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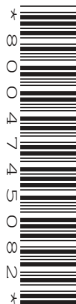


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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/21

Paper 2 Non-calculator (Extended)

May/June 2025

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 **16** pages. Any blank pages are indicated.



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 .

$$V = \frac{1}{3}\pi r^2 h$$

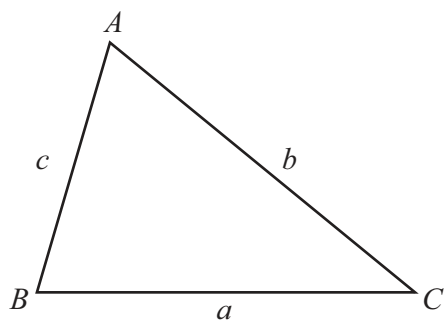
Volume, V , of sphere of radius r .

$$V = \frac{4}{3}\pi r^3$$

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 This is a list of numbers.

3.142

$\sqrt{125}$

125

81

$7\frac{2}{3}$

From this list write down

- (a) a cube number

..... [1]

- (b) an irrational number.

..... [1]

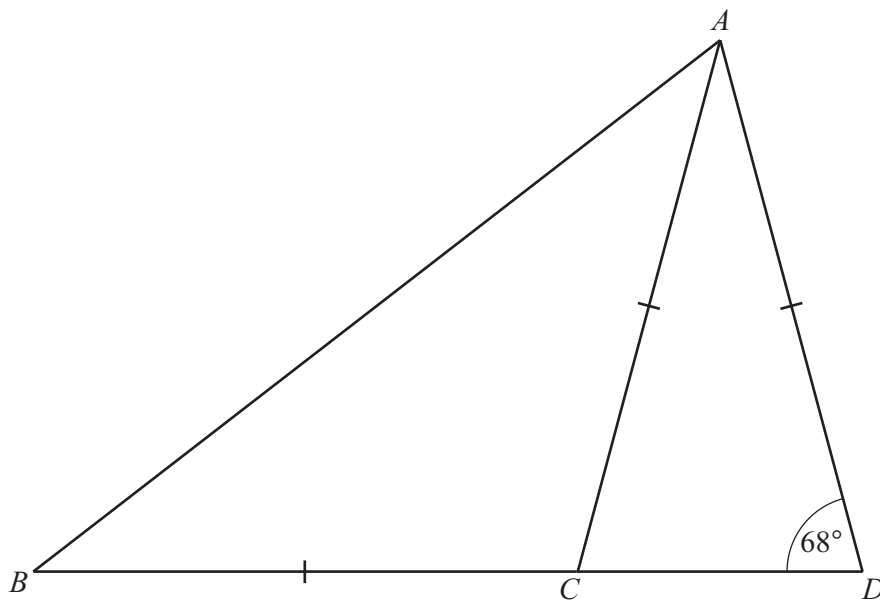
- 2 (a) Write 0.003 094 8 correct to 3 significant figures.

..... [1]

- (b) Write 579 644 358 correct to the nearest million.

..... [1]

3



NOT TO
SCALE

In the diagram $AC = BC = AD$.
 BCD is a straight line.

Find angle BAC .

Angle BAC = [2]

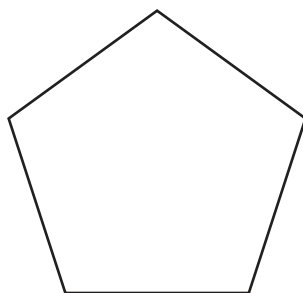




4



4 (a)



Draw all the lines of symmetry of this regular pentagon.

[1]

(b) A quadrilateral has rotational symmetry of order 2 and no lines of symmetry.

Write down the mathematical name of this quadrilateral.

