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CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

3404728137

MATHEMATICS **0580/42**

Paper 4 Calculator (Extended) **May/June 2026**

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. Do **not** use correction fluid or tape.
- 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.

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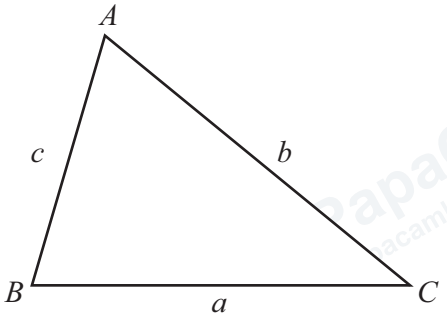
List of formulas

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,



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

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

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

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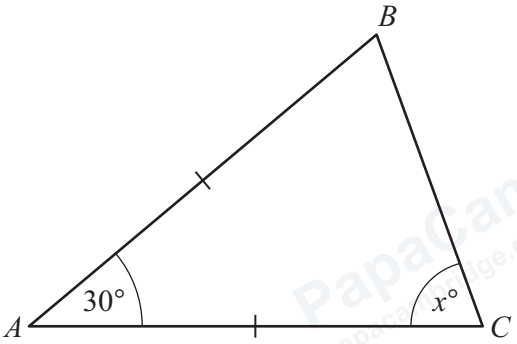

NOT TO SCALE

Triangle ABC is isosceles with $AB = AC$.

Find the value of x.

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

2 A librarian records the number of books borrowed by each of 40 students.
The frequency table shows the results.

number of books	0	1	2	3	4	5
frequency	5	14	10	8	1	2

(a) Find the mode.

..... [1]

(b) Find the median.

..... [1]

(c) Calculate the mean.

..... [3]

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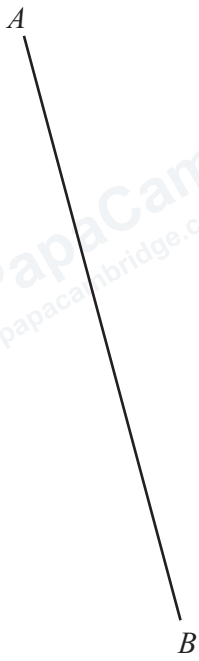

In triangle ABC, $AC = 10\,\text{cm}$ and $BC = 8.5\,\text{cm}$.

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

4 A television costs \$1260.
Liesl pays a deposit of 35% of the cost of the television.
She then pays monthly payments of \$45.50 for the remaining cost of the television.

Find the number of monthly payments that Liesl pays.

..... [3]

5 P is the point $(-3, 5)$ and $\overrightarrow{PQ}$ is $\begin{pmatrix} 8 \\ -3 \end{pmatrix}$.

Find the coordinates of the point Q.

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

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6 A semicircle has a diameter of 15.8 cm.

Calculate the perimeter of the semicircle.

..... cm [3]

7 **(a)** Tom invests $2500 at a rate of 4.4% per year compound interest.

Calculate the value of the investment at the end of 6 years.

$ ..... [2]

(b) Behnaz invests $4500 at a rate of r% per year compound interest.
At the end of 5 years, the value of the investment is $5420.

Calculate the value of r.

