Cambridge Assessment International Education

Cambridge IGCSE™

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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 [ ].

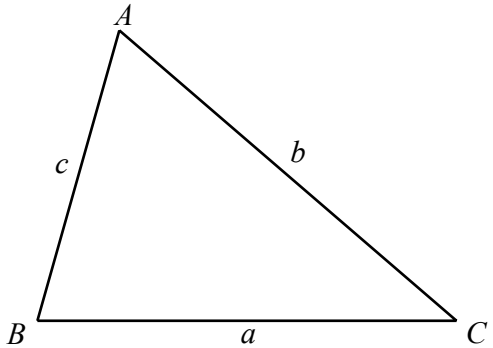
This document has **18** pages. Any blank pages are indicated.

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

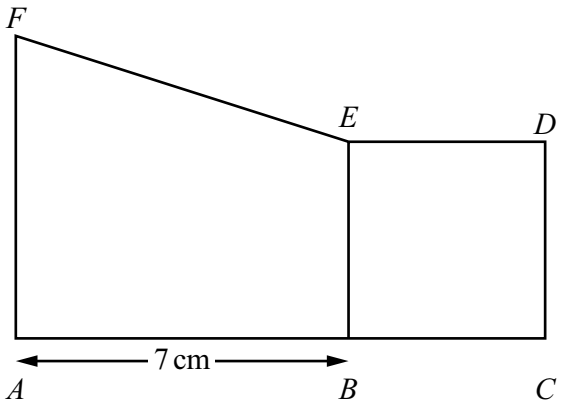
..... [2]

(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]

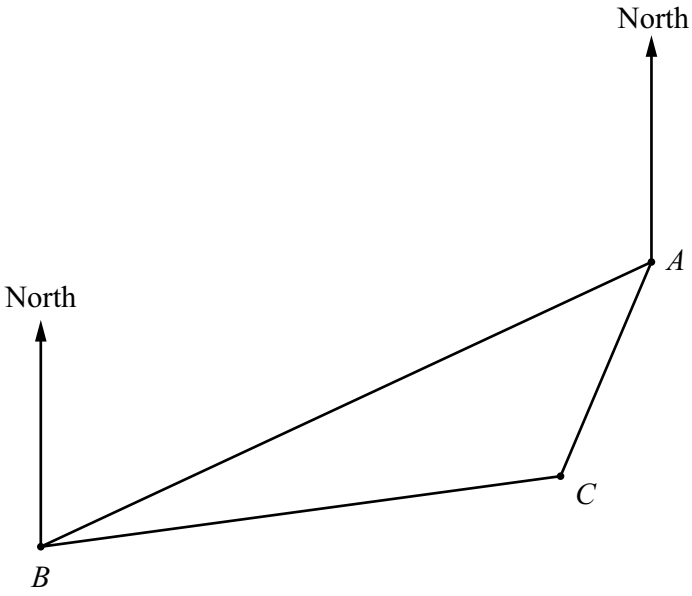
8 **(a)** On a map, the distance between two cities is 7.3 cm.

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.

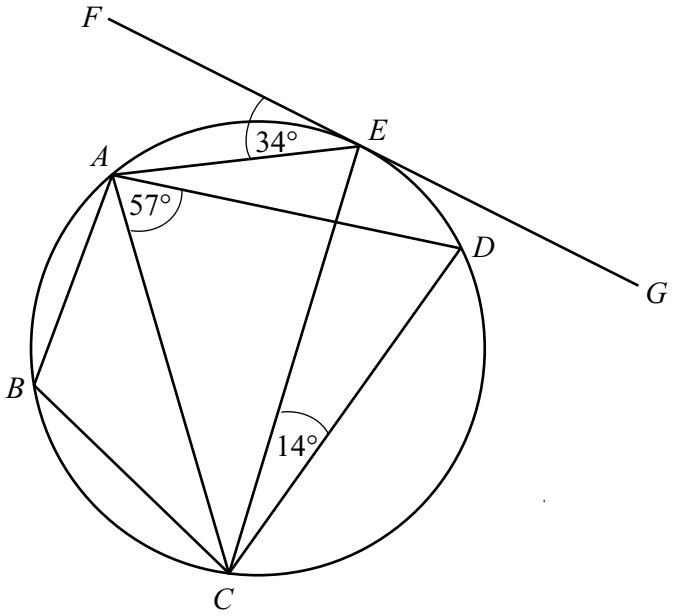
..... [1]