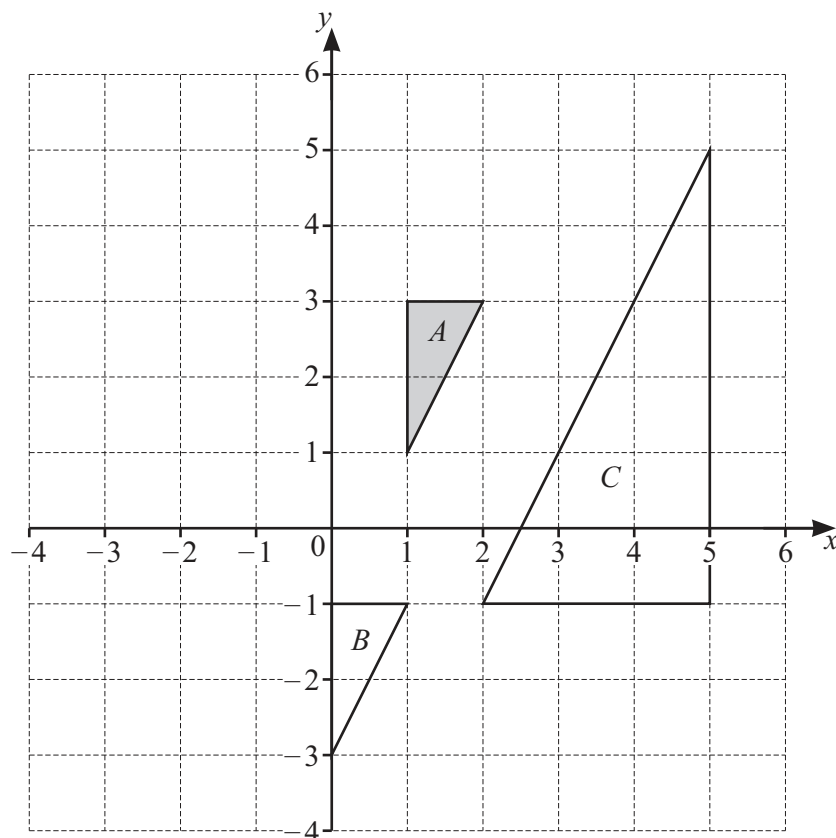
..... [1]

5 Work out $1\frac{3}{7} \times 4\frac{2}{3}$.

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

..... [3]





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

.....
 [2]

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

.....
 [3]

- (c) Rotate triangle A through 90° anticlockwise about $(-1, 1)$.

[2]





6



- 7 The ratio $a : b = 7 : 12$.
The ratio $b : c = 8 : 5$.

Find the ratio $a : b : c$ in its simplest form.

..... : : [2]

- 8 The mean of 9 numbers is 8.
When an extra number is included, the mean is 7.7 .

Find the extra number.

..... [2]

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9 Factorise.

(a) $4x^2y^3 - 6xy^4$

..... [2]

(b) $18p^2 - 2$

..... [2]

10 Work out $4 \times 10^{18} + 3.2 \times 10^{17}$.

Give your answer in standard form.

..... [2]





11 Solve.

$$7 - 3x > 2x - 8$$

..... [2]

12 $P = 2^3 \times 3^a \times 5^b \times 7$ $Q = 2 \times 3^5 \times 7^c$

The highest common factor (HCF) of P and Q is $2 \times 3^4 \times 7$.

The lowest common multiple (LCM) of P and Q is $2^3 \times 3^5 \times 5^2 \times 7$.

Find the values of a , b and c .