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

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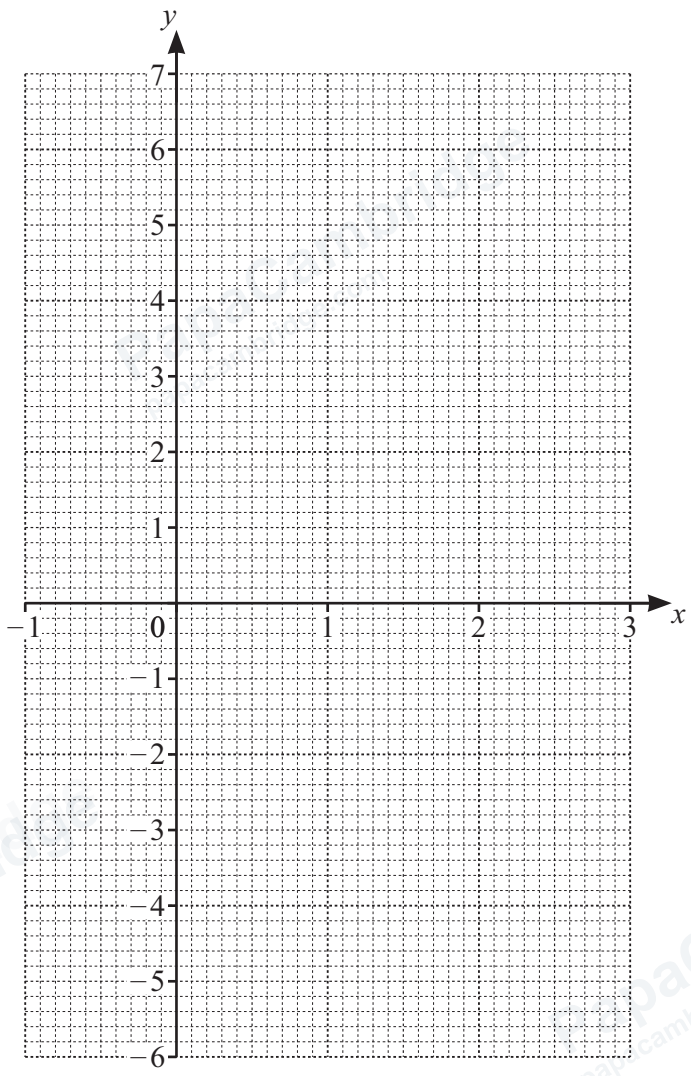
8 The table shows some values, correct to 1 decimal place, for $y = x^3 - 2x^2 - 2$.

x	–1	–0.5	0	0.5	1	1.5	2	2.5	3
y		–2.6	–2	–2.4		–3.1	–2		7

(a) Complete the table. [3]

(b) On the grid, draw the graph of $y = x^3 - 2x^2 - 2$ for $-1 \leqslant x \leqslant 3$.



[4]

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(c) By drawing a suitable straight line, solve the equation $x^3 - 2x^2 - x + 1 = 0$.

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

9 Solve the equation.

$$\frac{w+8}{4} = \frac{2w-3}{3}$$

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

10 Yasmin collects coins.
10% of her coins are gold.
25% of the **remaining** coins are silver.
The other 54 coins are copper.

(a) Calculate the number of silver coins.

..... [2]

(b) Calculate the total number of coins.

..... [2]

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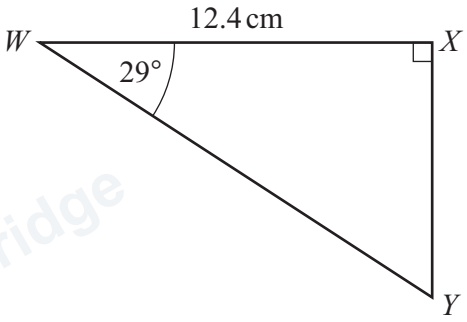

NOT TO SCALE

Calculate XY.

..... cm [2]

12 A scientist records the mass of a radioactive substance at the same time each day.
On 10 January, the scientist records a mass of 150 grams.
Each day, the mass of the substance decreases by 5%.

Find the date on which the scientist first records a mass of less than 96 grams.

..... [3]

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13 y is inversely proportional to x.
When $x = 6$, $y = 10.5$.

Find y when $x = 9$.

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

14 $\cos x = 0.41$

Find the reflex angle x.

