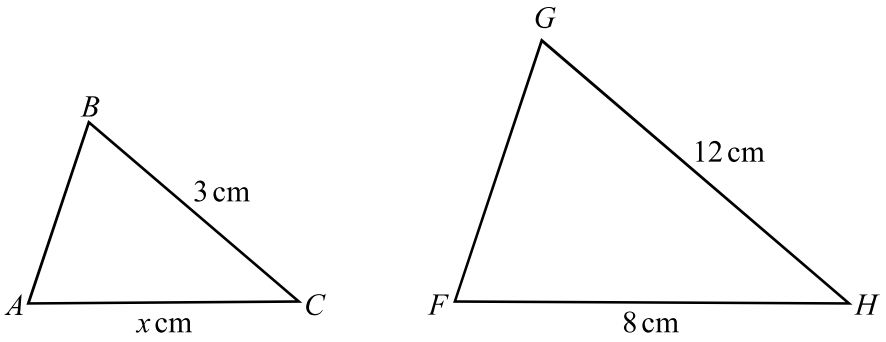
$b =$ ..... [1]

(b) Simplify.

$8x^5y^4 \div 2x^{-7}y^3$

..... [2]

23



NOT TO SCALE

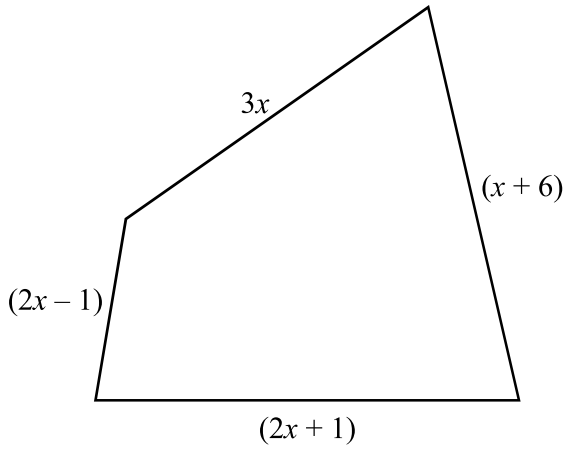
Triangle ABC is mathematically similar to triangle FGH.

Work out the value of x.

$x =$ ..... [2]

24 In this question, all measurements are in centimetres.

The diagram shows a quadrilateral.



NOT TO SCALE

The perimeter of the quadrilateral is 26 cm.

Write down an equation and solve it to find the value of x.

$x =$ ..... [3]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/02**

Paper 2 Non-calculator (Extended) **For examination from 2025**

SPECIMEN PAPER B **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

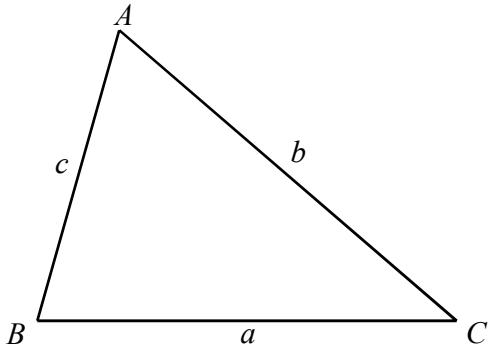
This document has **16** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

Calculators must **not** be used in this paper.

1 Write the ratio $12 : 30$ in its simplest form.

..... : ..... [1]

2 Write down the number of lines of symmetry of a kite.

..... [1]

3 The stem-and-leaf diagram shows the number of minutes taken by each of 18 students to complete a task.

1	2	3	6	9				
2	1	2	2	3	4	8	8	9
3	1	4	5	5	9	9		

Key: 1 | 2 represents 12 minutes

(a) Find the range.

..... minutes [1]

(b) Find the median.

..... minutes [1]

(c) A student draws a pie chart to show the information in the stem-and-leaf diagram.

Complete the table for the angles on the pie chart.

Number of minutes (t)	Angle on pie chart (°)
$10 < t \leqslant 20$	
$20 < t \leqslant 30$	
$30 < t \leqslant 40$	

[2]

4 Work out $\frac{3}{7} \times \frac{14}{15}$.

Give your answer as a fraction in its simplest form.

..... [2]

5 Find the size of an interior angle of a regular decagon.

..... [2]

6 Convert 5.7 litres into cm^3.

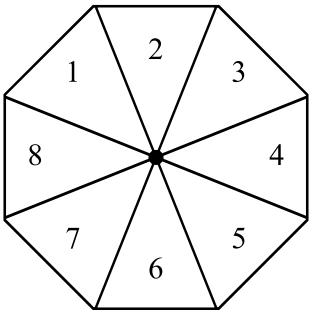
..... cm^3 [1]

7 Write these numbers in order, starting with the smallest.

$\frac{3}{20}$ 0.143 $\frac{1}{6}$ 16%

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

8 Jude has a fair 8-sided spinner numbered 1 to 8.



(a) Jude spins the spinner once.

Find the probability that the spinner lands on

(i) a number greater than 6

..... [1]

(ii) an even number or a multiple of 7.

..... [1]

(b) Jude spins the spinner 240 times.

Work out the expected number of times the spinner lands on a number greater than 6.

..... [1]

[Turn over

9 **Using a ruler and pair of compasses only**, construct a rhombus with side length 6 cm and a diagonal of length 9.5 cm.

One side has been drawn for you.

[3]

10 The time that Rafiq works is divided into meetings, planning and working on a computer.

One day, Rafiq is

- in meetings for $\frac{3}{4}$ of the time
- planning for $\frac{1}{5}$ of the time
- working on a computer for the remaining 25 minutes of the time.

Work out the total time that Rafiq works this day.
Give your answer in hours and minutes.

..... hours ..... minutes [5]

11 **(a)** Expand.

$2x(3x^2 - 8x)$

..... [2]

(b) **(i)** Factorise.

$x^2 - 19^2$

..... [1]

(ii) Work out.

$81^2 - 19^2$

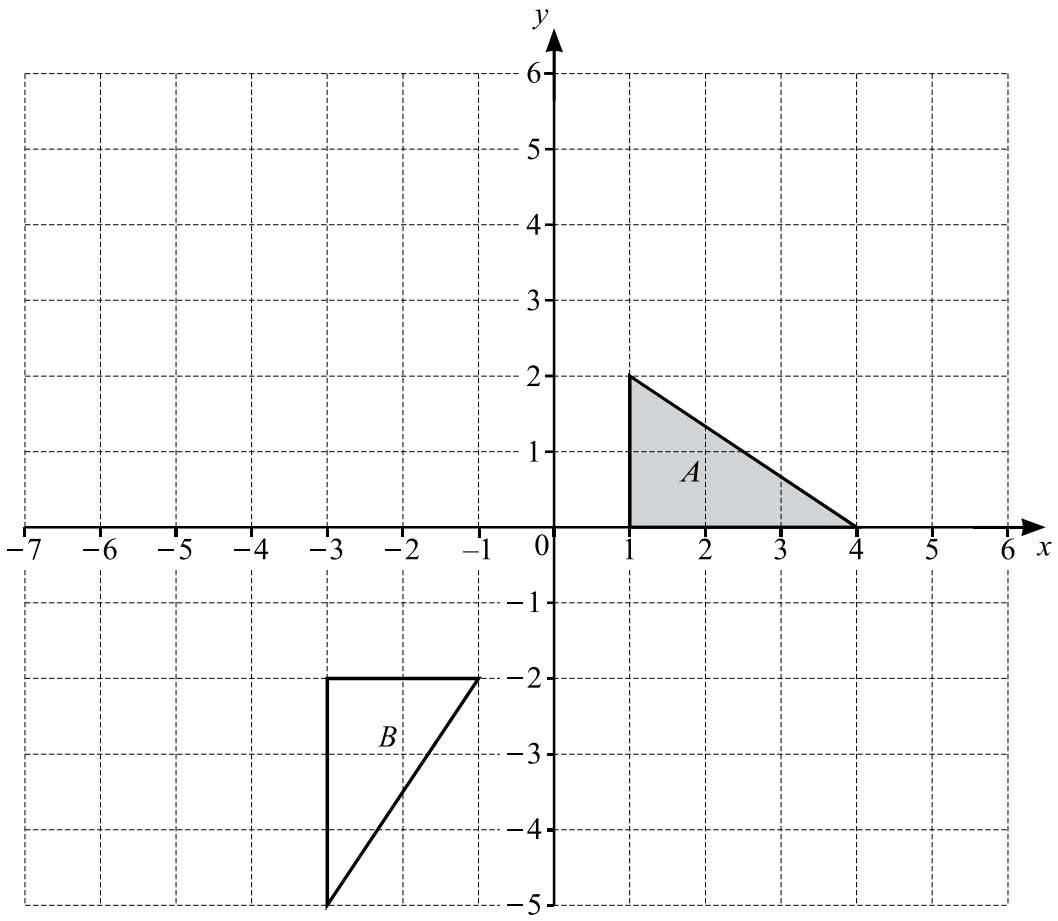
..... [2]

12 A force of 196 newtons is applied to a square surface of side 4.9 cm.
By writing each number correct to 1 significant figure, work out an estimate of the pressure applied to the square surface.

[Pressure = force ÷ area]
[Pressure is measured in newtons / cm^2]

..... newtons / cm^2 [3]

13



(a) On the grid, draw the image of

(i) triangle A after a reflection in the line $y = x + 2$ [3]

(ii) triangle A after an enlargement by scale factor $\frac{3}{2}$ with centre (1, 0). [2]

(b) Describe fully the **single** transformation that maps triangle A onto triangle B.

.....

..... [3]

14 Write $0.3\dot{8}$ as a fraction.
Give your answer in its simplest form.

..... [3]

15 Freya records how many minutes she takes to complete a crossword each day.

On Tuesday, she takes 10% less time than on Monday.
On Wednesday, she takes 50% less time than on Tuesday.
On Wednesday, she takes 9 minutes to complete the crossword.

Find the number of minutes Freya takes to complete the crossword on Monday.

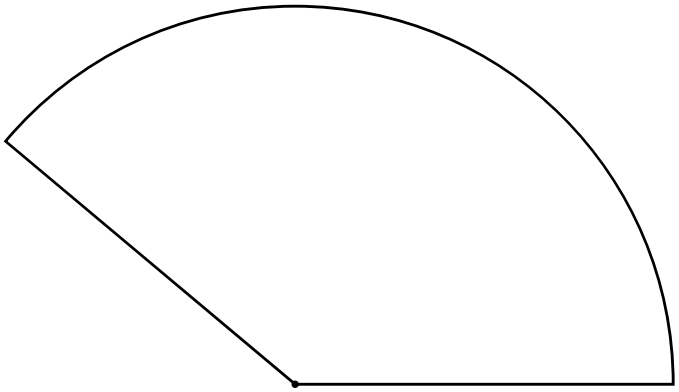
..... minutes [3]

16 $\overrightarrow{PQ} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ and $\overrightarrow{QR} = \begin{pmatrix} 1 \\ 9 \end{pmatrix}$.

Work out the length of $\overrightarrow{PR}$.

..... [3]

17



NOT TO SCALE

The diagram shows a sector of a circle with radius 6 cm.
The area of the sector is 15π cm^2.

(a) Work out the perimeter of the sector.
Give your answer in the form $a + b\pi$, where a and b are integers.

..... cm [4]

(b) The sector is the cross-section of a prism of length 10 cm.

Work out, giving your answer in terms of π,

(i) the volume of the prism

..... cm^3 [1]

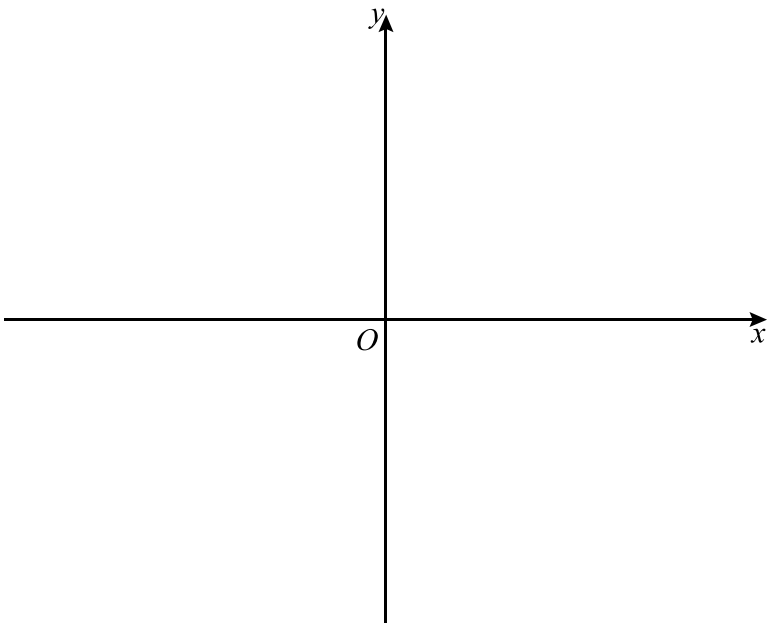
(ii) the total surface area of the prism.

..... cm^2 [3]

18 (a) (i) Write $x^2 - 8x + 10$ in the form $(x - a)^2 - b$.

..... [2]

(ii) Sketch the graph of $y = x^2 - 8x + 10$.
On the sketch, label the coordinates of the turning point and the y-intercept.



[3]

(b) A point P lies on the graph of $y = x^2 - 8x + 10$.
The gradient of the graph at P is 6.

Find the coordinates of P.

(..... , ...) [4]

19 **(a)** Simplify.

$$\sqrt{75} - \sqrt{3}$$

..... [2]

(b) Rationalise the denominator and simplify.

$$\frac{8}{1-\sqrt{5}}$$

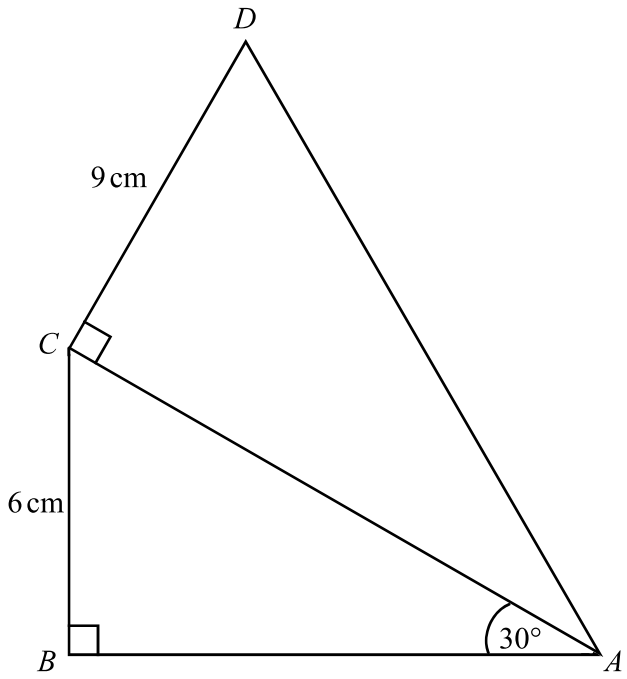
..... [3]

20 Expand and simplify.

$$(2x - 3)(x + 1)(2 - 3x)$$

..... [3]

21



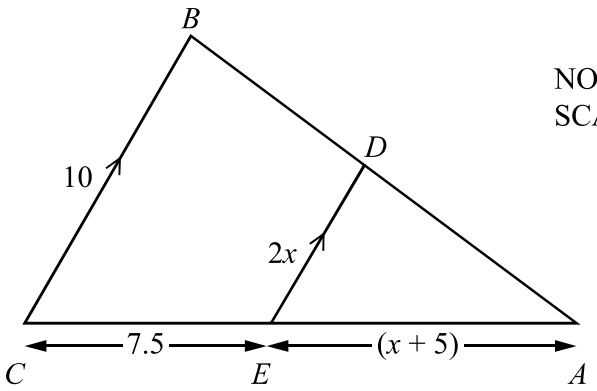
NOT TO SCALE

The diagram shows two right-angled triangles, ABC and ACD.

