Cambridge Assessment International Education

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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

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

INFORMATION

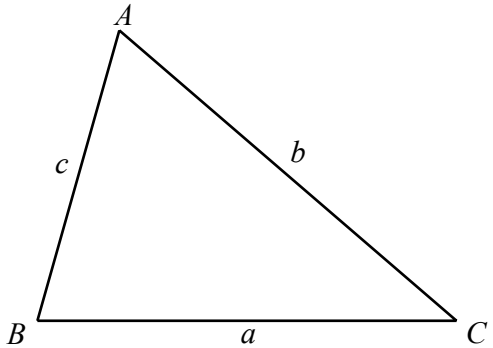
- The total mark for this paper is 75.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages.

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,



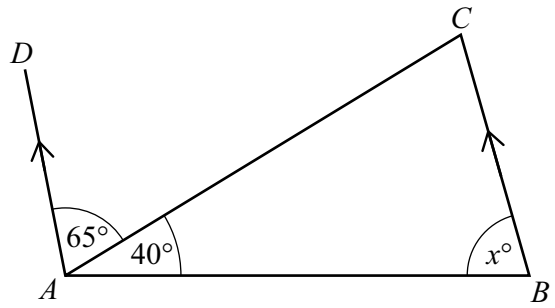
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

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

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

1



NOT TO SCALE

In the diagram, BC is parallel to AD.

Find the value of x.

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

2 Work out $\sqrt{0.0049}$.

..... [1]

3 A quadrilateral has

- exactly 2 lines of symmetry

and

- rotational symmetry of order 2.

Write down the mathematical name of the quadrilateral.

..... [1]

4 Work out $\frac{5}{6} - \frac{3}{4}$.

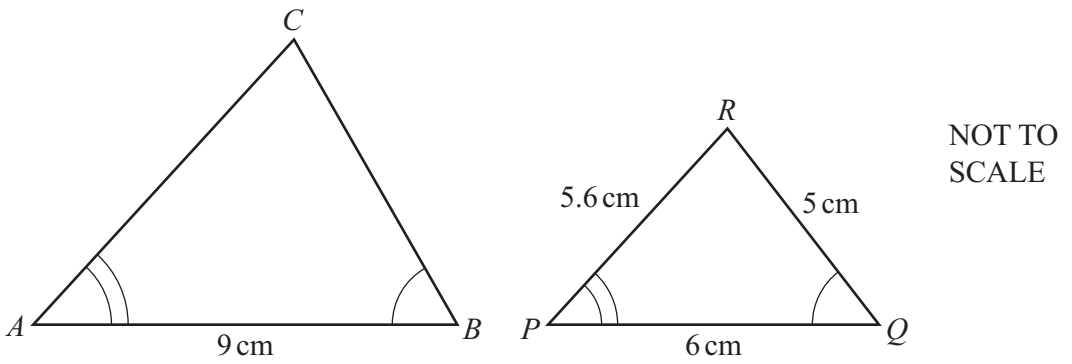
..... [2]

5 Amaya and Dev share some money in the ratio 7 : 5.
Amaya receives $8 more than Dev.

Work out how much Dev receives.

$ ..... [2]

6



Triangles *ABC* and *PQR* are similar.

Work out the length of *AC*.

AC = ... cm [2]

7 In a bookshop, the price of each sports book is $\$x$ and the price of each recipe book is $\$y$.

Jamal buys 5 sports books and 3 recipe books.
The total Jamal pays is \$59.

Katerina buys 10 sports books and 7 recipe books.
The total Katerina pays is \$126.

(a) Use this information to write down two equations in terms of x and y.

.....

.....
[2]

(b) Solve your equations to find the value of x and the value of y.

$x =$ .....

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

(c) Li buys some sports books and recipe books and pays a total of \$37.

Find the number of sports books and the number of recipe books Li buys.

Number of sports books = ...

Number of recipe books = ...
[2]

8 Rohan rolls a biased die 60 times.
The table shows the results.

Score	1	2	3	4	5	6
Frequency	11	9	9	11	8	12

(a) Find

(i) the mode of the scores

..... [1]

(ii) the median score

..... [1]

(iii) the range of the scores

..... [1]

(iv) the interquartile range of the scores.