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

15 Write $\frac{8}{x+2} + \frac{3}{x-4}$ as a single fraction in its simplest form.

..... [3]

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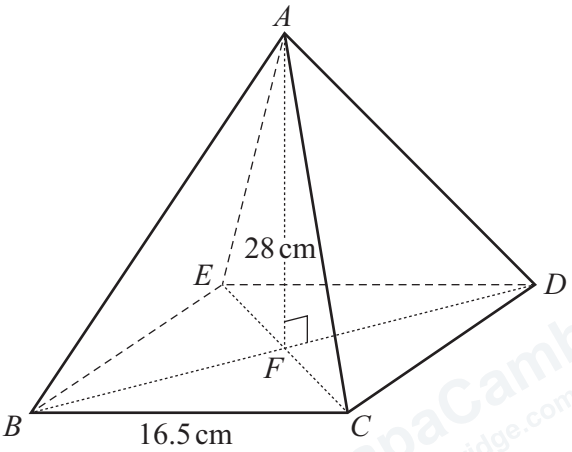

NOT TO SCALE

ABCDE is a square-based pyramid.
EC and *BD* intersect at *F*.
AF is perpendicular to the base *BCDE*.

$BC = 16.5\,\text{cm}$ and $AF = 28\,\text{cm}$.

(a) Write down the number of planes of symmetry of the pyramid.

..... [1]

(b) Calculate the volume of the pyramid.

..... cm^3 [2]

(c) Calculate *AB*.

..... cm [4]

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(d) Calculate the angle between AB and the base $BCDE$.

..... [2]

17 $f(x) = 20 - 3x$ $g(x) = \frac{64}{2^x}$ $h(x) = 7 + 2x$

(a) Find $f(4)$.

..... [1]

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

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

(c) Find $gg(5)$.

..... [2]

(d) Solve the equation $g^{-1}(x) = 8$.

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

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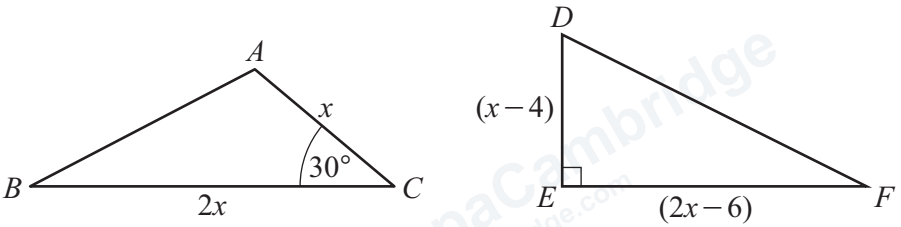
18 In this question, all lengths are in centimetres.



NOT TO SCALE

(a) Show that the area of triangle ABC is $\frac{1}{2}x^2\,\text{cm}^2$.

[1]

(b) The area of triangle ABC is equal to the area of triangle DEF.

Show that $x^2 - 14x + 24 = 0$.

[3]

(c) By factorising and solving $x^2 - 14x + 24 = 0$, find the area of triangle ABC.

..... cm^2 [4]

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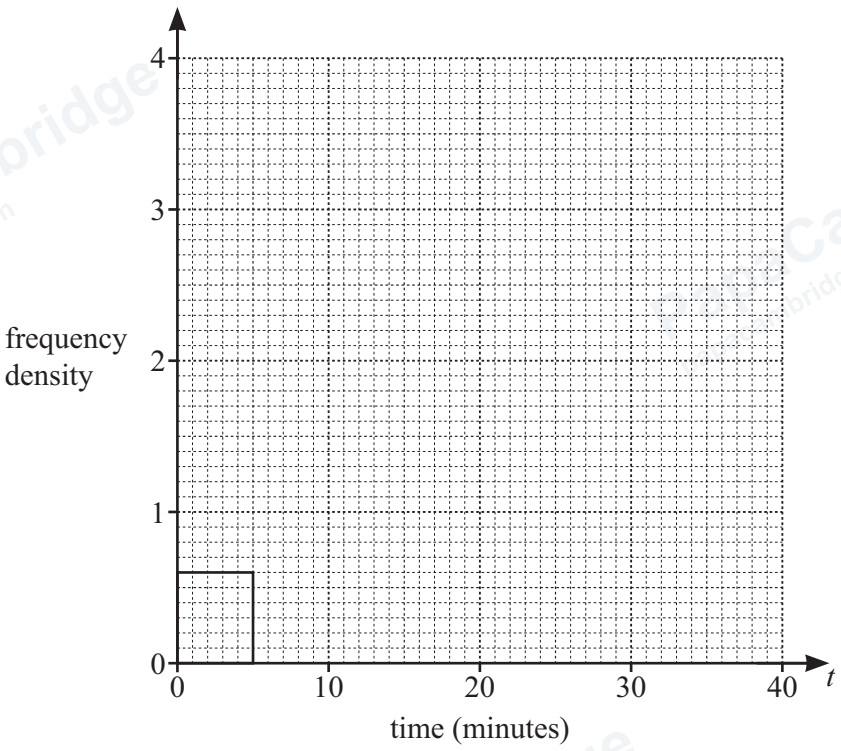
19 The time spent in a shop by each of 40 customers is recorded.
The table shows the results.