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]

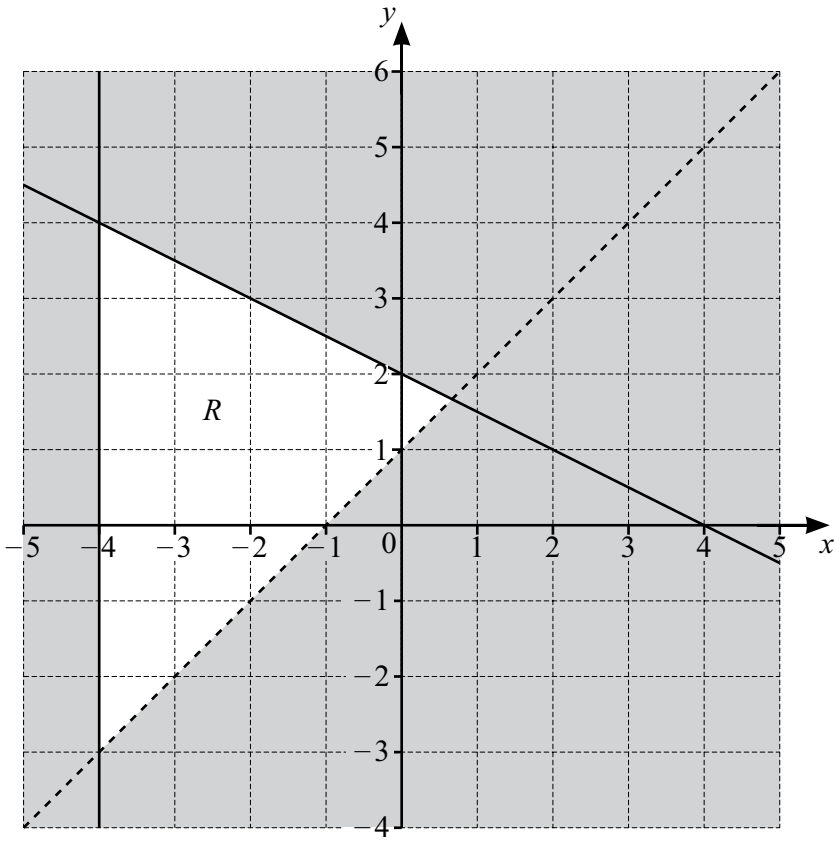
(b) angle ADC

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]

