Cambridge Assessment International Education

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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

Paper 2 Non-calculator (Extended) **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. You will be given marks for correct methods even if your answer is incorrect.

INFORMATION

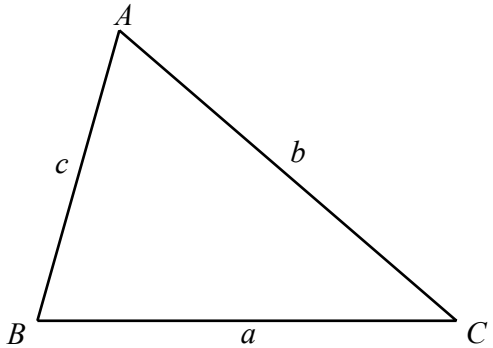
- The total mark for this paper is 75.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **14** pages.

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.

(a) $1 + 2 - 3 \times 4$

..... [1]

(b) $(0.6)^2$

..... [1]

2 Write the fraction $\frac{16}{60}$ in its simplest form.

..... [1]

3 Factorise.

$x^2 - 4x$

..... [1]

4 Convert $430\,\text{cm}^2$ into m^2.

..... m^2 [1]

5

25	26	27	28	29	30

From this list, write down a prime number.

..... [1]

6 Write 4735.6 correct to 2 significant figures.

..... [1]

7 Expand and simplify.

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

..... [2]

(b) $(3x - y)(x + 2y)$

..... [2]

8 The mean of five numbers is 16.
When two extra numbers are included, the mean of the seven numbers is 20.

Find the mean of the two extra numbers.

..... [2]

9 Solve the simultaneous equations.

$$4x + 3y = 0$$
$$2x - y = 5$$

$x =$ .....

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

10 **(a)** A regular polygon has 12 sides.

Work out the sum of the interior angles of the polygon.

..... [1]

(b) The interior angle of a regular polygon is $x°$.

Find the number of sides of this polygon in terms of x.

..... [2]

11 Alex drives 40 km from home to work at an average speed of 50 km/h.
He leaves home at 07 45.

Find the time he arrives at work.

..... [3]

12 Find the next term and the nth term in each of the following sequences.

(a) 82, 77, 72, 67, 62, ...

next term = ...

nth term = ...
[3]

(b) 3, –6, 12, –24, 48, ...

next term = ...

nth term = ...
[3]

13 Write each number in standard form.

(a) 58 000

..... [1]

(b) 0.008 09

..... [1]

14 Find the highest common factor (HCF).

(a) 24 56 72

..... [2]

(b) x^3y^4 x^2y^5 x^4y^2

..... [2]

15 Two fair dice are each numbered 1, 2, 3, 4, 5, 6.
These dice are rolled and the **total** score is recorded.

Find the probability that the total score is 3.

..... [2]

16 In triangle ABC, $AB = \sqrt{48}$ cm, $AC = 8$ cm and angle $ABC = 90°$.

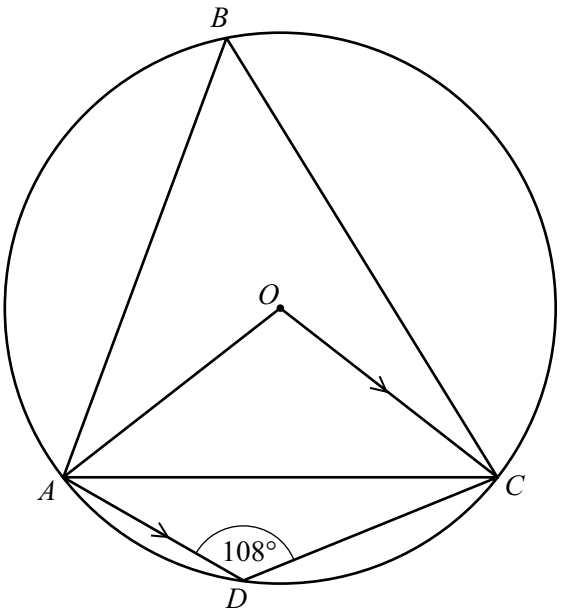
(a) Find BC.

$BC =$ ..... cm [3]

(b) Find angle BAC.