Find the value of $\cos ADC$.

$\cos ADC =$ ..... [5]

22 In this question, all lengths are given in centimetres.



Triangle ABC is mathematically similar to triangle ADE.

(a) (i) Show that $2x^2 + 15x - 50 = 0$.

[3]

(ii) Solve by factorising $2x^2 + 15x - 50 = 0$.

$x =$ ..... or $x =$ ..... [3]

(iii) Find the length AC.

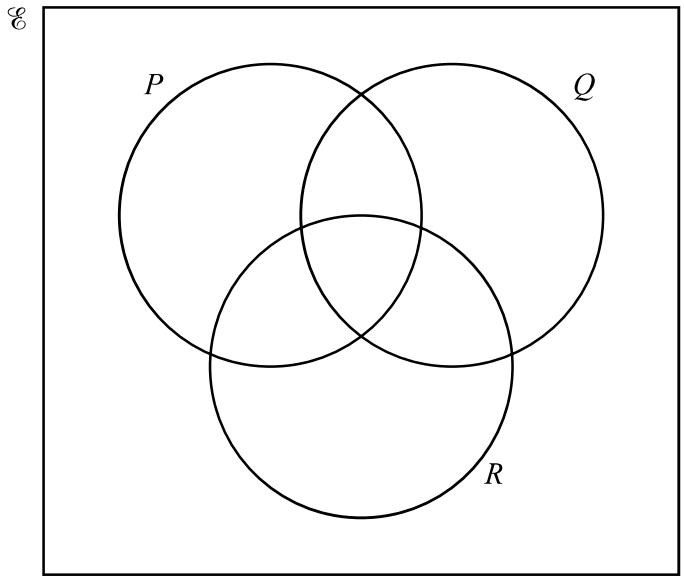
$AC =$ ..... cm [1]

(b) The area of triangle ABC is $k\,\text{cm}^2$.

Find an expression for the area of the quadrilateral $BCED$.
Give your answer in terms of k.

..... cm^2 [2]

23



In the Venn diagram, shade the region $P \cup Q' \cup R'$. [1]

24 Rearrange the formula to make p the subject.

$$d = \frac{2p + 3}{2 - py}$$

$p =$ ..... [4]

25 **(a)** Simplify.

(i) $(2xy)^0$

..... [1]

(ii) $\left(\frac{81m^8}{3m^2}\right)^{\frac{2}{3}}$

..... [3]

(b) Find the value of x.

$$32^x \times 2^{x+3} = \frac{1}{4}$$

$x =$ ..... [3]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/03**

Paper 3 Calculator (Core) **For examination from 2025**

SPECIMEN PAPER B **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **18** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

1 **(a)** Write the number twenty million in figures.

..... [1]

(b) Write the number 470 658 correct to the nearest thousand.

..... [1]

2 Write one of the symbols $<$ or $>$ or $=$ in each statement to make it correct.

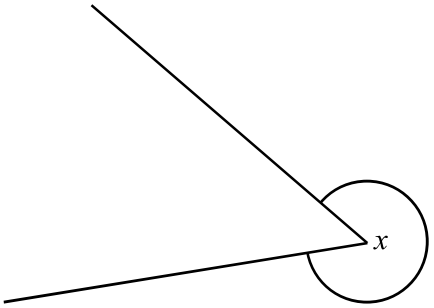
$\frac{2}{7}$ 28%

7% 0.07

$\frac{1}{80}$ 0.01

[2]

3



(a) Measure the angle marked x.

..... [1]

(b) Write down the mathematical name for this type of angle.

..... [1]

4 Peter's wages are $1350.

(a) Peter spends 8% of his wages on travel.

Find the amount he spends on travel.

$ ..... [1]

(b) Peter spends $891 on rent.

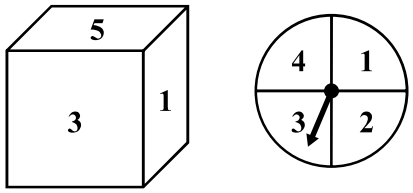
Find the percentage of his wages he spends on rent.

.....% [1]

(c) Find the amount of money Peter has left now.

$ ..... [1]

5 Kai has a fair 6-sided dice numbered 1 to 6 and a fair spinner numbered 1 to 4.



Kai rolls the dice and spins the spinner.
He finds a score by adding the two numbers together.

(a) Complete the table.

Number on spinner \ Number on dice	1	2	3	4	5	6
1	2	3	4	5		
2	3	4	5	6	7	
3	4	5	6	7	8	9
4	5	6	7	8		

[2]

(b) Use the table to find the probability that the score is

(i) 5

..... [1]

(ii) less than 7.

..... [1]

6 **(a)** The table shows the opening times for a museum.

Monday to Friday	10 am to 5 pm
Saturday	9.30 am to 6 pm
Sunday	Closed

Work out how many hours the museum is open in one week.

..... hours [2]

(b)

Cost of museum tickets	
Adult	$27.00
Senior	$20.60
Child	$16.95

A family buys 5 adult tickets, 4 senior tickets and 3 child tickets for the museum.

Calculate the total cost of the tickets for this family.

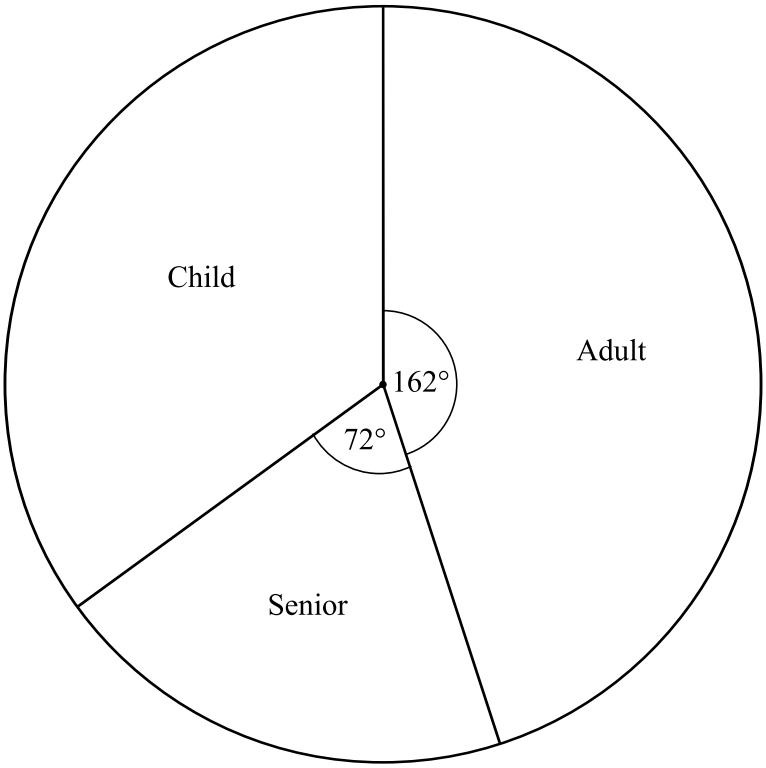
$ ..... [2]

(c) In one week, the ratio of visitors to the museum is adult : senior : child = 9 : 5 : 7 .
In this week, 432 adults visit the museum.

Work out the total number of visitors to the museum in this week.

..... [2]

(d) The pie chart shows information about visitors to the museum on one day.

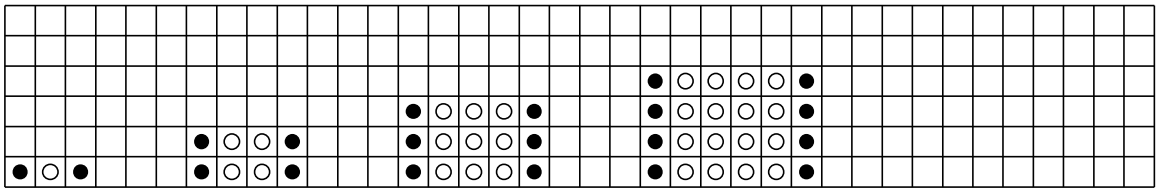


Complete the table.

	Number of visitors	Pie chart sector angle
Adult	108	162°
Senior		72°
Child		

[3]

7 A sequence of patterns is made using black and white counters.



Pattern 1 Pattern 2 Pattern 3 Pattern 4 Pattern 5

(a) Draw Pattern 5. [1]

(b) Complete the table.

Pattern	1	2	3	4	5	6
Number of black counters	2	4	6	8		
Number of white counters	1	4	9	16		

[2]

(c) Write down the term-to-term rule for the number of black counters.

..... [1]

(d) Find an expression, in terms of n, for the number of black counters in Pattern n.

..... [1]

(e) Explain why there is no pattern in this sequence that uses 150 white counters.

.....

..... [1]

8 Eva invests \$12 800 for y years at a rate of 3.2% per year simple interest.
The total interest earned during the y years is \$2457.60 .

Find the value of y.

$y =$ ..... [2]

9 Simplify.

$3x - 4y - 2x - 5y$

..... [2]

10 **(a)** Expand.

$3q(q - 7)$

..... [1]

(b) Factorise.

$14p - 6pq$

..... [2]

11 **(a)** The table shows part of a bus timetable.

Northville	0745	0815	0845	0915	0945
Oldfield	0750	0820	0850	0920	0950
Exham	0757	0827	0857	0927	0957
Beeton	0805	0835	0906	0935	1005
Milltown	0812	0842	0913	0942	1012

(i) Ria must arrive at Beeton before 0900.

Write down the latest time she can catch a bus from Northville.

..... [1]

(ii) A bus leaves Oldfield at 0850 and arrives at Milltown on time.

Find how many minutes the journey to Milltown takes.

..... min [1]

(b) The table shows the relative frequency of a bus arriving at Milltown early and arriving at Milltown on time.

Time of arrival	Early	On time	Late
Relative frequency	0.1	0.55	

(i) Complete the table.

[2]

(ii) During one week, 200 buses arrive at Milltown.

Calculate the number of buses expected to arrive early.

..... [1]

12 A café has 60 seats.

$\frac{3}{5}$ of the seats are occupied by adults.

9 seats are occupied by children.

Find the fraction of the seats that are **not** occupied.
Give your answer in its simplest form.

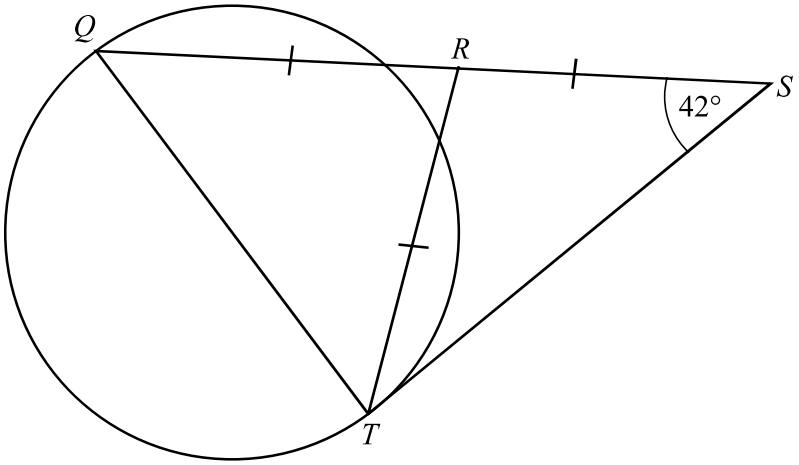
..... [3]

13 A bag of nuts costs \$3.
Jo buys n bags of nuts.

Find an expression for the change that Jo receives from \$20.

\$ ..... [2]

14



NOT TO SCALE

Q and T are points on a circle.
QRS is a straight line.
ST is a tangent to the circle at T.
$QR = RS = RT$ and angle $RST = 42°$.

(a) Find angle RTS.

Angle RTS = ... [1]

(b) Show that angle $QRT = 84°$.

[2]

(c) Explain why the line QT is a diameter of the circle.
You must show all your working, giving geometrical reasons.

.....

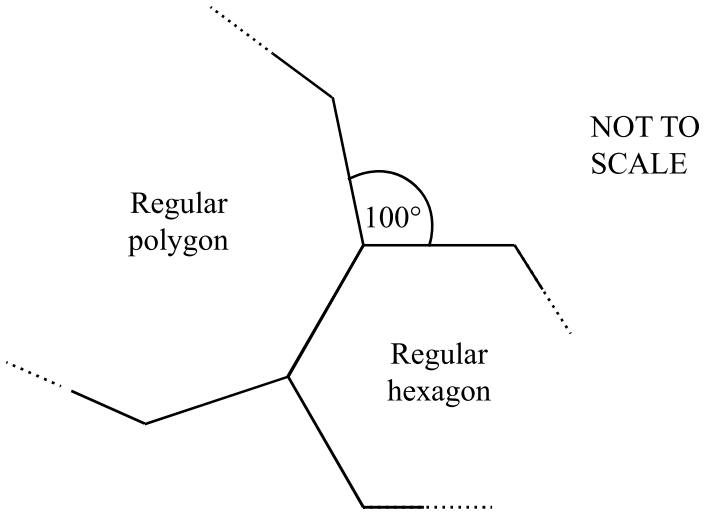
.....

..... [3]

15 **(a)** Calculate the exterior angle of a regular hexagon.

..... [2]

(b) The diagram shows part of a regular hexagon and part of a regular polygon.
The regular hexagon and the regular polygon are joined by a common side.



Calculate the number of sides of the regular polygon.

..... [2]

16 $-4 < x \leqslant 1$

Write down all the integers that satisfy this inequality.

..... [2]

17 Solve.

$$4(b - 7) = 24$$

$b =$ ..... [2]

18 A pyramid has a rectangular base.
The base has length 4.5 cm and width 2.5 cm.
The height of the pyramid is 7 cm.

Calculate the volume of the pyramid.

..... cm^3 [3]

19 In June, fuel for a bus costs \$0.32 per kilometre.

(a) In June, a bus travels 1800 km.

Calculate the total cost of the fuel in June.

\$ ..... [1]

(b) In July, fuel for the bus costs 7.5% more per kilometre than the cost in June.
In July, the bus travels 1850 km.

Calculate the difference in the total cost of the fuel between June and July.