$$a = \dots\dots\dots$$

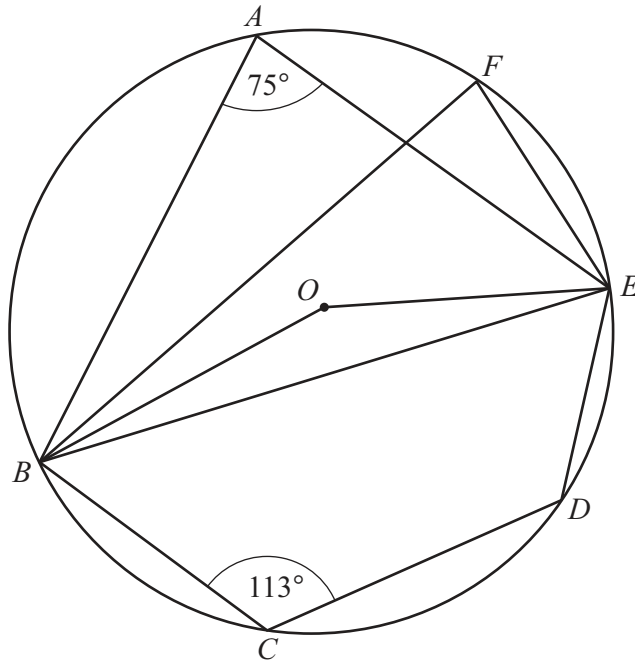
$$b = \dots\dots\dots$$

$$c = \dots\dots\dots$$

[3]



13

NOT TO
SCALE

A, B, C, D, E and F are points on a circle, centre O .

(a) Find angle BFE .

Angle $BFE = \dots\dots\dots$ [1]

(b) Find angle BED .

Angle $BED = \dots\dots\dots$ [1]

(c) Find reflex angle BOE .
Give geometrical reasons for your answer.

Angle $BOE = \dots\dots\dots$ Reasons $\dots\dots\dots$

$\dots\dots\dots$

$\dots\dots\dots$ [3]





10



14 These are the first 5 terms of a sequence.

1 7 17 31 49

(a) Find the next term of the sequence.

..... [1]

(b) Find an expression for the n th term of the sequence.

..... [2]

15 Solve.

$$2x^2 - 5x - 3 = 0$$

$x = \dots\dots\dots$ or $x = \dots\dots\dots$ [3]

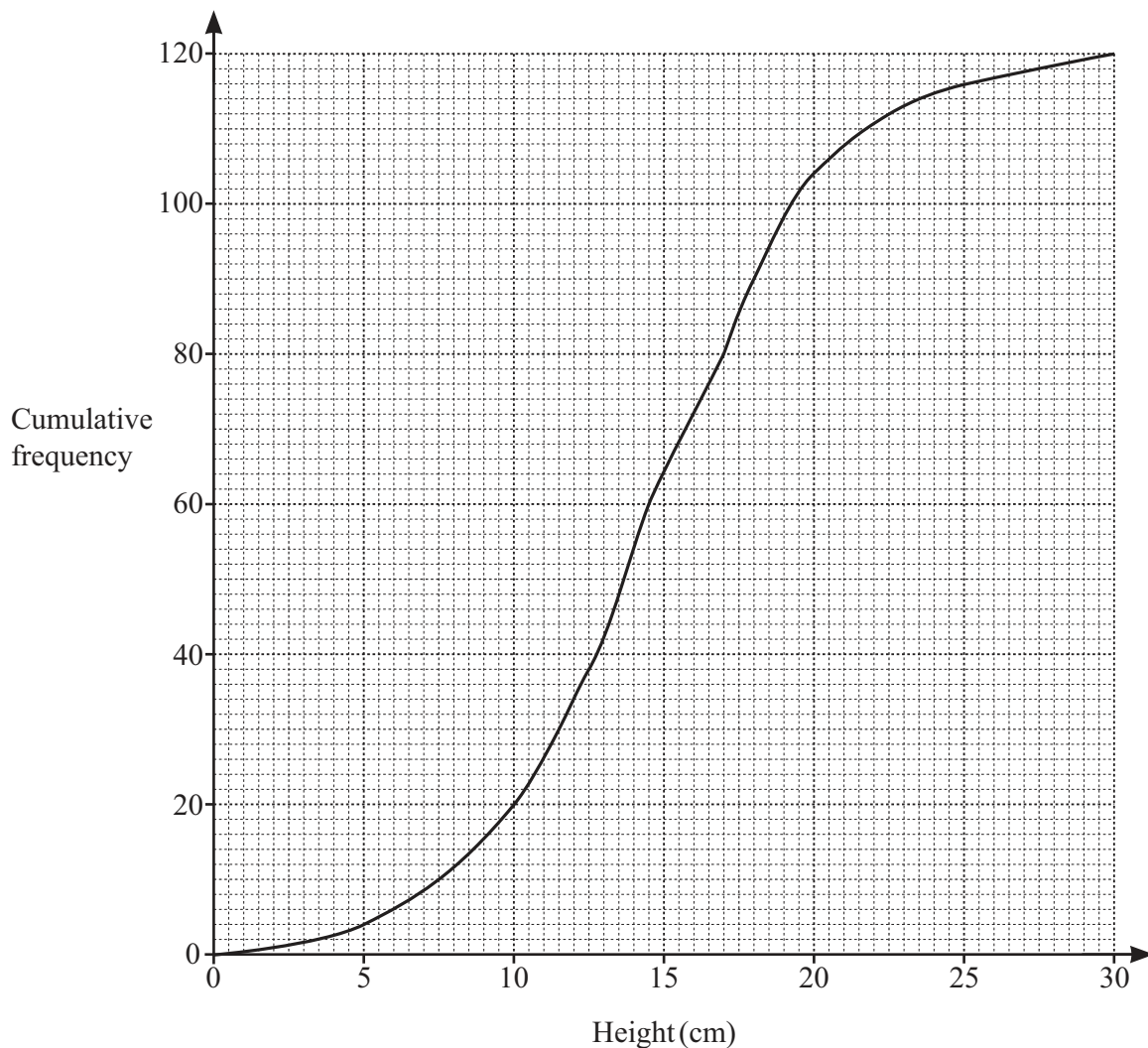
16 A is the point $(-3, 2)$ and B is the point $(5, -8)$.

