Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

6705993905

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/31**

Paper 3 Calculator (Core) **May/June 2025**

1 hour 15 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.
- You should use a graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly. You will be given marks for correct methods, including sketches, even if your answer is incorrect.
- 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 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages.

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

1 Coaches are used to take 105 children to an event.
Each coach has places for 32 children.

Explain why 4 is the minimum number of coaches that are needed.

..... [2]

2 Calculate.

(a) $\sqrt[3]{29\,791}$

..... [1]

(b) $\dfrac{7.45}{11.23 - 9.38}$

Give your answer correct to 2 decimal places.

..... [2]

3 **(a)** Write the time 18 42 as a 12-hour clock time.

..... [1]

(b) A film begins at 19 45.
The film lasts for 123 minutes.

Work out the time that the film ends.

..... [1]

4 These are the numbers of students entered for an examination from each of 15 schools.

81	87	61	68	73
76	95	62	62	73
84	78	92	74	60

(a) Complete an ordered stem-and-leaf diagram, including the key, to show this information.

6	
7	
8	
9	

Key .....|..... represents ..... [3]

(b) Find the range.

..... [1]

(c) Find the median.

..... [1]

5 Write down the reciprocal of $\frac{2}{5}$ giving your answer as a fraction.

..... [1]

6 Ella climbs a mountain.
The greater the height she climbs the lower the temperature.

What is the type of correlation between height and temperature?

..... [1]

7

			Abuja
3438			Cairo
8356	5222		Kathmandu
5649	2758	2766	Muscat

The table shows the distances, in km, an aircraft flies when travelling between cities.
For example, the aircraft flies 8356 km between Abuja and Kathmandu.

(a) Write down the distance the aircraft flies between Cairo and Muscat.

..... km [1]

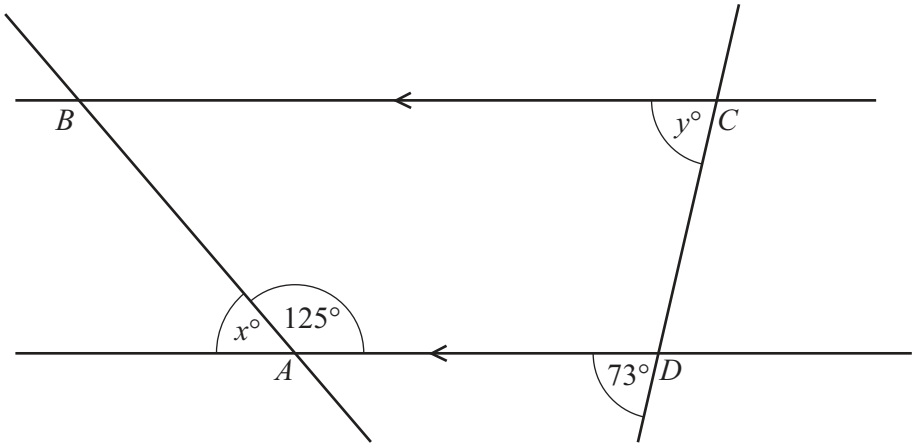
(b) Naji wants to fly from Abuja to Kathmandu.
He has two possible routes.

Route 1: Abuja to Cairo then Cairo to Kathmandu
Route 2: Abuja to Muscat then Muscat to Kathmandu

Use information from the table to help you complete the sentence.
You must show your working.

Route 1 is longer than Route 2 by ..... km [3]

8



NOT TO SCALE

The diagram shows 4 straight lines.
BC and *AD* are parallel.

(a) Write down the mathematical name of the quadrilateral *ABCD*.

..... [1]

(b) Work out the value of *x*.

x = ... [1]

(c) Write down value of *y*.

y = ... [1]

9 **(a)** These are the first 4 terms of a sequence.

5 11 17 23

Write down the rule for continuing this sequence.

..... [1]

(b) These are the first 4 terms of another sequence.

51 48 45 42

Find an expression for the nth term of this sequence.

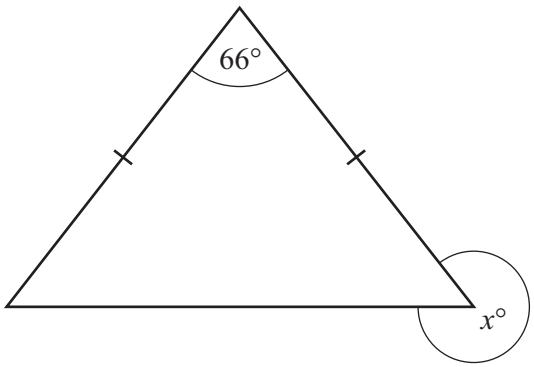
..... [2]

(c) The expression for the nth term of a different sequence is $5n^2 + 4$.

Work out the first 2 terms of this sequence.

....., ... [2]

10



NOT TO SCALE

The diagram shows an isosceles triangle.

Find the value of x.

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

11 A shop has 90 bowls and 72 jugs.

(a) Write the ratio number of bowls : number of jugs in its simplest form.

..... : ..... [1]

(b) Some of the bowls are sold but none of the jugs are sold.
The ratio number of bowls : number of jugs is now 2 : 3.