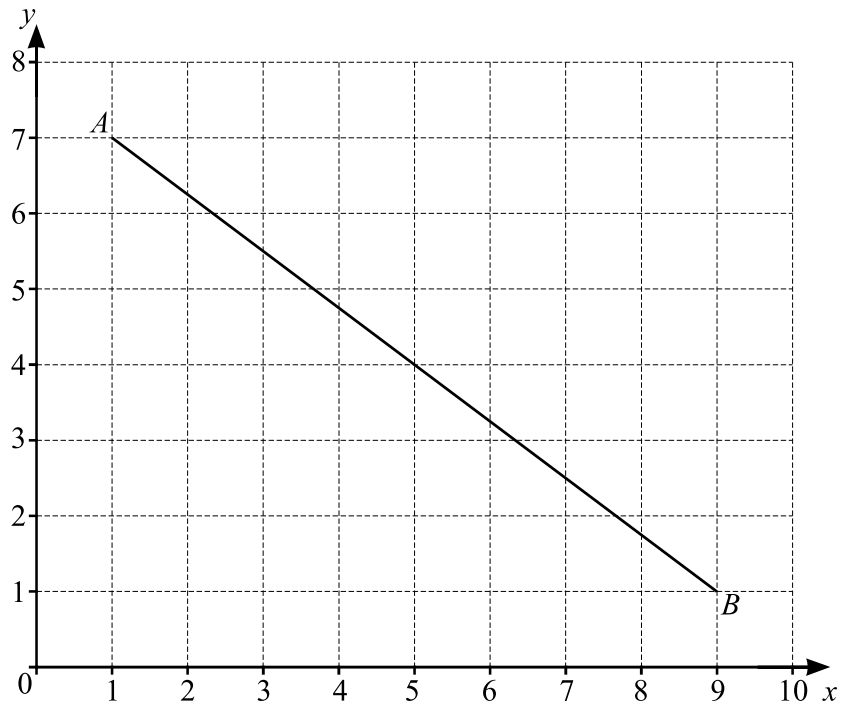
\$ ..... [4]

20 **(a)** The equation of line L is $y = 2x$.

Find the equation of the line parallel to line L that passes through (1, 5).
Give your answer in the form $y = mx + c$.

$y =$ ..... [2]

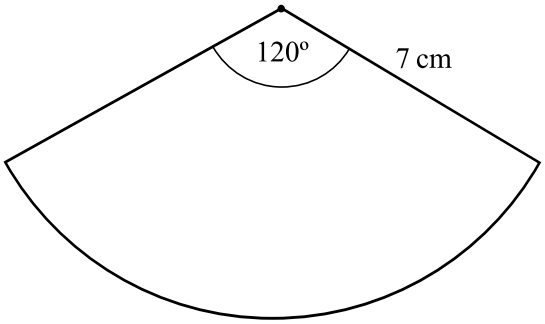
(b) The grid shows line AB.



Find the gradient of line AB.

..... [2]

21



NOT TO SCALE

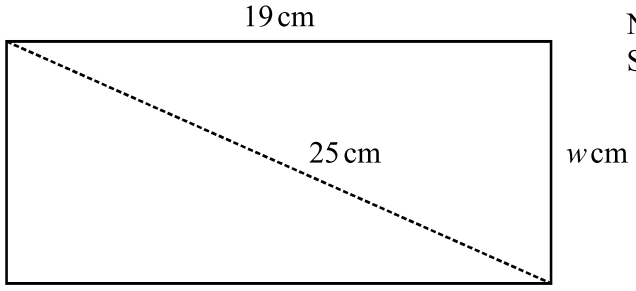
The diagram shows a sector of a circle with radius 7 cm and sector angle 120°.

Calculate the perimeter of this sector.

..... cm [3]

[Turn over

22 The diagram shows a rectangle.

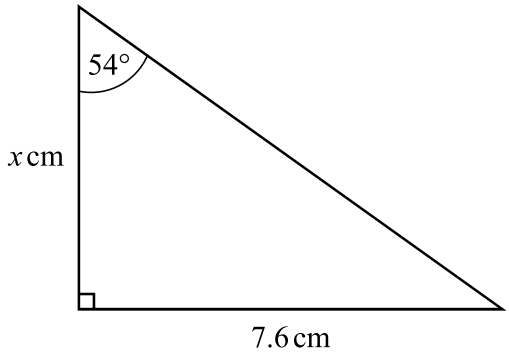


NOT TO SCALE

Calculate the value of w.

$w =$ ..... [3]

23 The diagram shows a right-angled triangle.



NOT TO SCALE

Calculate the value of x.

$x =$ ..... [3]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/04**

Paper 4 Calculator (Extended) **For examination from 2025**

SPECIMEN PAPER B **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 100.
- The number of marks for each question or part question is shown in brackets [ ].

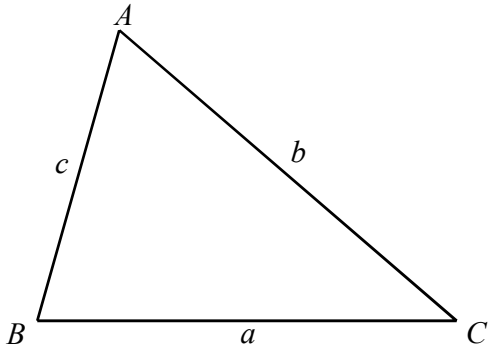
This document has **18** pages. Any blank pages are indicated.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

1 Find the reciprocal of 0.35 .

..... [1]

2 Calculate.

$$\frac{4^2 - 1.9}{3.2 - 2.6}$$

..... [1]

3 Navin and Esther share some money in the ratio Navin : Esther = 5 : 7.

(a) Find Navin's share as a percentage of the total money.

.....% [1]

(b) Find Esther's share as a percentage of Navin's share.

.....% [1]

(c) Navin's share is \$160.

Work out Esther's share.

\$ ..... [2]

4 **(a)** Simplify.

(i) $5x^2 - 7x + 6x - x^2$

..... [2]

(ii) $\frac{4x}{3y} \div \frac{2a}{9y}$

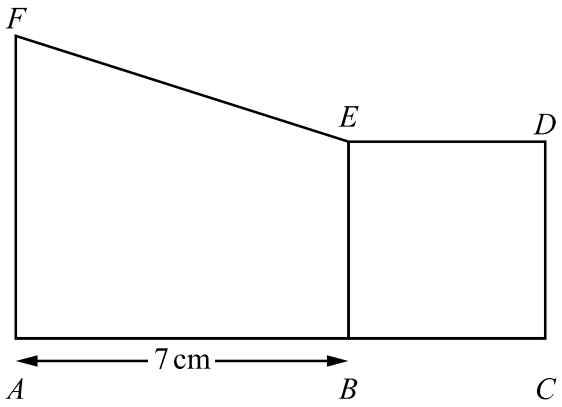
..... [2]

(b) Solve.

$5(3 - 2x) = 17$

$x =$ ..... [3]

5



NOT TO SCALE

The diagram shows a trapezium $ABEF$ joined to a square $BCDE$.
ABC is a straight line and $AB = 7$ cm.
$AF : BE = 3 : 2$.
The area of the square is $32\,\text{cm}^2$.

Calculate the area of the trapezium $ABEF$.

..... cm^2 [4]

6 Write 0.0473 in standard form.

..... [1]

7 **(a)** Talia invests \$1500 in a savings account for 4 years.
The account pays simple interest at a rate of $2\frac{1}{6}\%$ per year.

Calculate the total interest she receives at the end of 4 years.

\$ ..... [2]

(b) Kylian invests \$1500 in a different savings account.
The account pays compound interest at a rate of $r\%$ per year.

At the end of 5 years, the value of the investment is \$1825.

Calculate the value of r.

$r =$ ..... [3]

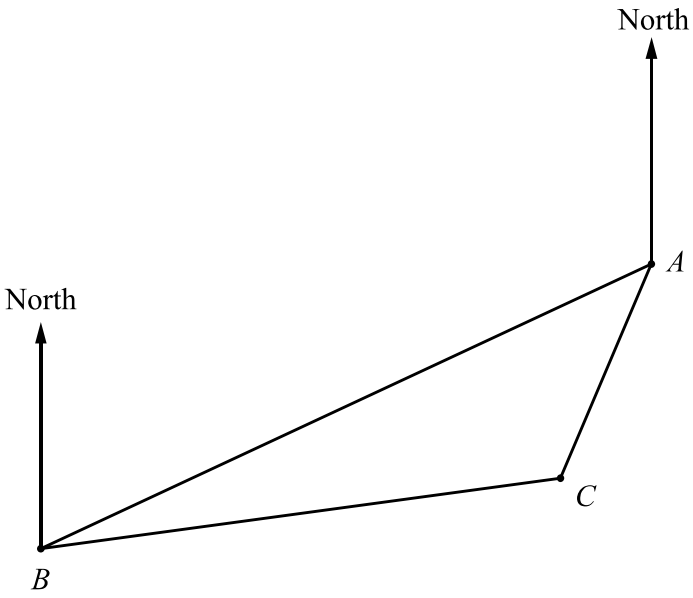
8 **(a)** On a map, the distance between two cities is 7.3 cm.

The actual distance between the two cities is 365 km.
The scale of this map is $1 : n$.

Find the value of n.

$n =$ ..... [2]

(b) The diagram shows the positions of towns A, B and C.
The towns are joined by straight roads.



NOT TO SCALE

(i) The bearing of A from B is 070°.

Find the bearing of B from A.

..... [2]

(ii) The bearing of C from A is 195° and angle $BCA = 113°$.

Find the bearing of C from B.

..... [3]

9 P is the point (4, 10) and Q is the point (–8, 5).

Find the coordinates of the midpoint of PQ.

(..... , ...) [2]

10 The test scores of 13 pupils are recorded.

21 23 23 24 26 27 34 37 38 40 42 43 48

(a) Find the median.

..... [1]

(b) Find the interquartile range.

..... [2]

11 Line L has equation $y = 6x - 1$.

(a) Find the equation of the line parallel to line L that passes through the point (0, 3).

..... [2]

(b) Write down the gradient of a line perpendicular to line L.

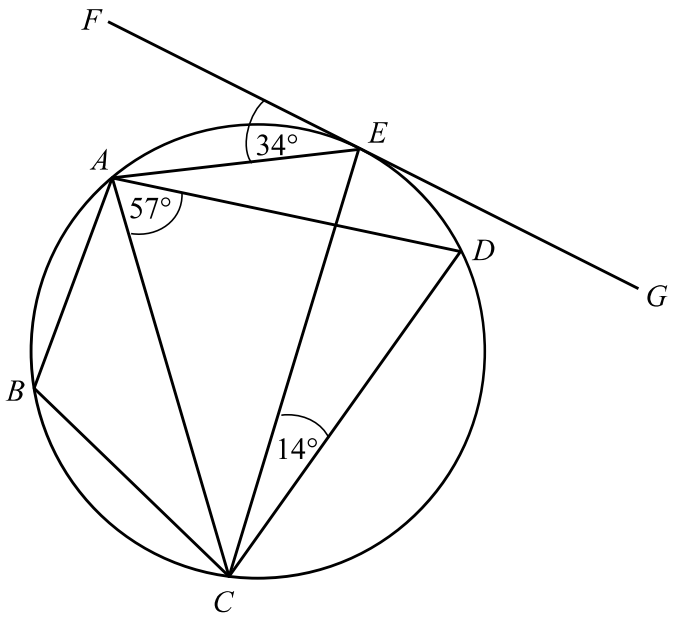
..... [1]

12 Find the integer values of x that satisfy the inequality.

$$-1 \leqslant 4 - 2x < 8$$

..... [3]

13



NOT TO SCALE

A, B, C, D and E are points on a circle.
FG is a tangent to the circle at E.

Find

(a) angle EAC

Angle EAC = ... [2]

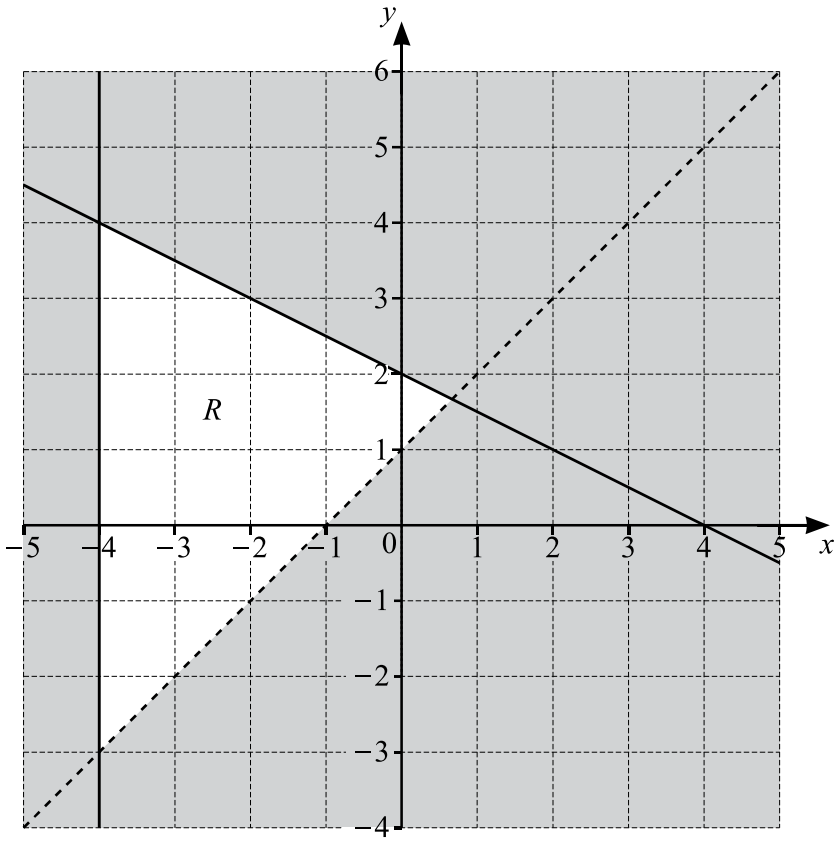
(b) angle ADC

Angle ADC = ... [2]

(c) angle ABC.

Angle ABC = ... [1]

14



Find the three inequalities that define the unshaded region, R.

.....

.....

.....

[4]

15 $f(x) = 2x^2 - 3x$ $g(x) = 7 + 2x$

(a) Find

(i) $g(-8)$

..... [1]

(ii) $gf(5)$

..... [2]

(iii) $g^{-1}(x)$.

$g^{-1}(x) =$ ..... [2]

(b) Find $f(x - 6)$.
Give your answer in the form $ax^2 + bx + c$.

..... [4]

(c) Use the quadratic formula to solve $f(x) - 6 = 0$.
Show all your working and give your answers correct to 2 decimal places.

$x =$ ..... or $x =$ ..... [3]

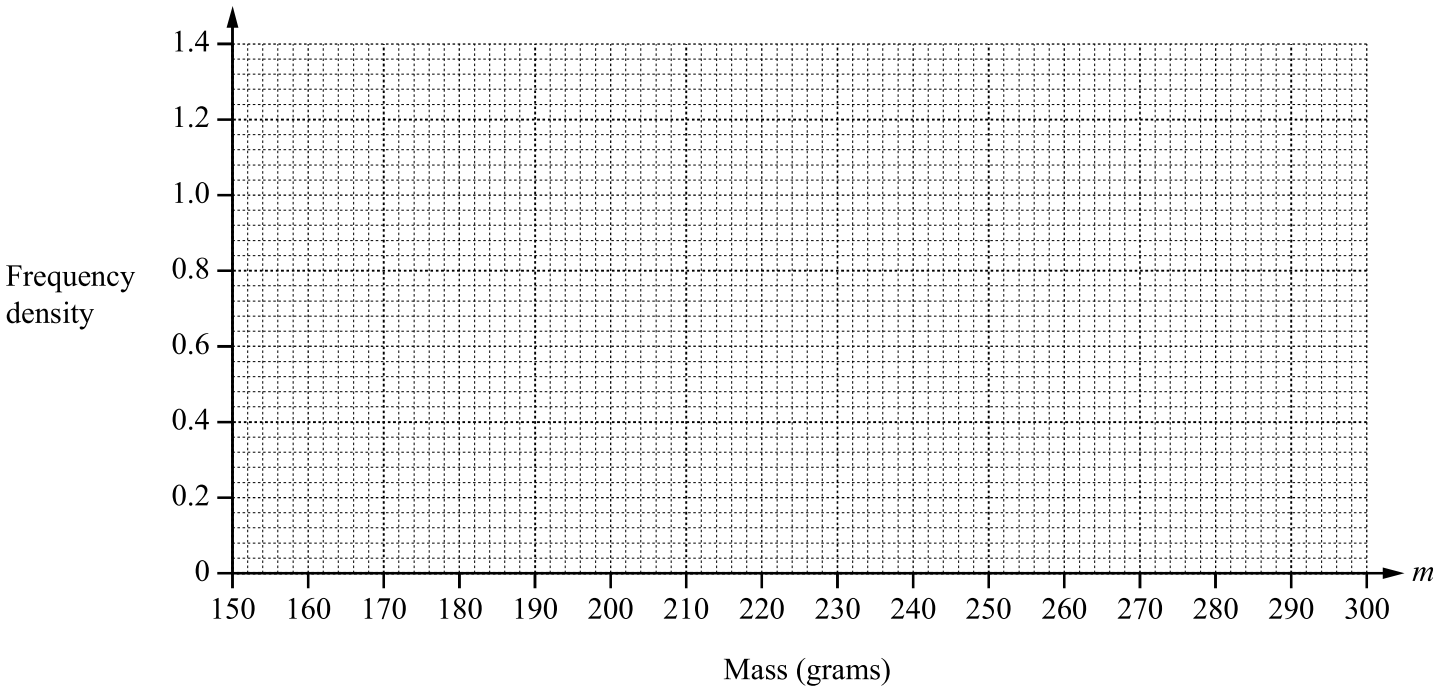
16 Tina records the mass of each of 120 apples.
The results are shown in the table.