..... [2]

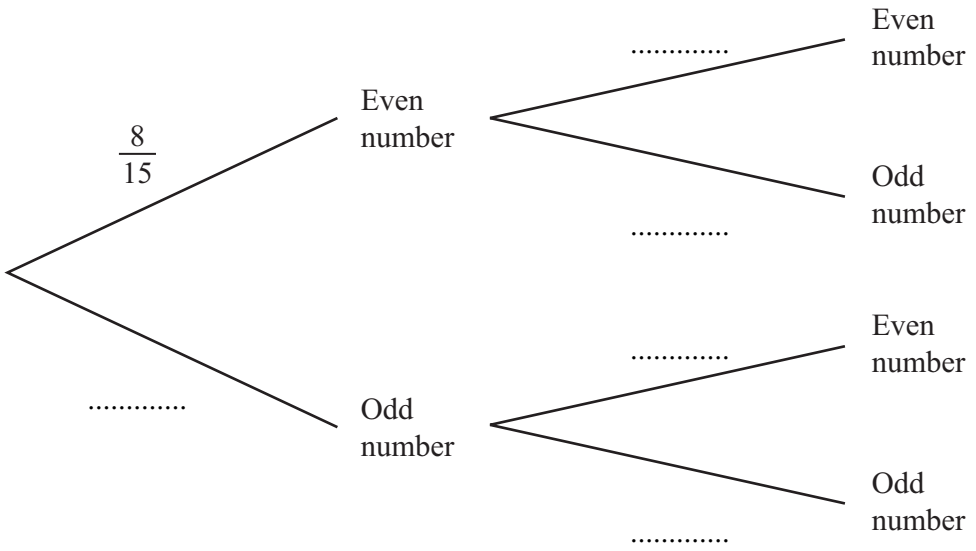
(b) Rohan uses the relative frequencies from the table to estimate the probability of the die showing an even number.

Show that the estimate of this probability is $\frac{8}{15}$.

[1]

(c) Rohan rolls the die twice.

(i) Complete the tree diagram to show the estimates of the probabilities of an even number or an odd number on each roll.



[2]

(ii) Work out an estimate of the probability that Rohan rolls one even number and one odd number.

..... [2]

9 $A = \pi r^2 + 2\pi rh$

Rearrange the formula to write h in terms of π, r and A.

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

10 A is the point (–1, 2) and $\overrightarrow{AB} = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$.

Find the coordinates of the point B.

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

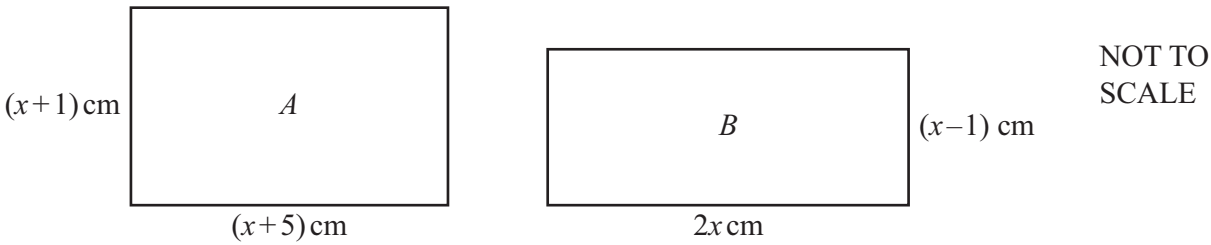
11 These are the first four terms of a sequence.

5, 10, 20, 40

Find the nth term of the sequence.

..... [2]

12



The area of rectangle B is $4\,\text{cm}^2$ greater than the area of rectangle A.

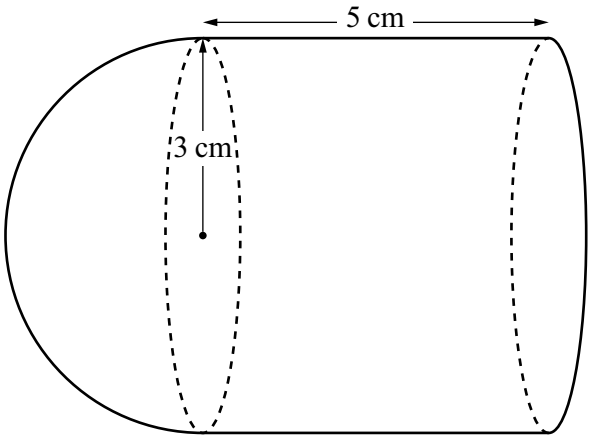
(a) Show that $x^2 - 8x - 9 = 0$.

[3]

(b) Find the value of x.