Angle $BAC =$ ..... [2]

17



NOT TO SCALE

A, *B*, *C* and *D* are points on a circle, centre *O*.
AD is parallel to *OC* and angle *ADC* = 108°.

Find the value of

(a) angle *ABC*

Angle *ABC* = ... [1]

(b) angle *AOC*

Angle *AOC* = ... [1]

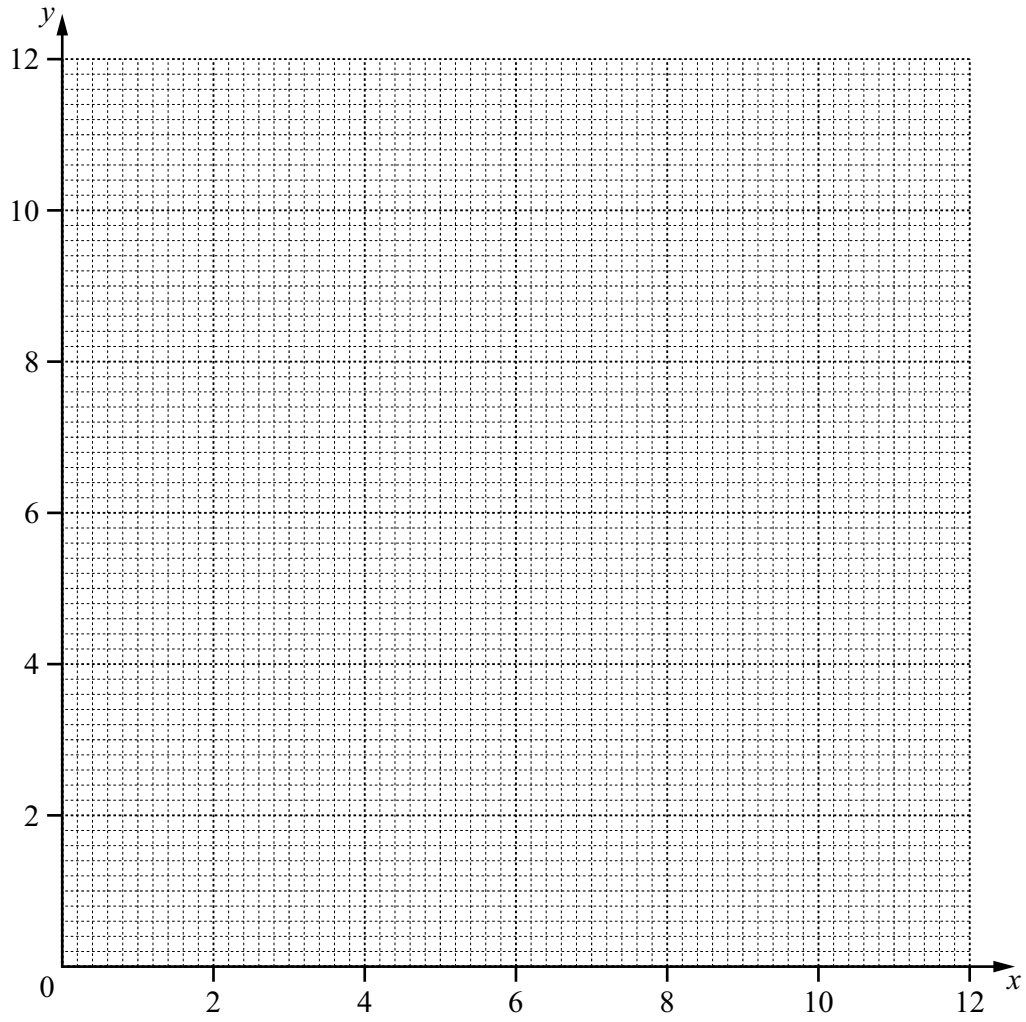
(c) angle *OCA*

Angle *OCA* = ... [1]

(d) angle *DAC*.

Angle *DAC* = ... [1]

18



On the grid, label the region R containing the points which satisfy these three inequalities.

$x \geqslant 1$ $y \leqslant 12 - 2x$ $4y + 3x \geqslant 36$ [6]

19 Solve.

$$2x^2 - 5x = 7$$

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

20 **(a)** Show that $\left(\sqrt{a} + \sqrt{b}\right)\left(\sqrt{a} - \sqrt{b}\right) = a - b$.