Mass (m grams)	$150 < m \leqslant 180$	$180 < m \leqslant 220$	$220 < m \leqslant 270$	$270 < m \leqslant 300$
Frequency	18	28	65	9

(a) Calculate an estimate of the mean mass of the apples.

..... g [4]

(b) Draw a histogram to show the information in the table.



[3]

(c) (i) One of the 120 apples is picked at random.

Find the probability that this apple has a mass of 180 g or less.

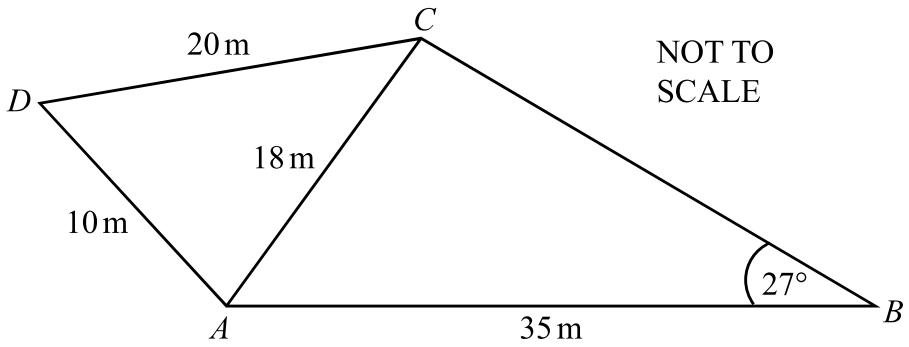
..... [1]

(ii) Two apples are picked at random from those with a mass greater than 180 g.

Find the probability that one of these apples has a mass greater than 270 g, and the other apple has a mass of 220 g or less.

..... [3]

17



The diagram shows the positions A, B, C and D on a football pitch.

(a) Show that angle $CAD = 86.2°$, correct to 1 decimal place.

[4]

(b) Calculate the **obtuse** angle ACB.

..... [4]

(c) A player runs directly from *B* to *D* in a time of 5.3 seconds.

Calculate the average speed of the player.

..... m/s [5]

18 f is inversely proportional to the cube of g.
When $f = 0.5$, $g = 3$.

(a) Find f in terms of g.

$f =$ ..... [2]

(b) g is increased by 100%.

Find the percentage change in f.

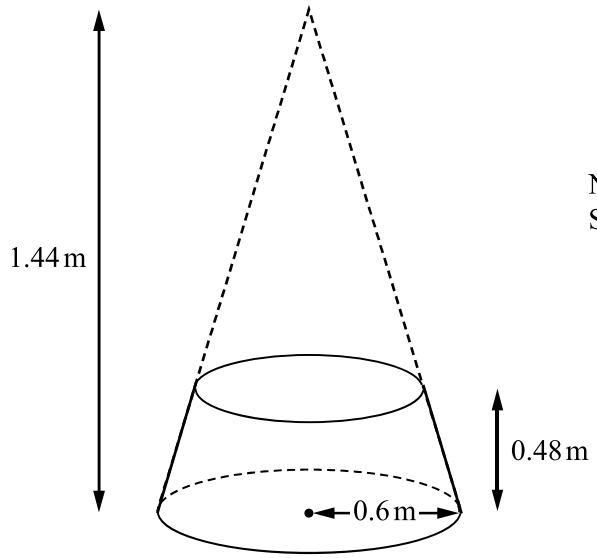
..... % [3]

19 The area of a triangle is $12\,m^2$, correct to the nearest square metre.
The base of the triangle is 5.7 m, correct to the nearest 0.1 m.

Calculate the smallest possible height of the triangle.

..... m [3]

20



The diagram shows the frustum of a cone.
The frustum has base radius 0.6 m and vertical height 0.48 m.
The vertical height of the original cone is 1.44 m.

Calculate the total surface area of the frustum.

..... m^2 [6]

BLANK PAGE

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/01**

Paper 1 Non-calculator (Core) **For examination from 2025**

PRACTICE PAPER **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **18** pages. Any blank pages are indicated.

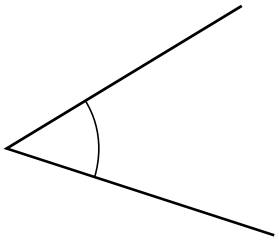
[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

Calculators must **not** be used in this paper.

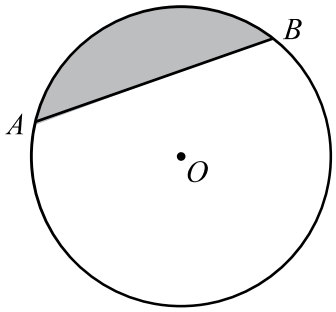
1 **(a)**



Write down the mathematical name for this type of angle.

..... [1]

(b)



NOT TO SCALE

A and B lie on a circle, centre O.

(i) Write down the mathematical name for the shaded region.

..... [1]

(ii) $OA = 8\,\text{cm}$

Write down the length of the diameter of this circle.

..... cm [1]

2 Convert 5.3 kilometres into metres.

..... m [1]

3 Ahmed has \$10.
Pens cost \$0.80 each.

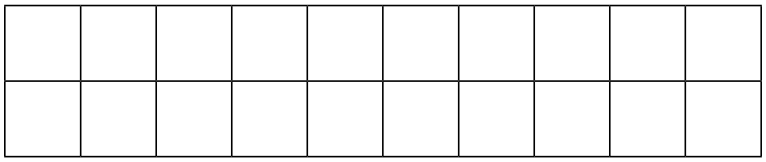
(a) Work out the maximum number of pens that Ahmed can buy.

..... [2]

(b) Work out the change Ahmed receives.

\$ ..... [1]

4



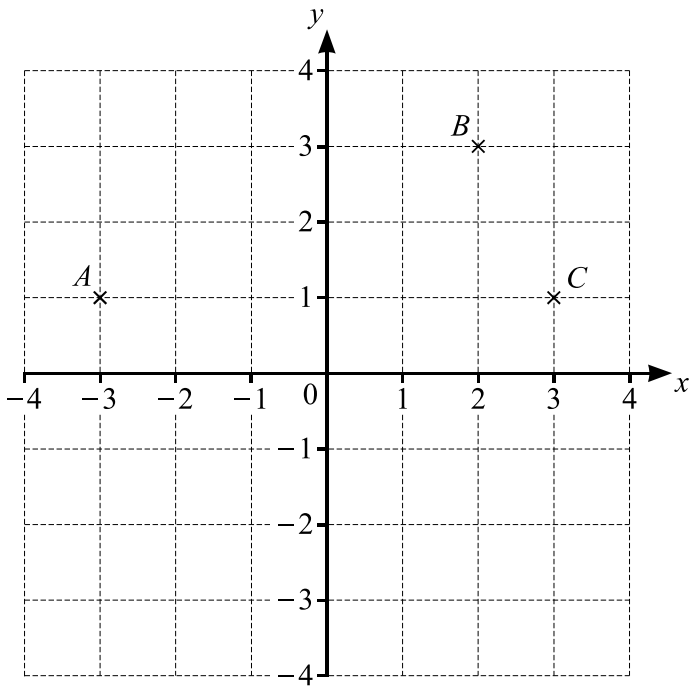
Shade $\frac{3}{5}$ of this rectangle. [2]

5 A bag contains red, blue and orange counters.
30% of the counters are red.
Half of the counters are blue.
16 counters are orange.

Find the number of red counters in the bag.

..... [2]

6



Points A, B and C are shown on the grid.

(a) Write down the coordinates of point C.

(..... , ...) [1]

(b) On the grid, plot point D so that $ABCD$ is a parallelogram. [1]

7 **(a)** 20 students from College A each run 5 km.
The times, correct to the nearest minute, are recorded.

32	51	25	40	47	21	37	32	48	36
46	39	30	29	44	39	53	35	40	31

(i) Complete the stem-and-leaf diagram.

2	
3	
4	
5	

Key: 3 | 4 represents 34 minutes

[2]

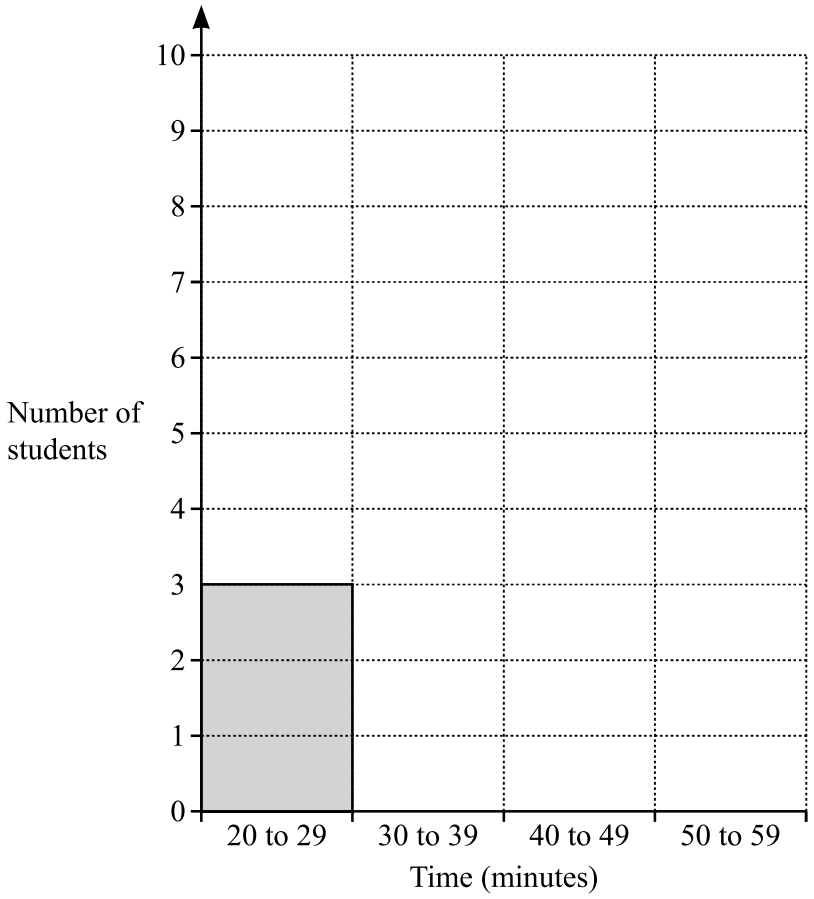
(ii) Find the range of the times.

..... min [1]

(iii) Find the median of the times.

..... min [1]

(iv) Complete the bar chart for the times of the students.



[2]

(b) 20 students from College B each run 5 km.
Their times, correct to the nearest minute, are recorded and the results are shown in the table.

Time (minutes)	Number of students
30 to 39	5
40 to 49	8
50 to 59	7

Write down two comments comparing the times of students from College A with the times of students from College B.

1.....

.....

2.....

.....

[2]

8 A cube has a surface area of $96\,cm^2$.

Find the volume of the cube.

..... cm^3 [4]

9 Write down

(a) a square number greater than 10

..... [1]

(b) an irrational number

..... [1]

(c) a cube number between 50 and 100

..... [1]

(d) the highest common factor (HCF) of 24 and 40.

..... [1]

10 A solid metal cone with a height of 6 cm has a volume of $200\pi\,\text{cm}^3$.

(a) Find the radius of the cone.

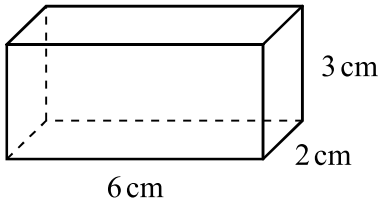
..... cm [2]

(b) The cone is melted down and made into 20 identical solid cylinders each of radius 2 cm.

Find the height of each cylinder.