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

13



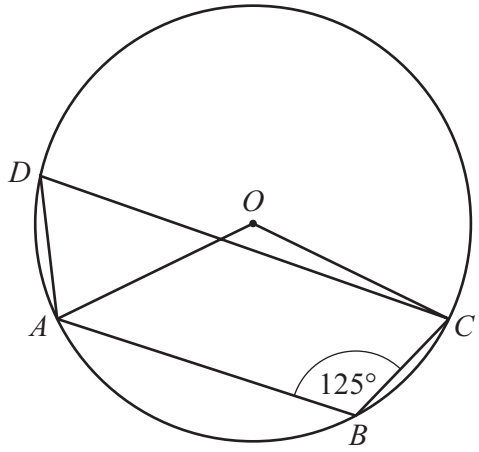
NOT TO SCALE

A solid is made by joining a hemisphere to a cylinder, as shown in the diagram.
The hemisphere has radius 3 cm.
The cylinder has radius 3 cm and length 5 cm.
The total volume of the solid is $k\pi\,\text{cm}^3$.

Find the value of k.

$k =$ ..... [3]

14



NOT TO SCALE

A, *B*, *C* and *D* are points on the circumference of the circle, centre *O*.

Work out obtuse angle *AOC*.
Give a geometric reason for each step of your working.

.....

.....

.....

..... [4]

15 $f(x) = 2x^2 - x$ $g(x) = 1 - 2x$ $h(x) = 3^{2x}$

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

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

(b) Solve the equation $f^{-1}(x) = 4$.

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

(c) Find $h(2)$.

..... [1]

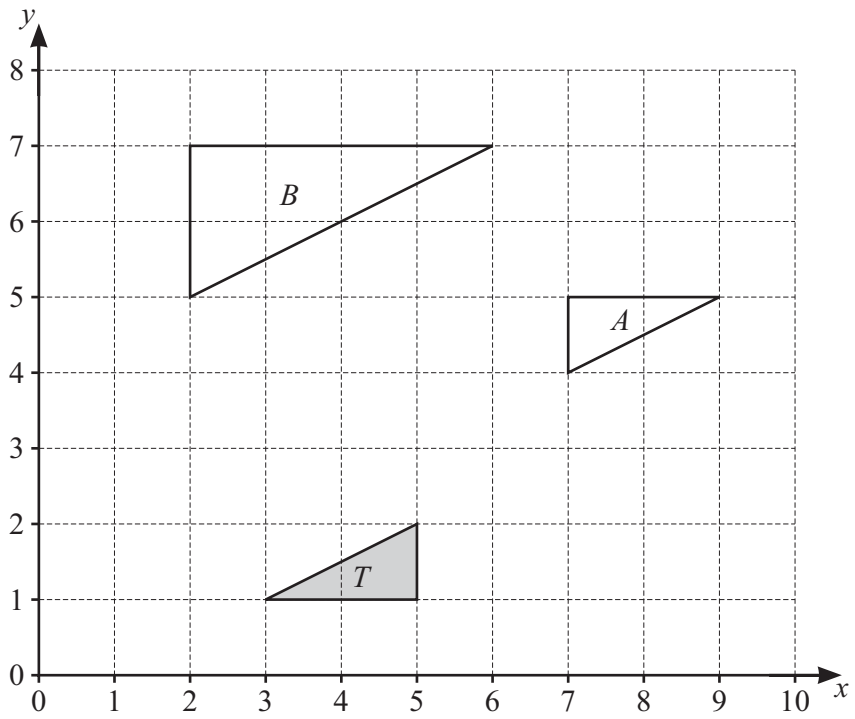
(d) Solve the equation $h(x) = \frac{1}{9}$.

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

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

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

16



Describe fully the **single** transformation that maps

(a) triangle T onto triangle A

.....

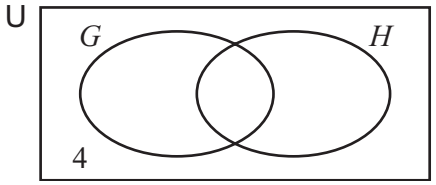
..... [3]

(b) triangle T onto triangle B.

.....

..... [3]

17 In this question you may use the Venn diagram to help you.



$n(U) = 20$ $n(G \cup H)' = 4$ $n(G) = 12$ $n(H) = 11$

(a) Find $n(G \cap H)$.

..... [2]

(b) Find $n(G' \cap H)$.

..... [1]

18 Work out $(3 \times 10^{-11}) \times (4 \times 10^{-8})$.
Give your answer in standard form.

..... [2]

19 **(a)** Simplify $(32q^{15})^{\frac{2}{5}}$.

..... [2]

(b) Find the value of n when $9^n = 27$.

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

20 Simplify.

$\sqrt{125} - \sqrt{45}$

..... [2]

21 $y \propto \frac{1}{x^3}$

When $x = 2$, $y = 4$.

Find y in terms of x.

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

Question 22 is printed on the next page.

22 x is an acute angle and $\cos x = \frac{\sqrt{3}}{2}$.

Find the value of

(a) $\sin x$

..... [2]

(b) $\cos(180° + x)$.

..... [1]

