Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

Paper 2 Non-calculator (Extended) **February/March 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 [ ].

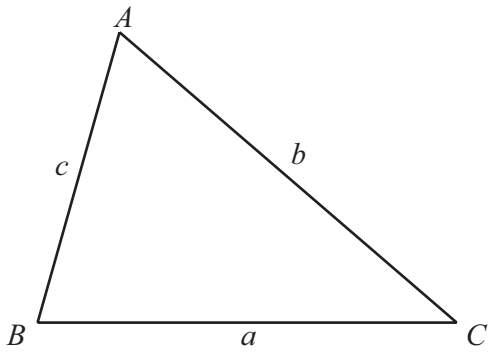
This document has **16** pages. Any blank pages are indicated.

[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,



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

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

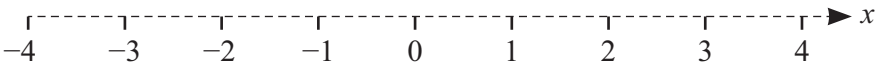
$$\text{Area} = \frac{1}{2}ab\sin C$$

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

1 Write down the reciprocal of $\frac{1}{5}$.

..... [1]

2 Show the inequality $-2 < x \leqslant 3$ on the number line.



[2]

3 Draw an angle of 215° at A.

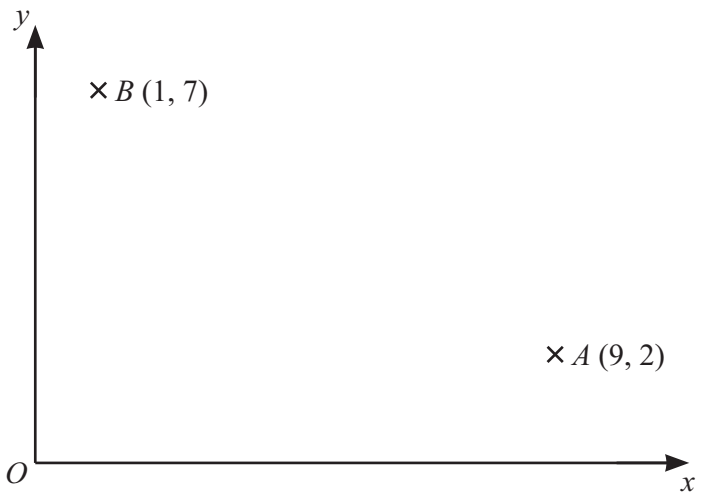
[1]

4 9 15 12 8 13 14

Find the range of these numbers.

..... [1]

5



NOT TO SCALE

Point A is translated to point B.

Find vector $\overrightarrow{AB}$.

$\overrightarrow{AB} = \begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

6 U = {natural numbers $\leqslant 20$}
A = {multiples of 3}
B = {triangle numbers}

(a) Write down the elements of set A and the elements of set B.

Set A .....

Set B .....
[2]

(b) Write down the elements of $A \cap B$.

..... [1]

7 Write 84 as a product of its prime factors.

..... [2]

8 By writing each number correct to 1 significant figure, estimate the value of

$$\frac{5923-2198}{0.5461\times 39.43}.$$

..... [2]

9 These are the equations of two lines.

$$4y = x+7 \qquad y+4x = 6$$

(a) Find the coordinates of the point where these two lines intersect.

(..... , ...) [3]

(b) Are the two lines perpendicular?
Give a reason for your answer.

..... because .....

..... [2]

10 **(a)** The probability that an event happens is 0.95 .

Write down the probability that the event does not happen.

..... [1]

(b) An unbiased die is numbered 1, 2, 3, 4, 5, 6.
Jamisha rolls the die once.

Find the probability that Jamisha rolls

(i) an even number

..... [1]

(ii) a 3 or a 5.

..... [1]