..... cm [2]

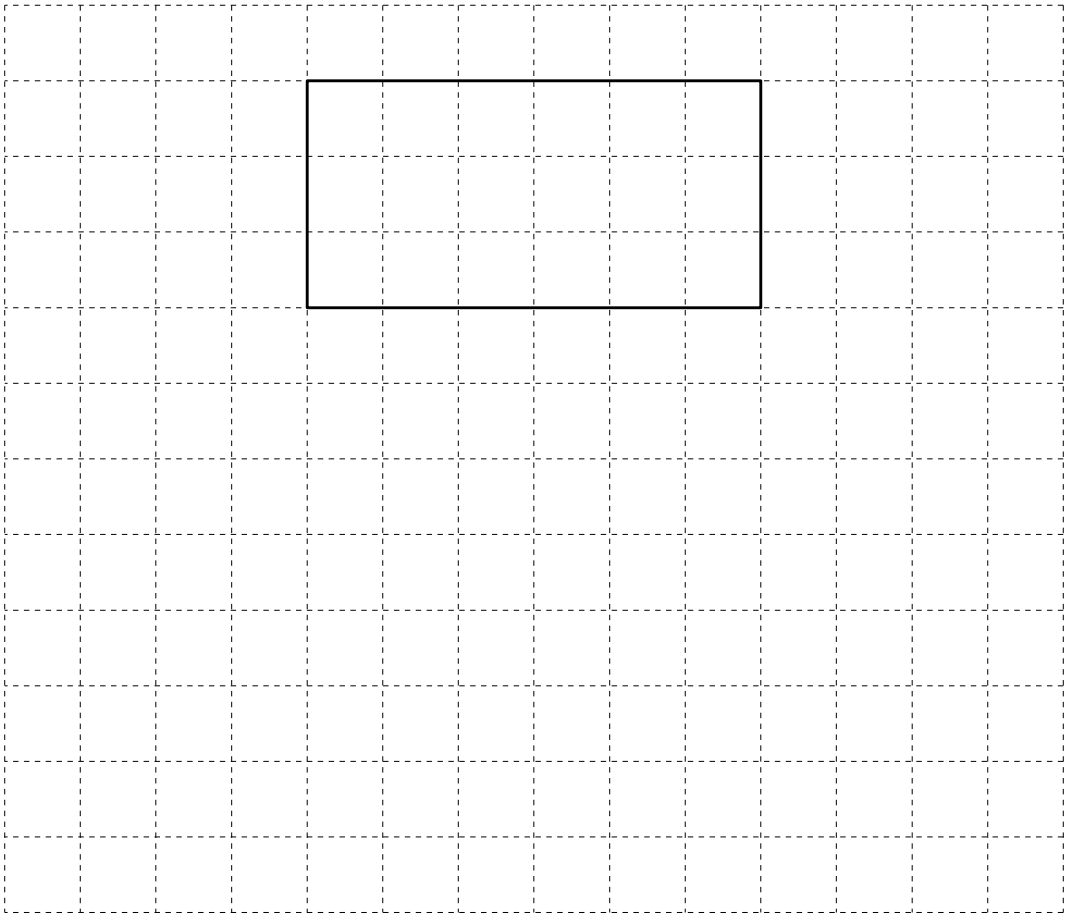
11



NOT TO SCALE

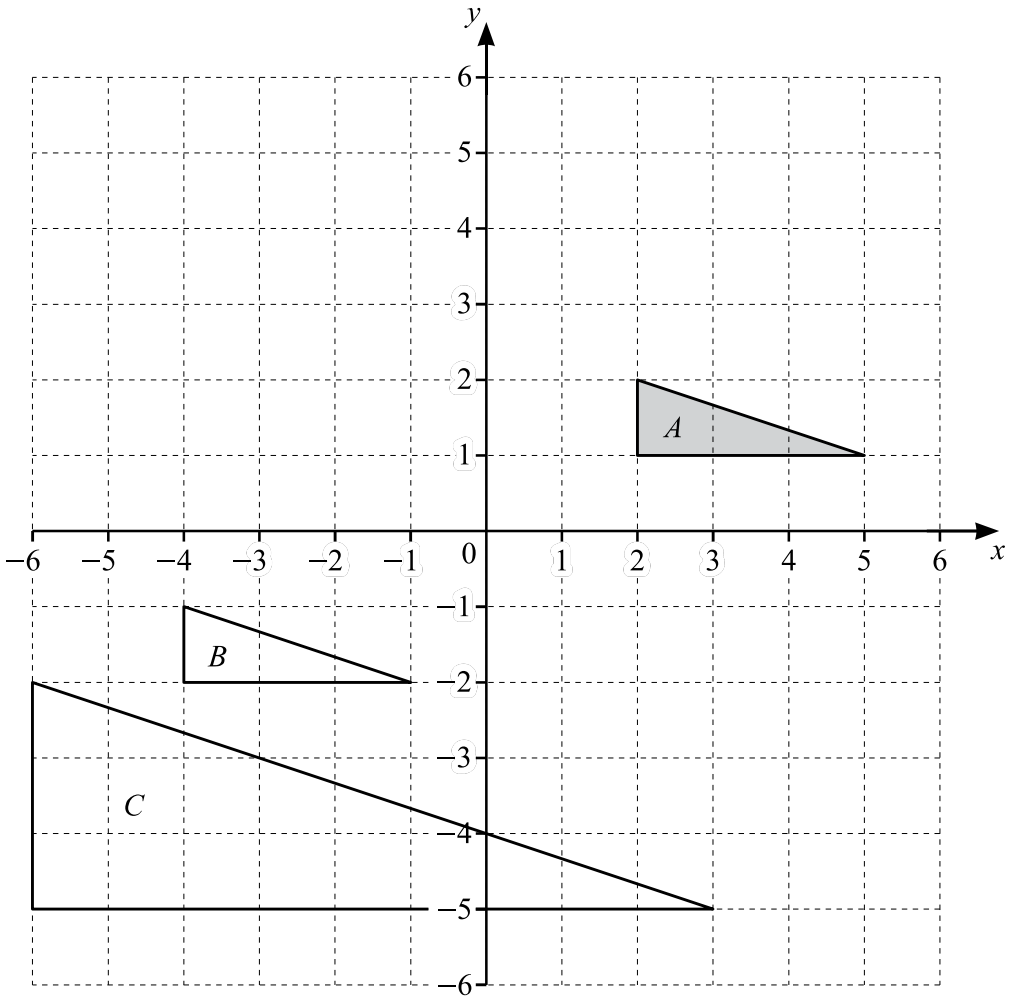
The diagram shows a cuboid.

On the 1 cm^2 grid, complete the net of the cuboid.
One face has been drawn for you.



[3]

12



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

(i) triangle *A* onto triangle *B*

.....

..... [2]

(ii) triangle *A* onto triangle *C*.

.....

..... [3]

(b) On the grid, draw the image of triangle *A* after a reflection in the line $y = -1$. [2]

13 (a) $T = 3a^2b$

Find the value of T when $a = 4$ and $b = 5$.

$T =$ ..... [2]

(b) (i) Expand.

$x(3y - 5x)$

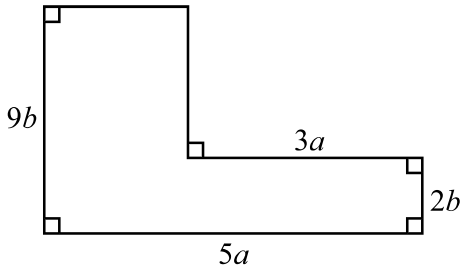
..... [2]

(ii) Factorise.

$5x - 20x^2$

..... [2]

(c)

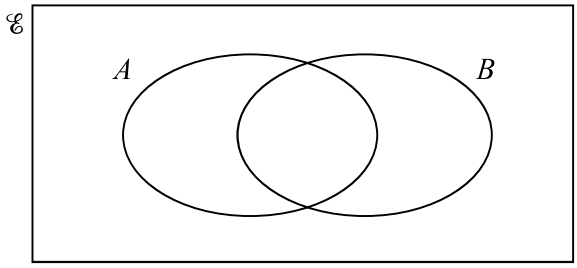


NOT TO SCALE

Find an expression for the total area of this shape.
Give your answer in its simplest form.

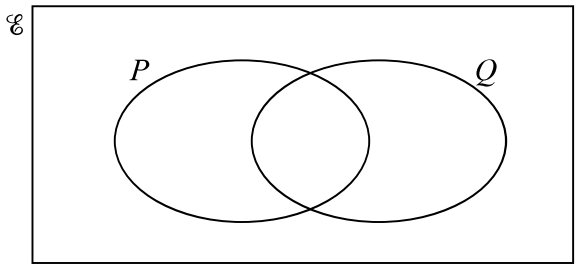
..... [3]

14 (a)



On the Venn diagram, shade the region $A \cap B$. [1]

(b) $\mathscr{E} = \{1, 2, 3, 4, 5, 6\}$
$P = \{x : x \text{ is an even number}\}$
$Q = \{x : x \text{ is a prime number}\}$



(i) Complete the Venn diagram. [2]

(ii) Find n(P).

..... [1]

15 Work out $2\frac{1}{5} \times 3\frac{3}{4}$.
Give your answer as a mixed fraction in its simplest form.

..... [3]

16 **(a)** Write 45 000 in standard form.

..... [1]

(b) Write 2.06×10^{-2} as an ordinary number.

..... [1]

17 Simplify.

$$8t^8 \div 4t^4$$

..... [2]

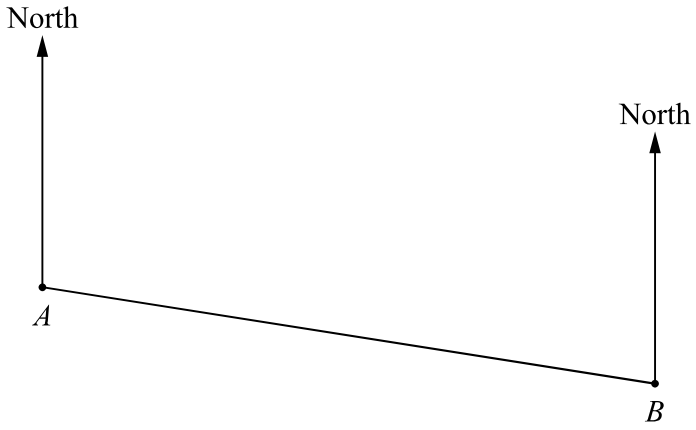
18 **(a)** Write 48 as a product of its prime factors.

..... [2]

(b) Find the lowest common multiple (LCM) of 48 and 60.

..... [2]

19



The bearing of B from A is 105°.

Find the bearing of A from B.

..... [2]

20 The height, h metres, of a tower is 76.3 m, correct to 1 decimal place.

Complete this statement about the value of h.

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

21 Solve these equations.

(a) $5x = -30$

$x =$ ..... [1]

(b) $4x - 2 = 28$

$x =$ ..... [2]

(c) $\frac{2x + 7}{3} = 11$

$x =$ ..... [2]

22 Solve the simultaneous equations.
You must show all your working.

$$5x - 2y = 17$$
$$2x + 3y = 3$$

$x =$ .....

$y =$ .....

[4]

BLANK PAGE

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/02**

Paper 2 Non-calculator (Extended) **For examination from 2025**

PRACTICE PAPER **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

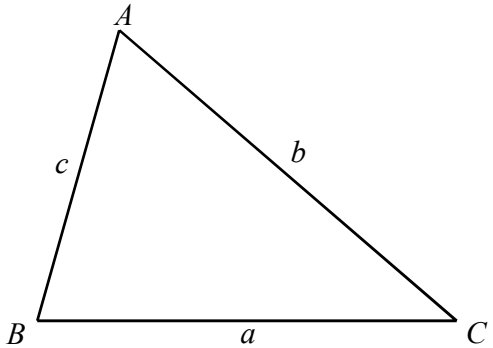
This document has **18** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



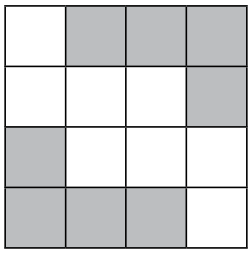
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

Calculators must **not** be used in this paper.

1



Write down the order of rotational symmetry of the diagram.

..... [1]

2 At noon the temperature in Maseru was 21 °C.
At midnight the temperature had fallen by 26 °C.

Work out the temperature at midnight.

..... °C [1]

3 Work out.

(a) 0.3×0.07

..... [1]

(b) $8 \div 0.2$

..... [1]

4 Write down

(a) a square number greater than 10

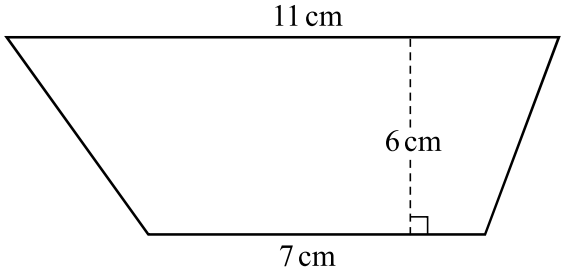
..... [1]

(b) the reciprocal of 20.

..... [1]

[Turn over

5

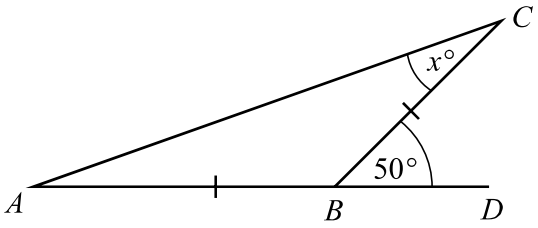


NOT TO SCALE

Work out the area of the trapezium.

..... cm^2 [2]

6



NOT TO SCALE

$AB = BC$ and ABD is a straight line.

Find the value of x.

$x =$ ..... [2]

7 Write 0.00067 in standard form.

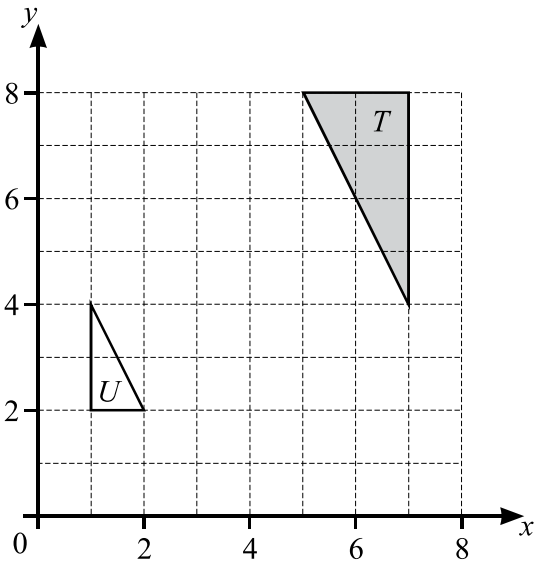
..... [1]

8 Work out $1\frac{3}{4} - \frac{11}{12}$.

Give your answer as a fraction in its simplest form.

..... [3]

9



Describe fully the **single** transformation that maps triangle T onto triangle U.

.....

..... [3]

10 Simplify.

$8t^8 \div 4t^4$

..... [2]

11 The line $y = 3x - 2$ crosses the y-axis at G.

Write down the coordinates of G.

(..... , ...) [1]

12 **(a)** $\mathbf{p} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} -2 \\ 7 \end{pmatrix}$

(i) Find $2\mathbf{p} + \mathbf{q}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

(ii) Find the exact value of $|\mathbf{p}|$.

Give your answer as a surd in its simplest form.

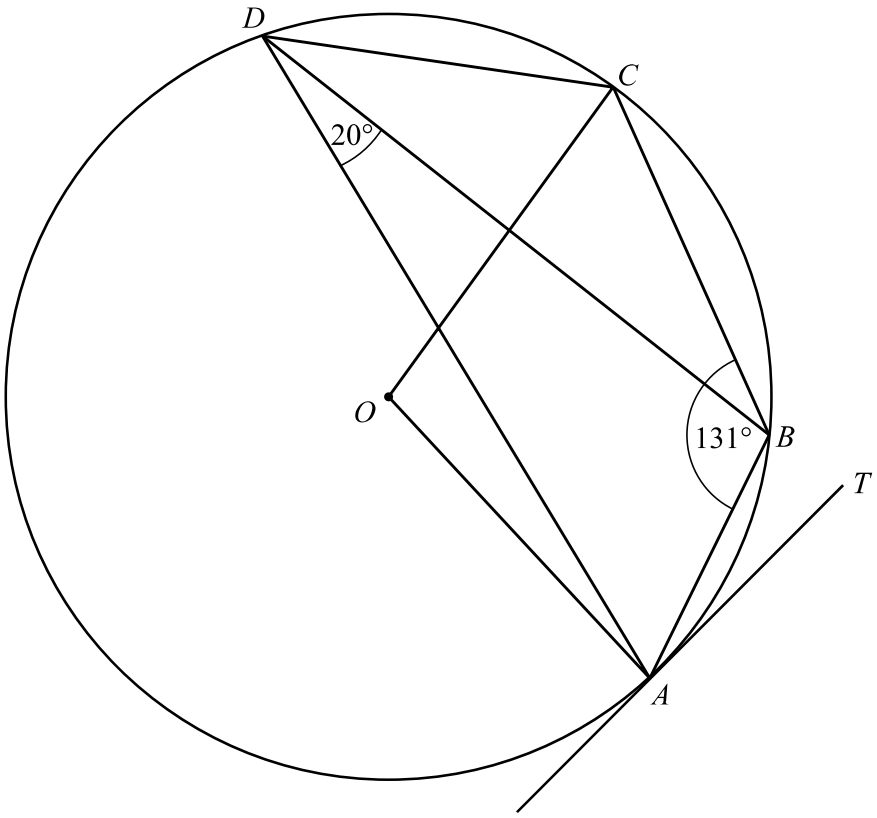
..... [2]

(b) A is the point (4, 1) and $\overrightarrow{AB} = \begin{pmatrix} -3 \\ 1 \end{pmatrix}$.