Find the equation of the perpendicular bisector of AB .

..... [5]



17 The cumulative frequency diagram shows the heights of 120 plants.



Use the cumulative frequency diagram to estimate

(a) the interquartile range

..... cm [2]

(b) the number of plants greater than 20 cm in height.

..... [2]





12



18 (a) $f(x) = 3x - 2$ $g(x) = 5 - x$

(i) Find $f(-4)$.

..... [1]

(ii) Find $g^{-1}(x)$.

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

(iii) Solve $gf(x) = 1$.

..... [3]

(b) $h(x)$ is a function with an inverse function $h^{-1}(x)$.

Find $hh^{-1}(x)$.

..... [1]

19 Expand and simplify.

$(x - 4)(2x + 1)(x + 2)$

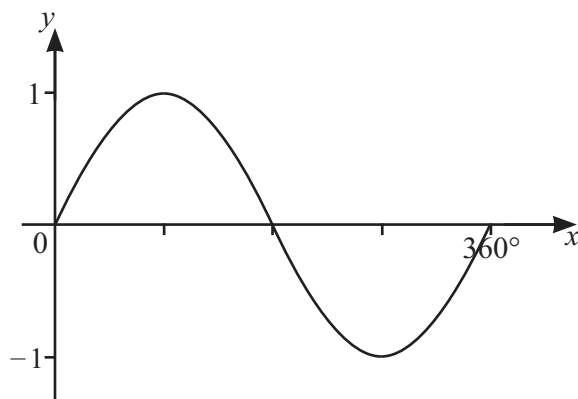
..... [3]



20 (a) Solve $\tan x = \sqrt{3}$ for values of x between 0° and 360° .

..... [2]

(b) This is a sketch of the graph of $y = \sin x$.



Solve $4 \sin x + 3 = 1$ for values of x between 0° and 360° .

..... [3]





- 21 y is inversely proportional to x^3 .
 $y = 1$ when $x = 2$.

(a) Find y in terms of x .

$$y = \dots\dots\dots [2]$$

(b) Find x when $y = 27$.

$$x = \dots\dots\dots [2]$$

- 22 Simplify.

(a) $\sqrt{120} \times \sqrt{27}$

$$\dots\dots\dots [2]$$

(b) $\frac{1}{5 - 2\sqrt{3}}$

$$\dots\dots\dots [2]$$





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