[1]

(b) **(i)** Rationalise the denominator.

$$\frac{1}{\sqrt{7} + \sqrt{6}}$$

..... [1]

(ii) Work out.

$$\frac{1}{\sqrt{9} + \sqrt{8}} + \frac{1}{\sqrt{8} + \sqrt{7}} + \frac{1}{\sqrt{7} + \sqrt{6}} + \frac{1}{\sqrt{6} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{4}}$$

..... [2]

21 A sphere has radius r.
A cone has radius r and vertical height h.
The surface area of the sphere is equal to the **total** surface area of the cone.

Show that $h = k\sqrt{k}\,r$ where k is a constant.

[4]

22 $$\frac{2x-3}{2x+3} - \frac{2x+3}{2x-3} = \frac{ax}{bx^2 - c}$$

Find the values of a, b and c.

$a =$ .....

$b =$ .....

$c =$ .....

[4]

23 The surface area of a cuboid is $2000\,cm^2$ and the volume of the cuboid is $2000\,cm^3$.
The surface area of a similar cuboid is $8000\,cm^2$.

Find the volume of this cuboid.

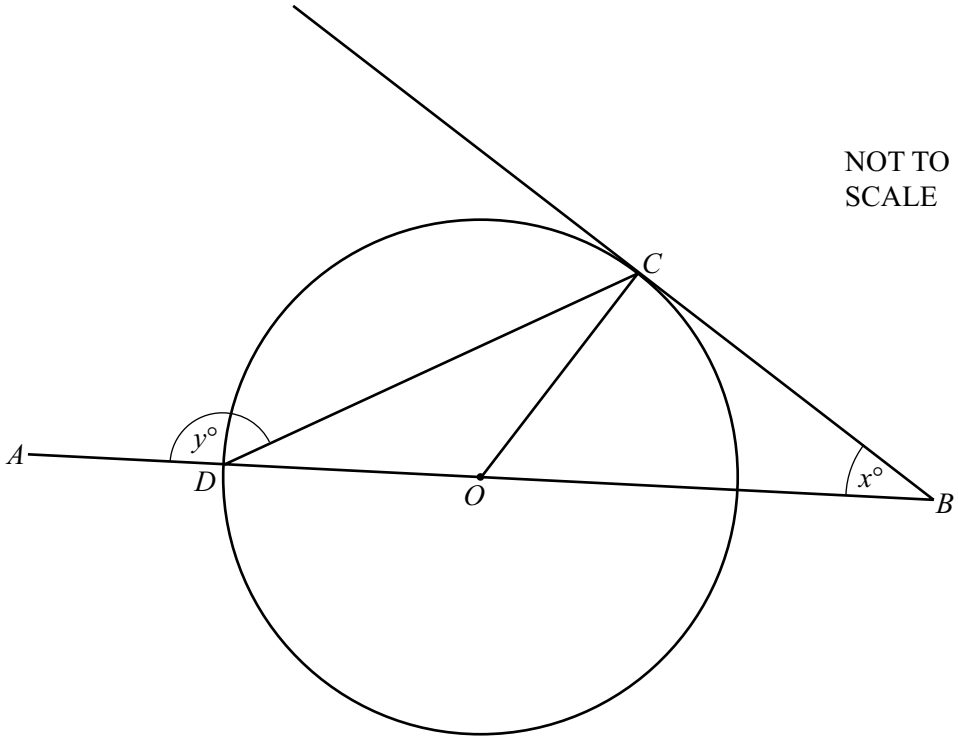
..... cm^3 [3]

24 Two bags each contain only blue balls and red balls.
Bag 1 contains 7 blue balls and 3 red balls.
Bag 2 contains 3 blue balls and 7 red balls.
Maria chooses a ball at random from Bag 1 and puts it into Bag 2.
She then chooses a ball at random from Bag 2 and puts it into Bag 1.

Find the probability that there are now exactly 7 blue balls in Bag 1.

..... [3]

25



The diagram shows a circle, centre O.
$ADOB$ is a straight line.
BC is a tangent to the circle at C.

Find y in terms of x.

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