time (t minutes)	$0 < t \leqslant 5$	$5 < t \leqslant 10$	$10 < t \leqslant 20$	$20 < t \leqslant 40$
frequency	3	18	13	6

(a) Calculate an estimate of the mean time.

..... minutes [4]

(b) Complete the histogram to show the information in the frequency table.



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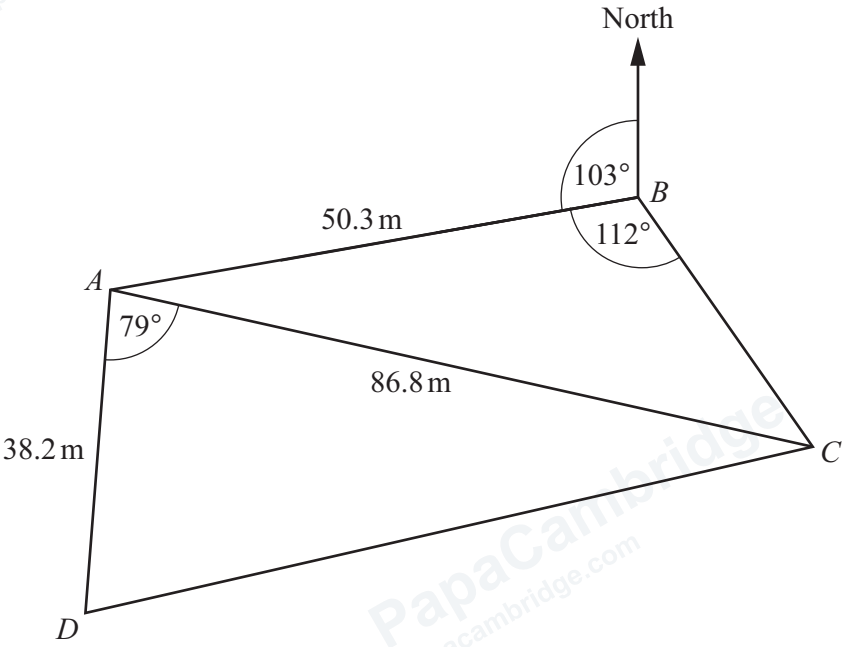

NOT TO SCALE

The diagram shows a field *ABCD* with a straight footpath from *A* to *C*.

(a) Find the bearing of *A* from *B*.

..... [1]

(b) Calculate the distance *CD*.

..... m [3]

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(c) Calculate the shortest distance from B to AC.

..... m [6]

21 The volume of a solid metal cuboid is 22 cm^3, correct to the nearest cm^3.
The mass of the metal cuboid is 140 grams, correct to the nearest 10 grams.

Calculate the lower bound of the density of the metal.
[Density = mass ÷ volume]

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

Question 22 is on the back page.

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22 Write $\frac{8x^2+24x}{2x^2-18}$ as a single fraction in its simplest form.

..... [3]

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