Work out how many bowls are sold.

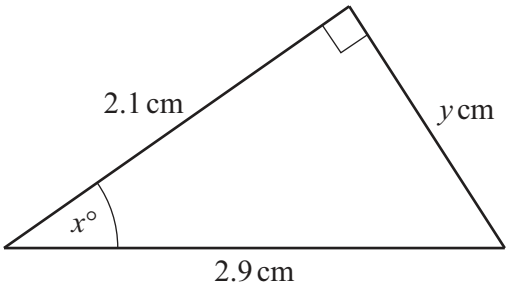
..... [3]

12 The price of a ticket is $280.
The exchange rate between euros (€) and dollars ($) is €1 = $1.297 .

Work out the price of the ticket in euros.

€ ..... [1]

13 The diagram shows a right-angled triangle.



NOT TO SCALE

(a) Use trigonometry to work out the value of x.

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

(b) Use Pythagoras' theorem to find the value of y.

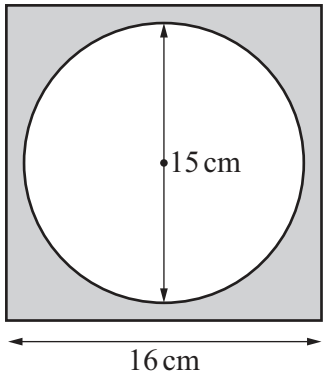
$y =$ ..... cm [3]

14 A cyclist rides 200 m.
The cyclist rides at a constant speed of 45 km/h.

Work out how many seconds it takes the cyclist to ride 200 m.

..... s [3]

15



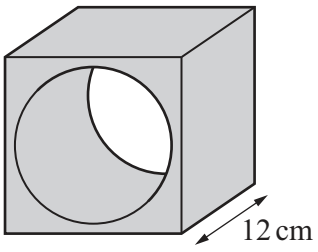
NOT TO SCALE

The diagram shows a square with a hole in the shape of a circle.
The length of the side of the square is 16 cm.
The diameter of the circle is 15 cm.

(a) Show that the shaded area is $79.3\,cm^2$ correct to 3 significant figures.

[3]

(b) The shape in **part (a)** is the cross-section of a block.



NOT TO SCALE

The block is a cuboid with a hole in the shape of a cylinder.
The length of the block is 12 cm.

Find the volume of the block.

..... cm^3 [1]

16 The equation of line L is $3y - x = 12$.

(a) Rearrange $3y - x = 12$ to make y the subject.

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

(b) Write down the equation of the line parallel to L, that passes through the point $(0, 5)$.

..... [2]

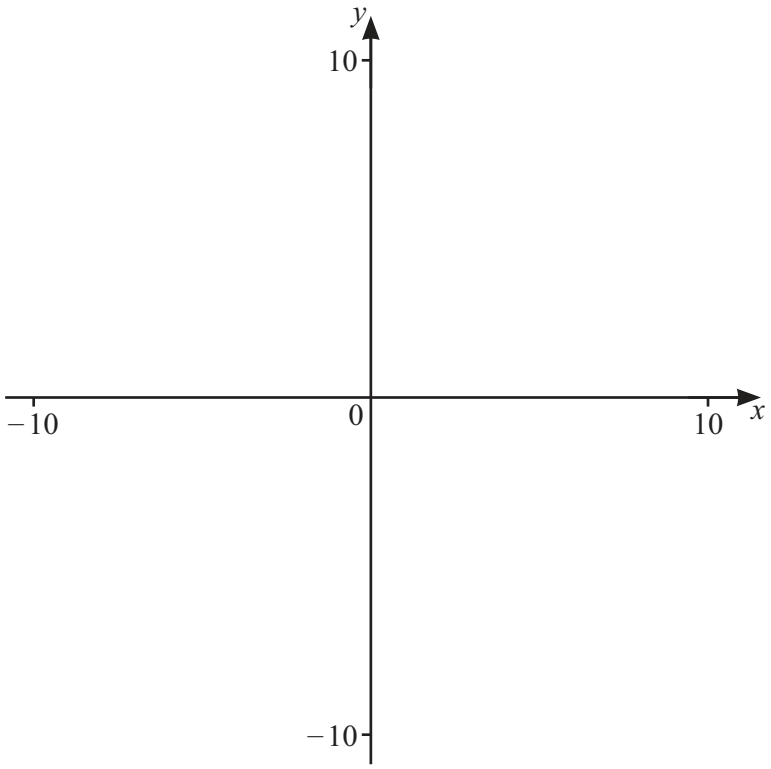
17 The price of a game is \$15.
This price is increased by 12%.

Find the new price.

\$ ..... [2]

Question 18 is printed on the next page.

18



(a) On the diagram, sketch the graph of $y = \frac{7}{x+2}$ for values of x between -10 and 10. [3]

(b) Write down the coordinates of the point where the graph crosses the y-axis.

(..... , ...) [1]

(c) On the diagram, sketch the graph of $y = \frac{x}{5}$ for values of x between -10 and 10. [2]

(d) Find the values of x when $\frac{7}{x+2} = \frac{x}{5}$.

x = ... or x = ... [2]