Find the coordinates of B.

(..... , ...) [1]

13



NOT TO SCALE

A, B, C and D lie on the circle, centre O.
TA is a tangent to the circle at A.
Angle $ABC = 131°$ and angle $ADB = 20°$.

Find

(a) angle ADC

Angle ADC = ... [1]

(b) angle AOC

Angle AOC = ... [1]

(c) angle BAT

Angle BAT = ... [1]

(d) angle OAB.

Angle OAB = ... [1]

14 $h^2 = x^2 + 2y^2$

Rearrange the formula to make y the subject.

$y =$ ..... [3]

15 Ella's height is 175 cm, correct to the nearest 5 cm.

(a) Write down the upper bound of Ella's height.

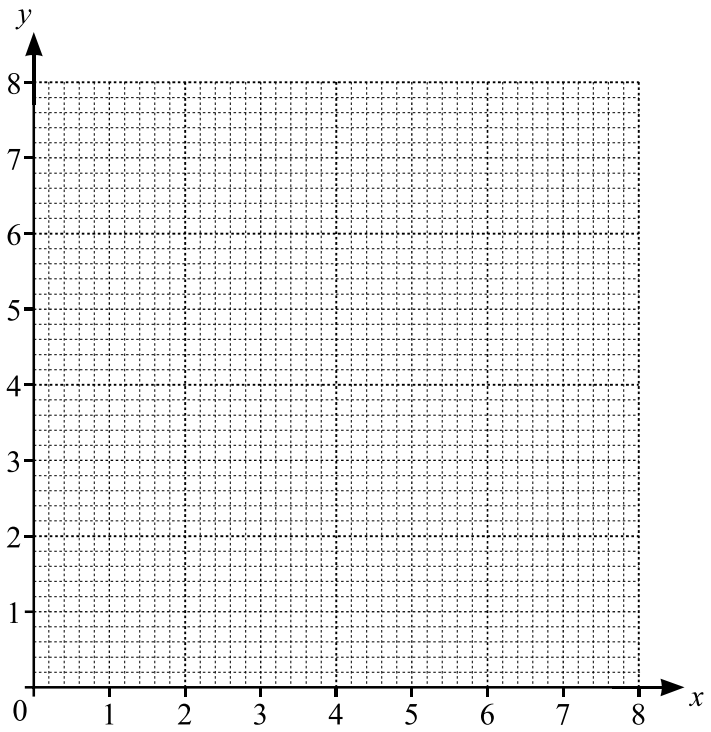
..... cm [1]

(b) Rafael's height is 161 cm, correct to the nearest cm.

Work out the upper bound of the difference between Ella's height and Rafael's height.

..... cm [2]

16



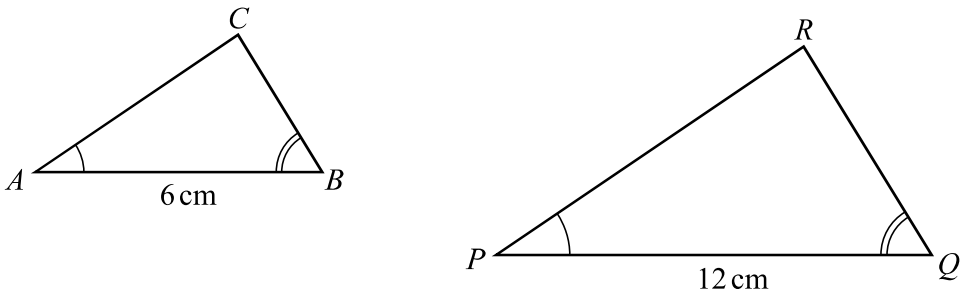
(a) By drawing suitable lines and shading the unwanted regions, find the region, R, where

$$x \geqslant 2, \quad y \geqslant x \quad \text{and} \quad 2x + y \leqslant 8 .$$ [5]

(b) The point P lies in the region R.
The coordinates of P are (a, b).
Write down the largest possible value of $a + b$.

..... [1]

17



NOT TO SCALE

Triangle ABC is mathematically similar to triangle PQR.
The area of triangle ABC is $15\,cm^2$.

(a) Work out the area of triangle PQR.

..... cm^2 [2]

(b) The triangles are the cross-sections of prisms which are also mathematically similar.
The volume of the smaller prism is $300\,cm^3$.

Calculate the length of the larger prism.

..... cm [3]

18 **(a)** A cylinder with radius 2 cm and height h cm has the same volume as a sphere with radius 3 cm.

Find the value of h.

$h =$ ..... [3]

(b) A solid metal cube has sides with length 20 cm.
The cube is melted down and made into 40 solid spheres, each of radius r cm.

Show that $r = \sqrt[3]{\frac{150}{\pi}}$.

[3]

(c) A solid cylinder has radius x cm and height $\frac{7x}{2}$ cm.
The surface area of a sphere with radius R cm is equal to the total surface area of the cylinder.

Find an expression for R in terms of x.

$R =$ ..... [3]

19 $f(x) = 3x + 2$ $g(x) = x^2 + 1$ $h(x) = 4^x$

(a) Find h(3).

..... [1]

(b) Find fg(1).

..... [2]

(c) Find gf(x) in the form $ax^2 + bx + c$.

..... [3]

(d) Find x when $f(x) = g(7)$.

$x =$ ..... [2]

(e) Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

(f) Find $\frac{g(x)}{f(x)} + x$.

Give your answer as a single fraction, in terms of x, in its simplest form.

..... [3]

(g) Find x when $h^{-1}(x) = 2$.

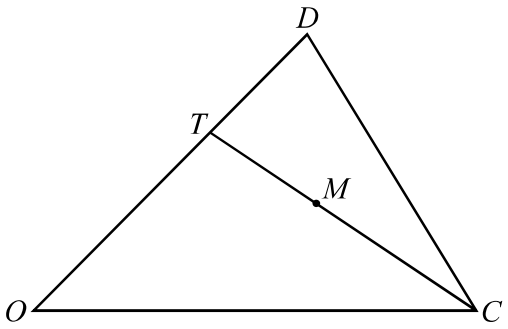
$x =$ ..... [1]

20 $P = 2^{10} \times 3^8 \times 7^5$.

Write $12P^2$ as a product of prime factors.

..... [2]

21



NOT TO SCALE

In the diagram, O is the origin, $OT = 2TD$ and M is the midpoint of TC.
$\overrightarrow{OC} = \mathbf{c}$ and $\overrightarrow{OD} = \mathbf{d}$.

Find the position vector of M.
Give your answer in terms of **c** and **d** in its simplest form.

..... [3]

22 $\sqrt[3]{y^2} = \sqrt[6]{x}$ and $y = \sqrt[n]{x}$.

Find the value of n.

$n =$ ..... [2]

23 Rationalise the denominator, giving your answer in its simplest form.

$$\frac{45}{\sqrt{6}+1}$$

..... [3]

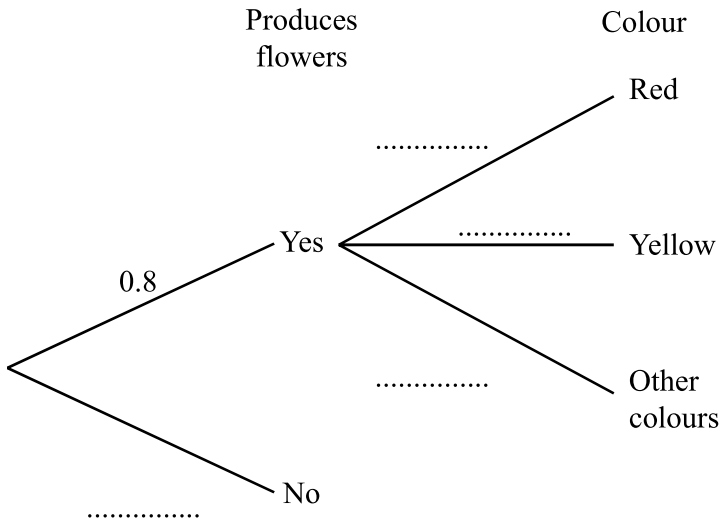
24 Tanya plants some seeds.
The probability that a seed will produce flowers is 0.8 .
When a seed produces flowers, the probability that the flowers are red is 0.6 and the probability that the flowers are yellow is 0.3 .

(a) Tanya has a seed that produces flowers.

Find the probability that the flowers are not red and not yellow.

..... [1]

(b) **(i)** Complete the tree diagram.



[2]

(ii) Find the probability that a seed chosen at random produces red flowers.

..... [2]

(iii) Tanya chooses a seed at random.

Find the probability that this seed does not produce red flowers and does not produce yellow flowers.

..... [3]

(c) Two of the seeds are chosen at random.

Find the probability that one produces flowers and one does not produce flowers.

..... [3]

25 **(a)** $y = x^4 - 4x^3$

(i) Find the value of y when $x = -1$.

$y =$ ..... [2]

(ii) Find the coordinates of the two stationary points on the graph of $y = x^4 - 4x^3$.

(..... , ...)

(..... , ...)
[6]

(b) $y = x^p + 2x^q$

$\frac{dy}{dx} = 11x^{10} + 10x^4$.

Find the value of p and the value of q.

$p =$ .....

$q =$ .....
[2]

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/03**

Paper 3 Calculator (Core) **For examination from 2025**

PRACTICE PAPER **1 hour 30 minutes**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **18** pages. Any blank pages are indicated.

 [Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

1 **(a)** Write in figures the number fifty-three thousand and thirty-five.

..... [1]

(b) Write 0.08379 correct to 3 decimal places.

..... [1]

(c) Write down the value of the 7 in the number 570 296.

..... [1]

2 Write down the reciprocal of $\frac{2}{9}$.

..... [1]

3 Find the value of

(a) $\sqrt[3]{68921}$

..... [1]

(b) 23^2.

..... [1]

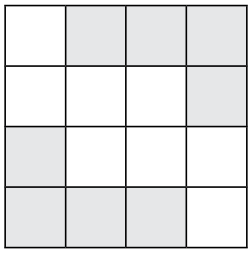
4 The cost of hiring a taxi can be worked out using this formula.

Total cost = \$2.20 per kilometre + \$0.50 per minute

Calculate the cost of hiring a taxi for a journey of 15 km that takes 35 minutes.

\$ ..... [2]

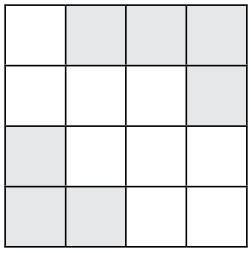
5 **(a)**



Write down the order of rotational symmetry of the diagram.

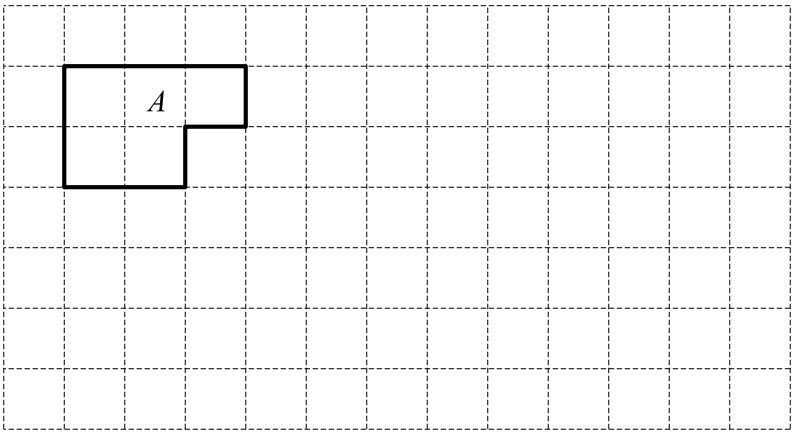
..... [1]

(b)



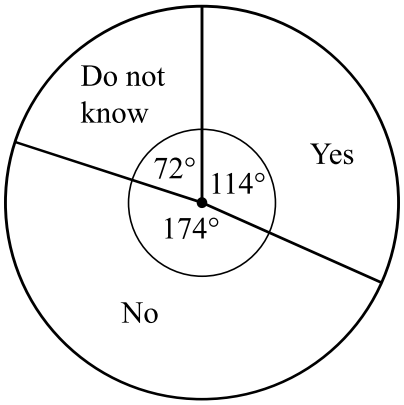
On the diagram, shade one more small square so that the diagram has only one line of symmetry. [1]

6



On the grid, draw a shape that is congruent to shape *A*. [1]

7 The 840 students in a school are asked if they want a change of school uniform.
The results are shown in the pie chart.



Show that the number of students who said Yes is 266.

[1]

8 Write these numbers in order, starting with the smallest.

$\frac{13}{201}$ 5.6% 0.065 $\frac{5}{89}$

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

9 The average temperature at the North Pole is –23 °C in January and –11 °C in March.

(a) Find the difference between these temperatures.

..... °C [1]

(b) The average temperature in July is 28 °C higher than the average temperature in March.

Find the average temperature in July.

..... °C [1]

10 Paul has a set of 8 cards, each with a number written on it.
The numbers on the cards are 1, 1, 2, 3, 3, 3, 4, 5.
One card is taken at random.

Write down the probability that the number on the card is

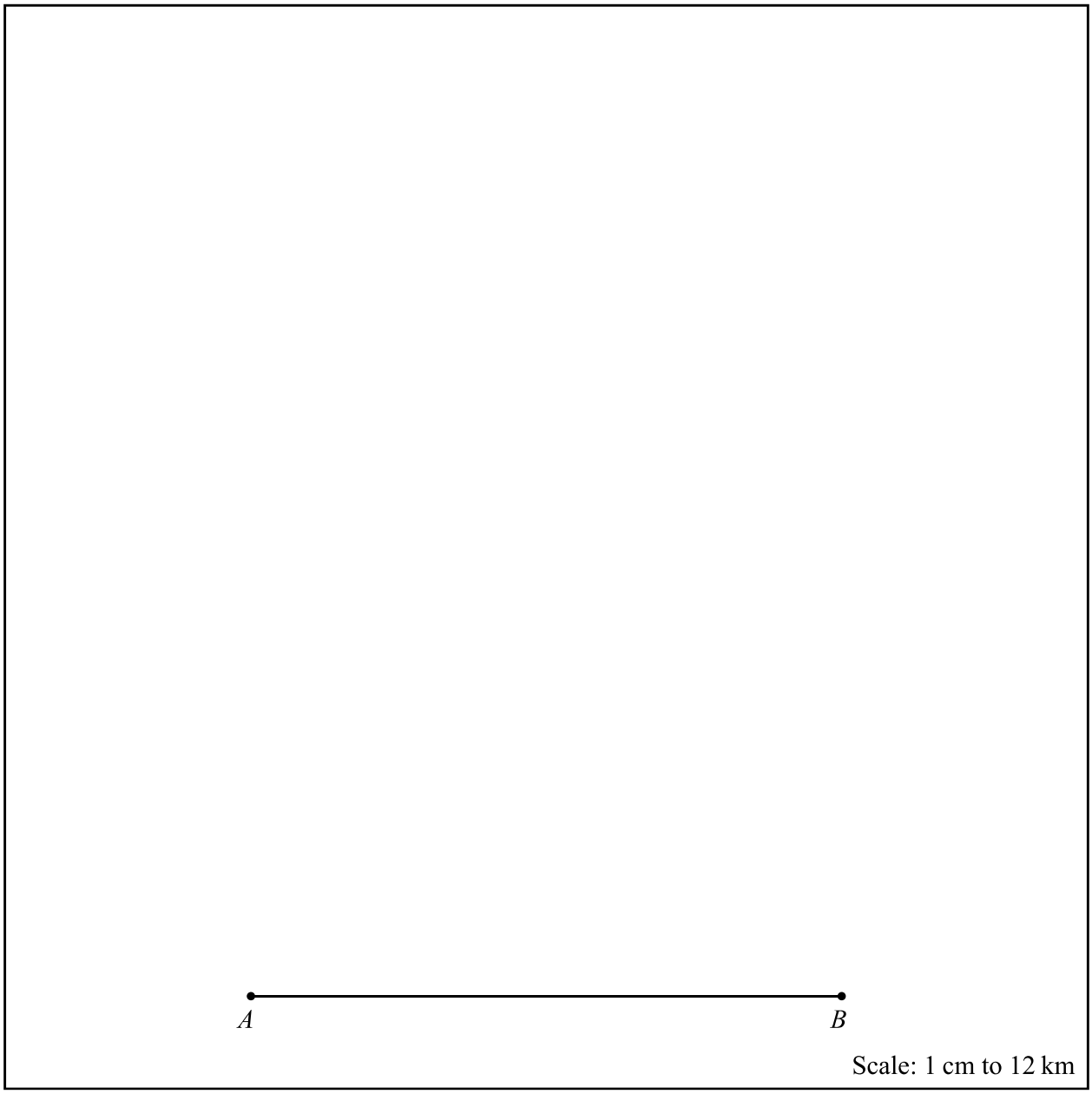
(a) 1

..... [1]

(b) an odd number

..... [1]

11 The scale drawing shows the positions of town *A* and town *B*.
The scale is 1 cm represents 12 kilometres.



(a) Find the actual distance between town *A* and town *B*.