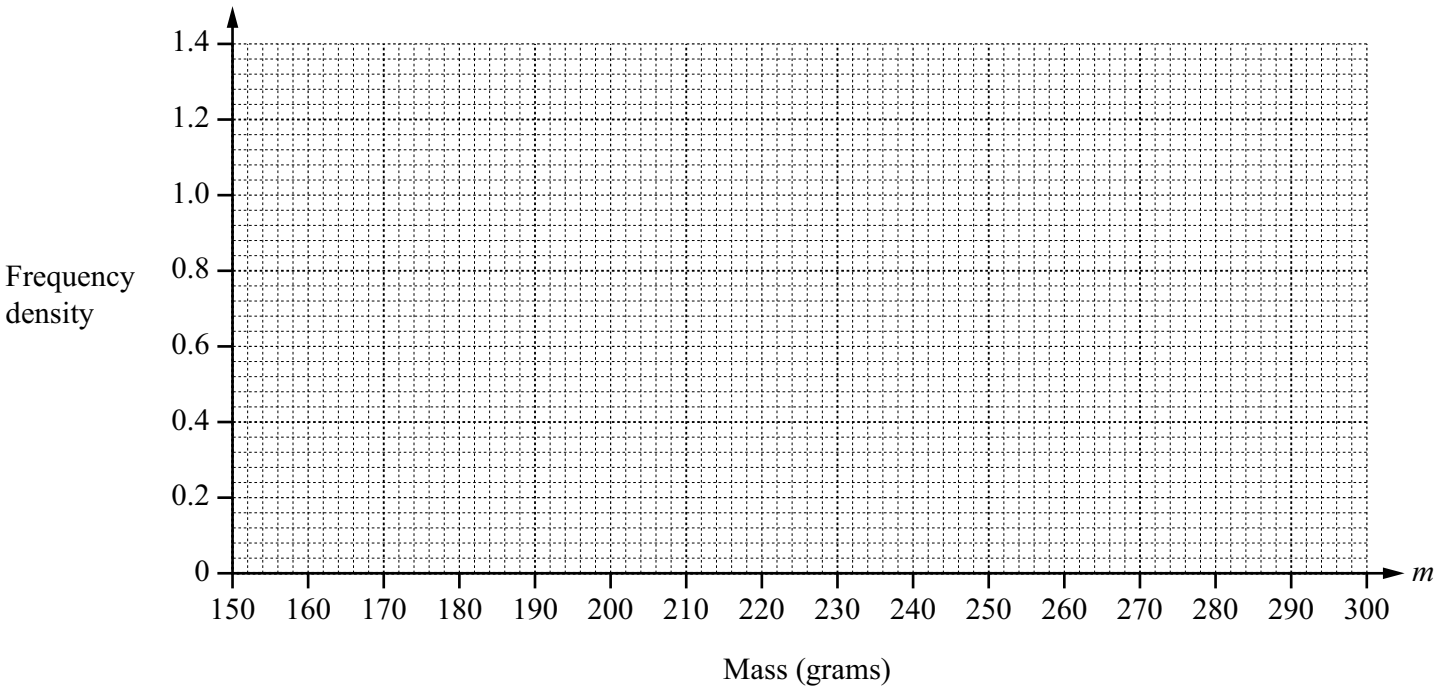
16 Tina records the mass of each of 120 apples.
The results are shown in the table.

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.

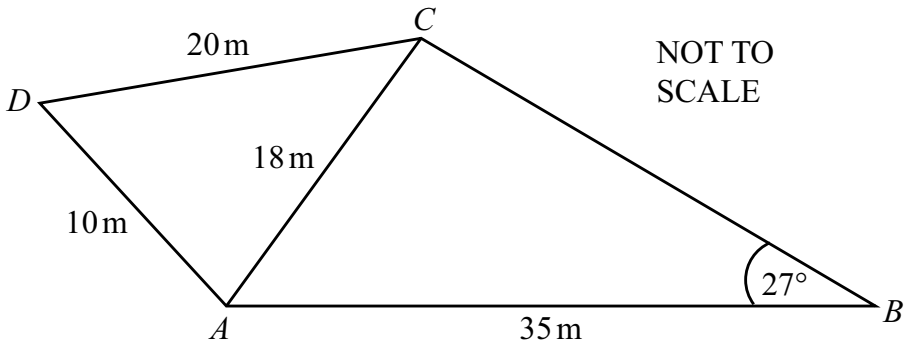
..... [1]

(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.

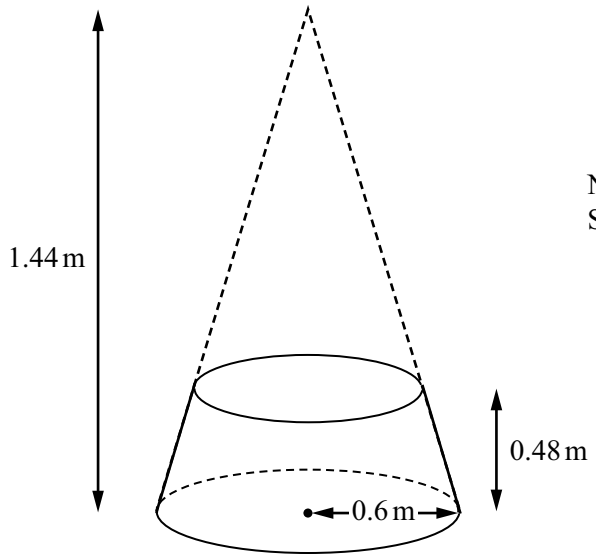
..... % [3]

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]

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