..... km [2]

(b) Town *C* is 72 km from town *A* and 96 km from town *B*.

On the scale drawing, construct the position of town *C*. [3]

12 Jeremy goes on holiday. He parks his car in the airport car park from 10 00 on Tuesday 17 July to 17 00 on Saturday 28 July.
The car park charges are shown below.

Monday to Friday	$14 per day
Saturday and Sunday	$8 per day
Part days are charged as full days	

(a) Find the total cost of parking his car.

$ ..... [3]

(b) The plane ticket costs $680 plus a tax of 16%.

Find the total cost of this ticket.

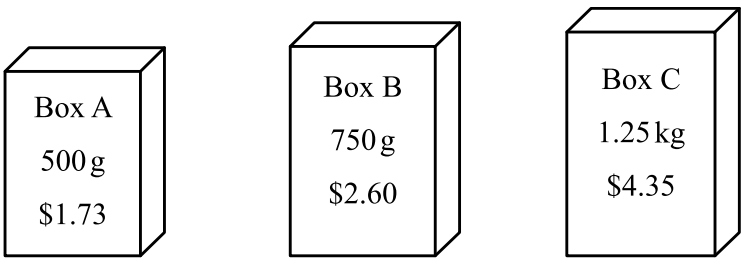
$ ..... [2]

(c) The plane flies from Melbourne to Tokyo at an average speed of 783 km/h.
The distance from Melbourne to Tokyo is 8352 km.
The plane leaves Melbourne at 09 52 local time.
The local time in Tokyo is 2 hours behind the local time in Melbourne.

Find the local time in Tokyo when the plane arrives.

..... [4]

13 A shop sells cereal in boxes A, B and C.



NOT TO SCALE

Work out which box is the best value.
You must show all your working.

Box ..... [3]

14 Sam invests \$12 000 at a rate of n% per year simple interest.
At the end of 3 years the value of the investment is \$12 900.

Find the value of n.

n = ... [3]

15 Six students each bring an apple to school one day.

The list shows the mass of each apple, correct to the nearest gram.

82 94 78 103 88 82

(a) Find the mode.

..... g [1]

(b) Another student, Toni, also brings an apple to school.
The mean mass of the 7 apples is 89 g.

Work out the mass of Toni's apple.

..... g [3]

16 **(a)** Find the next term in each of these sequences.

(i) 3, 9, 15, 21, …

..... [1]

(ii) 27, 20, 13, 6, ...

..... [1]

(b) The nth term of a sequence is $60 - 8n$.

Find the largest number in this sequence.

..... [1]

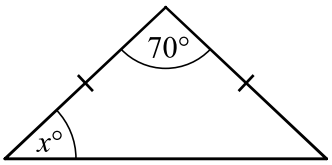
(c) These are the first five terms of a different sequence.

12 19 26 33 40

Find an expression for the nth term of this sequence.

..... [2]

17 (a)



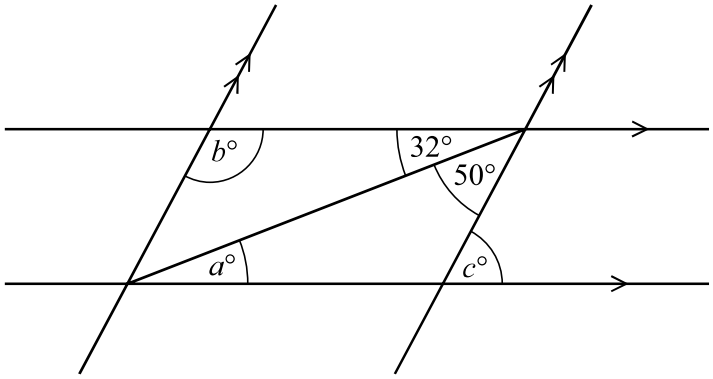
NOT TO SCALE

The diagram shows an isosceles triangle.

Find the value of x.

$x =$ ..... [2]

(b)



NOT TO SCALE

The diagram shows two pairs of parallel lines.

Find the value of a, the value of b and the value of c.

$a =$ .....

$b =$ .....

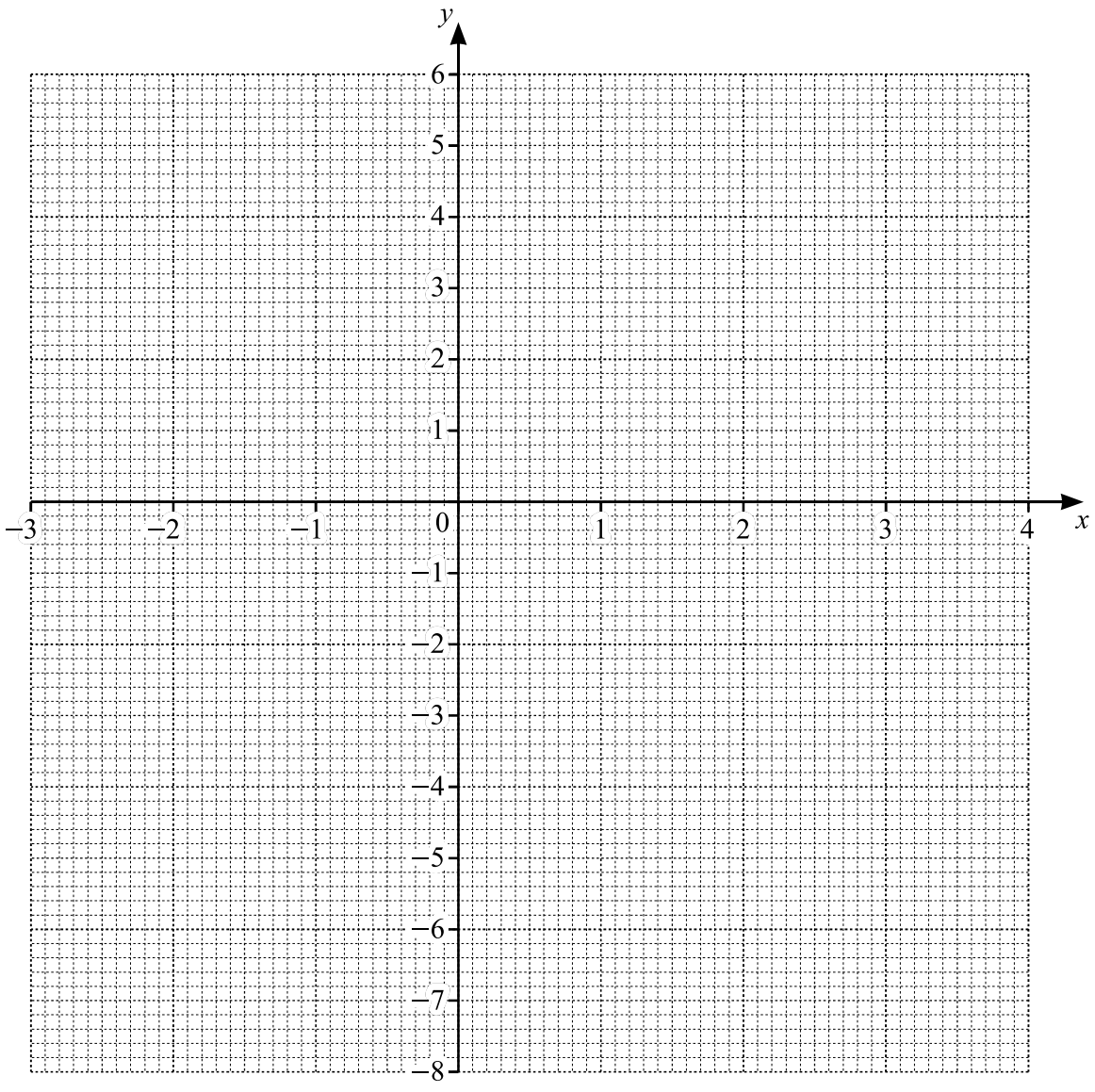
$c =$ .....
[3]

18 **(a)** Complete the table of values for $y = -x^2 + x + 5$.

x	–3	–2	–1	0	1	2	3	4
y		–1	3			3		

[3]

(b) On the grid, draw the graph of $y = -x^2 + x + 5$ for $-3 \leqslant x \leqslant 4$.

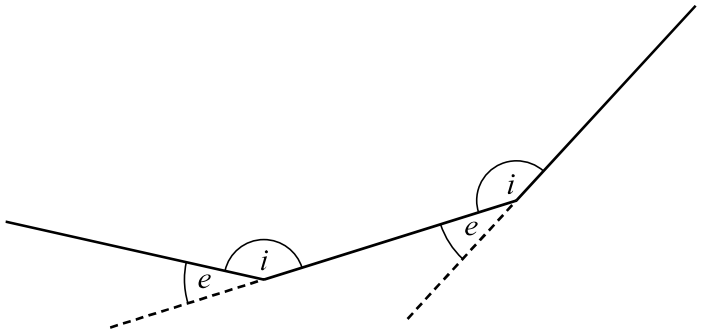


[4]

(c) Write down the coordinates of the highest point of the graph.

(..... , ...) [1]

19 The diagram shows part of a regular polygon.



NOT TO SCALE

e is an exterior angle.
i is an interior angle.

The ratio $e : i = 2 : 13$.

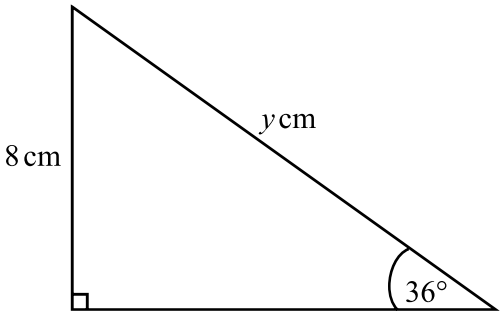
(a) Work out angle *e*.

..... [3]

(b) Work out the number of sides of this regular polygon.

..... [1]

20



NOT TO SCALE

Calculate the value of y.

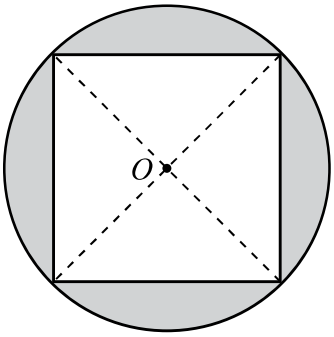
$y =$ ..... cm [3]

21 Roberto buys a toy for \$5.00.
He then sells it for \$4.60.

Calculate his percentage loss.

..... % [2]

22



NOT TO SCALE

The diagram shows a square with vertices on the circumference of a circle, centre O.
The radius of the circle is 6 cm.

Work out the shaded area.

..... cm^2 [5]

23 Expand and simplify.

$(x - 3)(x + 3)$

..... [2]

24 Rovers, United and City are football teams.

Rovers scored x goals.
United scored 8 goals more than Rovers.
City scored 3 goals less than twice the number of goals scored by Rovers.

The three teams scored a total of 117 goals.

Write down and solve an equation to find the value of x.

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

BLANK PAGE

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0580/04**

Paper 4 Calculator (Extended) **For examination from 2025**

PRACTICE PAPER **2 hours**

You must answer on the question paper.

You will need: Geometrical instruments

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 scientific 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 100.
- The number of marks for each question or part question is shown in brackets [ ].

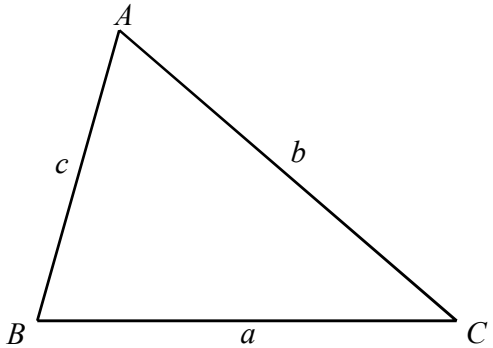
This document has **18** pages.

[Turn over

List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

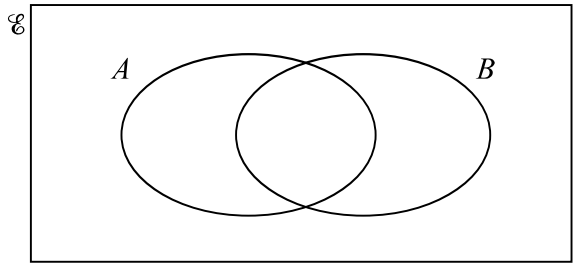
$$\text{Area} = \frac{1}{2}ab\sin C$$

1 $y = mx + c$

Find the value of y when $m = -3$, $x = -2$ and $c = -8$.

$y =$ ..... [2]

2



On the Venn diagram, shade the region $A \cap B$. [1]

3 In triangle ABC, $BC = 7.6$ cm and $AC = 6.2$ cm.

Using a ruler and compasses only, construct triangle ABC.
Leave in your construction arcs.
The side AB has been drawn for you.

[2]

4 Write 2^{-4} as a decimal.

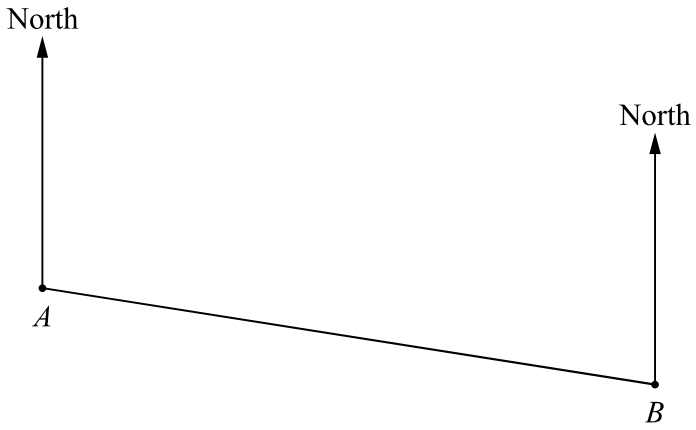
..... [1]

5 Simplify.

$$\frac{p}{2q} \times \frac{4pq}{t}$$

..... [2]

6



The bearing of B from A is 105°.

Find the bearing of A from B.

..... [2]

7 Solve the equation.

$$\frac{1-x}{3} = 5$$

$x =$ ..... [2]

8 A train of length 105 m takes 11 seconds to pass completely through a station of length 225 m.

Calculate the speed of the train in km/h.

..... km/h [3]

9 Divide \$24 in the ratio 7 : 5.

\$..... : \$..... [2]

10 Write \$24.60 as a fraction of \$2870.
Give your answer in its simplest form.

..... [2]

11 In a sale the original prices are reduced by 15%.

(a) Calculate the sale price of a book that has an original price of \$12.

\$ ..... [2]

(b) Calculate the original price of a jacket that has a sale price of \$38.25 .

\$ ..... [2]

12 **(a)** Dean invests \$500 for 10 years at a rate of 1.7% per year simple interest.

Calculate the total interest earned during the 10 years.

\$ ..... [2]

(b) Ollie invests \$200 at a rate of 0.0035% **per day** compound interest.

Calculate the value of Ollie's investment at the end of 1 year. [1 year = 365 days.]

\$ ..... [2]

13 Simplify.

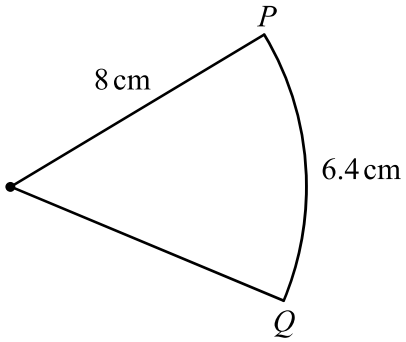
(a) $(5x^4)^3$

..... [2]

(b) $\left(256x^{256}\right)^{\frac{3}{8}}$

..... [2]

14



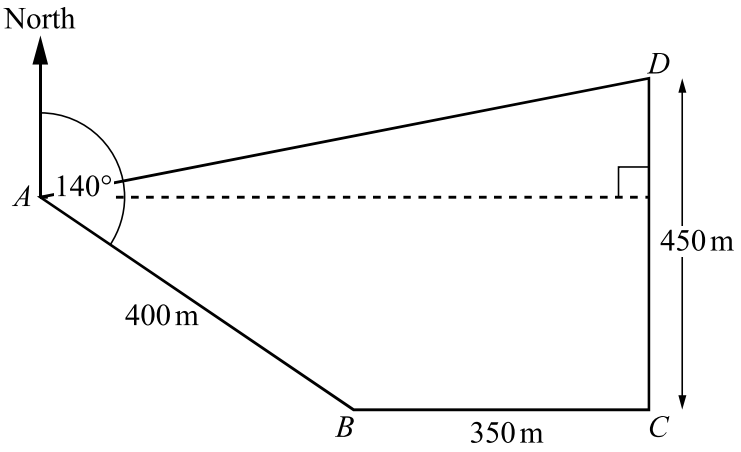
NOT TO SCALE

The diagram shows a sector of a circle of radius 8 cm.
The length of the arc PQ is 6.4 cm.

Find the area of the sector.

..... cm^2 [4]

15



NOT TO SCALE

The diagram shows a field *ABCD*.
The bearing of *B* from *A* is 140°.
C is due east of *B* and *D* is due north of *C*.
AB = 400 m, *BC* = 350 m and *CD* = 450 m.

(a) Show that the bearing of *D* from *B* is 37.9°, correct to 1 decimal place.

..... [2]

(b) Calculate the distance from D to A.

..... m [6]

(c) Jono runs around the field from A to B, B to C, C to D and D to A.
He runs at a speed of 3 m/s.

Calculate the total time Jono takes to run around the field.
Give your answer in minutes and seconds, correct to the nearest second.

..... min ..... s [4]

16 The speed of each of 200 cars passing a building is measured.
The table shows the results.

Speed (v km/h)	$0 < v \leqslant 20$	$20 < v \leqslant 40$	$40 < v \leqslant 45$	$45 < v \leqslant 50$	$50 < v \leqslant 60$	$60 < v \leqslant 80$
Frequency	16	34	62	58	26	4

(a) Calculate an estimate of the mean.

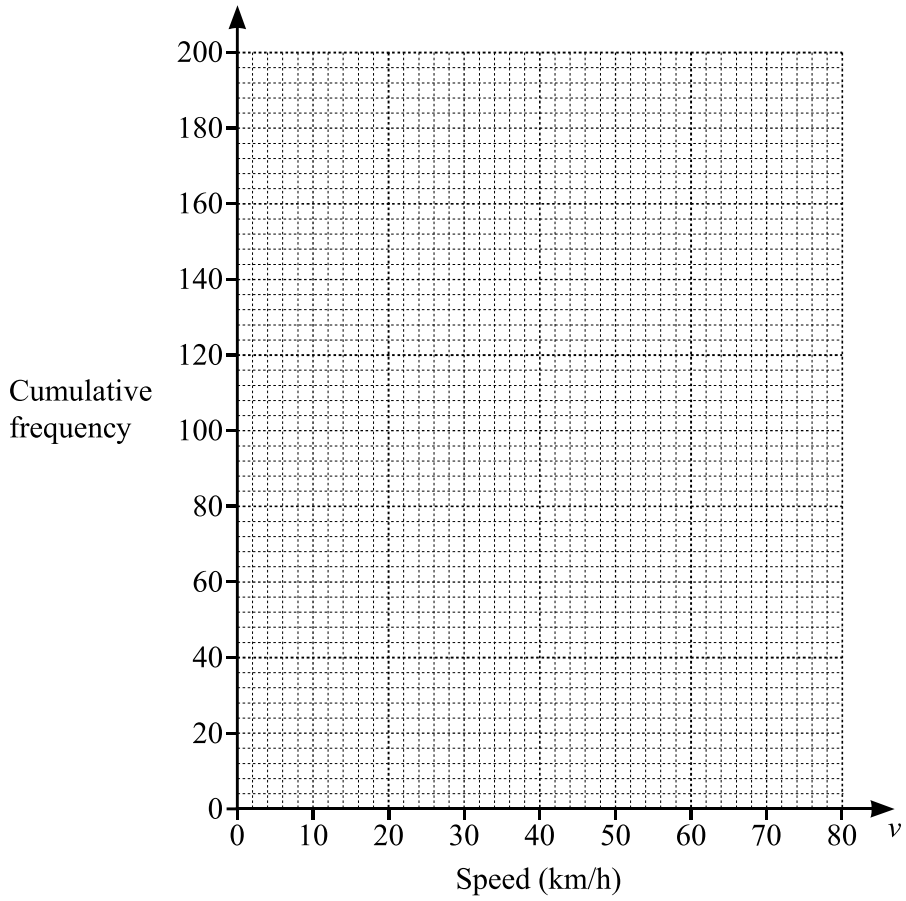
..... km/h [4]

(b) **(i)** Use the frequency table to complete the cumulative frequency table.

Speed (v km/h)	$v \leqslant 20$	$v \leqslant 40$	$v \leqslant 45$	$v \leqslant 50$	$v \leqslant 60$	$v \leqslant 80$
Cumulative frequency	16	50			196	200

[1]

(ii) On the grid, draw a cumulative frequency diagram.



[3]

(iii) Use your diagram to find an estimate of the upper quartile.

..... km/h [1]

(c) Two of the 200 cars are chosen at random.

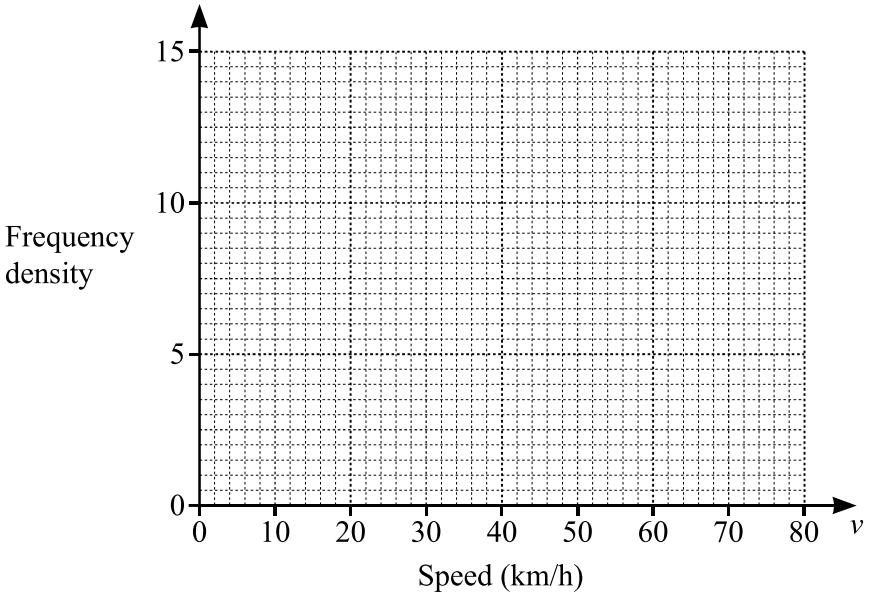
Find the probability that they both have a speed greater than 50 km/h.

..... [2]

(d) A new frequency table is made by combining intervals.

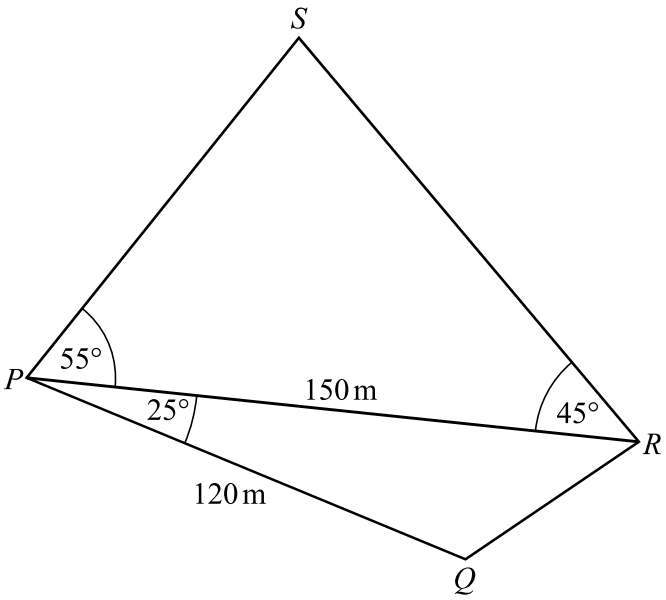
Speed (v km/h)	$0 < v \leqslant 40$	$40 < v \leqslant 50$	$50 < v \leqslant 80$
Frequency	50	120	30

On the grid, draw a histogram to show the information in this table.



[3]

17



NOT TO SCALE

The diagram shows two triangles.

(a) Calculate QR.

$QR =$ ..... m [3]

(b) Calculate RS.

$RS =$ ..... m [4]

(c) Calculate the total area of the two triangles.

..... m^2 [3]

18 **(a)** Complete the square for $x^2 + 8x - 9$.

..... [2]

(b) Use your answer to **part (a)** to solve the equation $x^2 + 8x - 9 = 0$.

$x =$ ..... or $x =$ ..... [2]

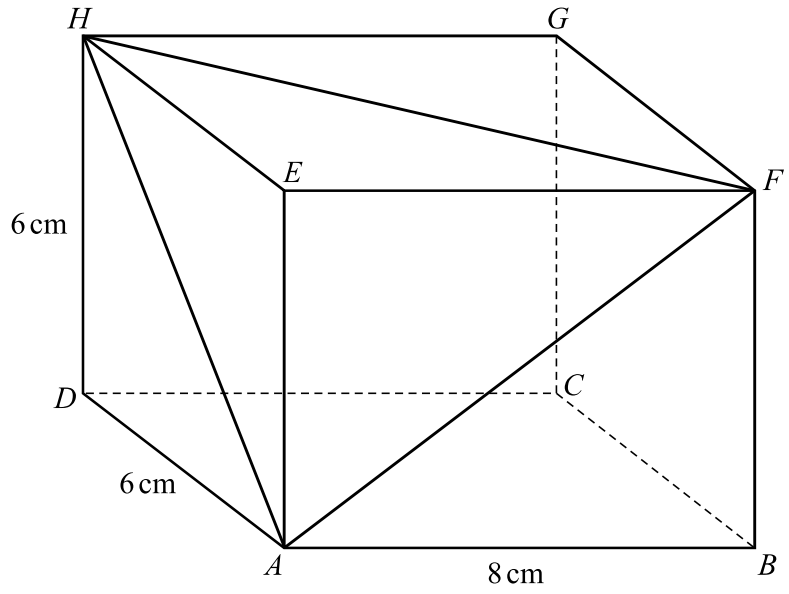
19 The solutions of the equation $x^2 + bx + c = 0$ are $\frac{-7+\sqrt{61}}{2}$ and $\frac{-7-\sqrt{61}}{2}$.

Find the value of b and the value of c.

$b =$ .....

$c =$ .....
[3]

20



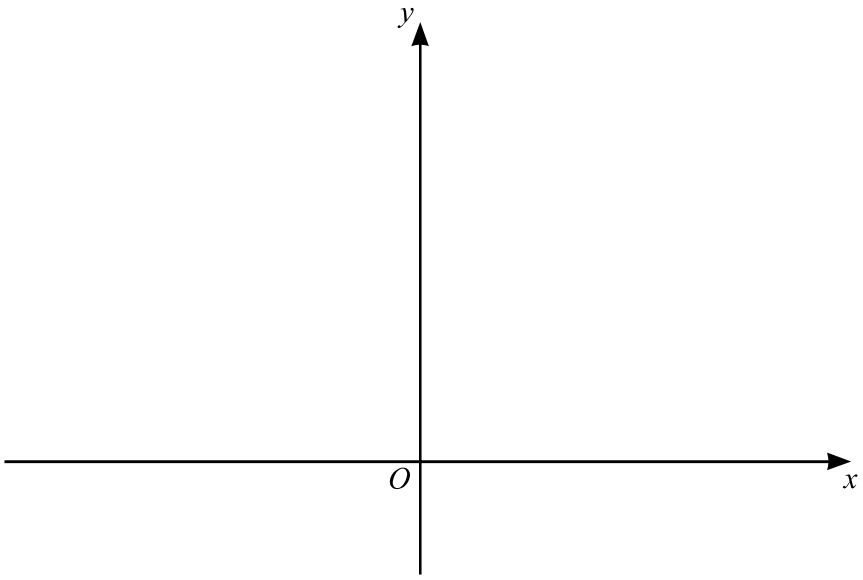
NOT TO SCALE

The diagram shows a cuboid.
$AB = 8$ cm, $AD = 6$ cm and $DH = 6$ cm.

Calculate angle HAF.

Angle HAF = ... [6]

21



(a) On the diagram,

(i) sketch the graph of $y = (x - 1)^2$ [2]

(ii) sketch the graph of $y = \frac{1}{2}x + 1$. [2]

(b) The graphs of $y = (x - 1)^2$ and $y = \frac{1}{2}x + 1$ intersect at A and B.

Find the length of AB.

$AB =$ ..... [7]

22 Simplify.

$$\frac{2x^2 + x - 15}{ax + 3a - 2bx - 6b}$$

..... [5]