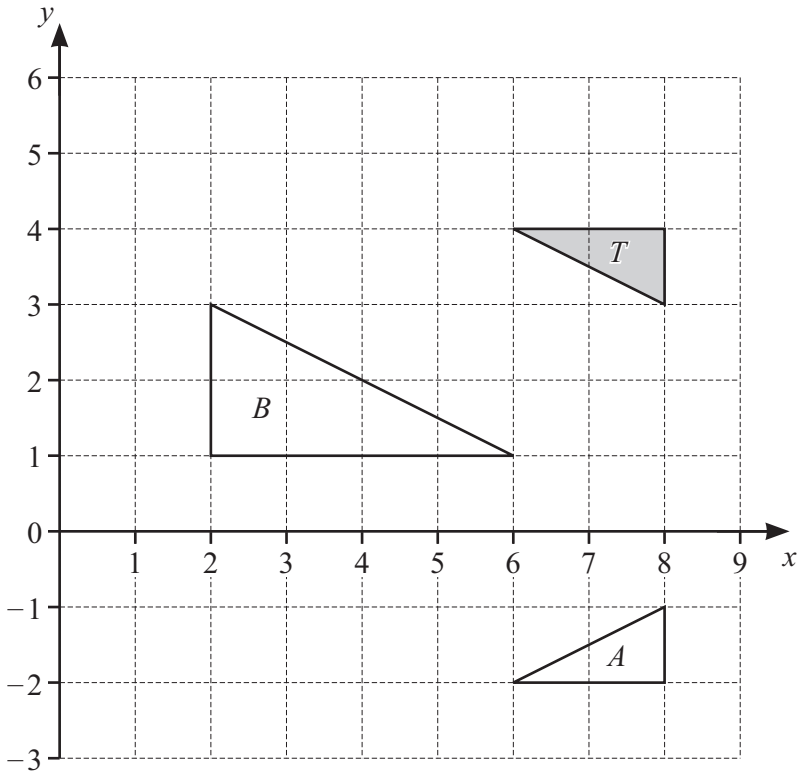
11 These are the first five terms of a sequence.

3 9 19 33 51

Find the *n*th term of this sequence.

..... [2]

12



(a) Describe fully the **single** transformation that maps

(i) triangle T onto triangle A

.....

..... [2]

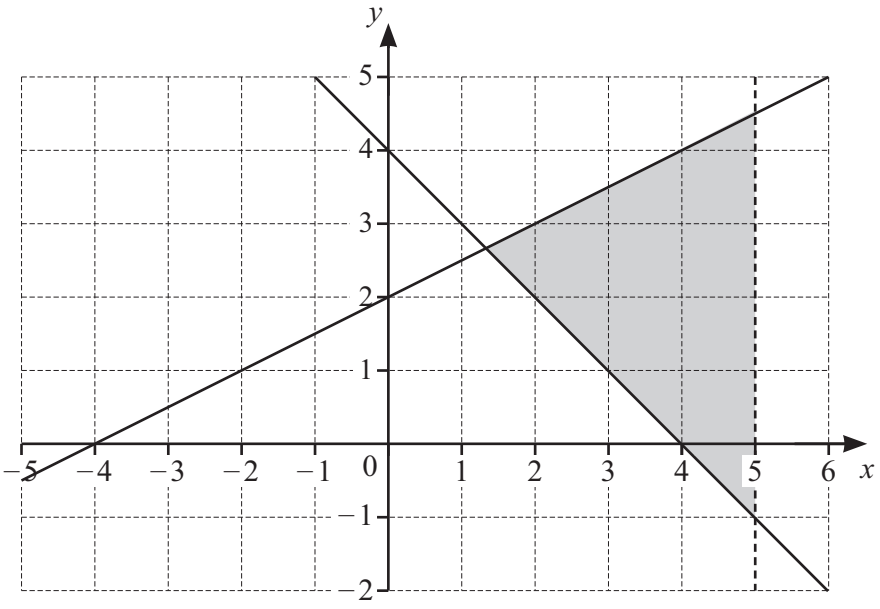
(ii) triangle T onto triangle B.

.....

..... [3]

(b) Draw the image of triangle T after a translation of $\begin{pmatrix} -4 \\ 1 \end{pmatrix}$. [2]

13



Find the 3 inequalities that define the shaded region.

..... [4]

14 **(a)** Work out $(0.5)^2$.

..... [1]

(b) Work out $\sqrt[3]{64} \times 3^2$.

..... [2]

(c) $16^n = 2^{n-1}$

Find the value of n.

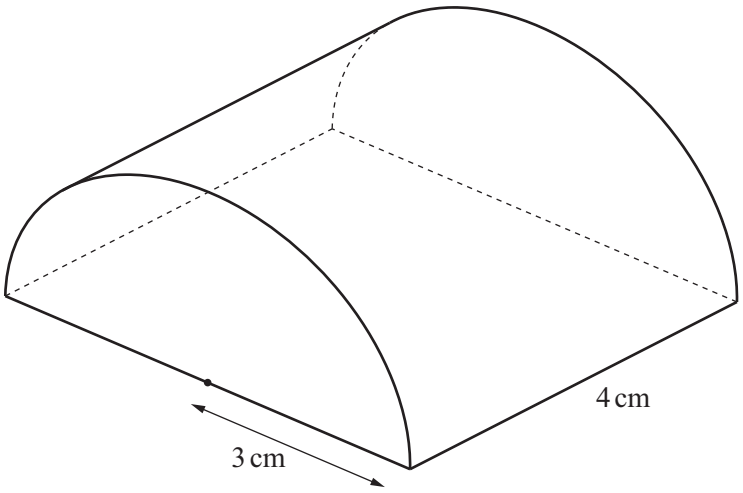
$n =$ ..... [2]

15 Expand and simplify.

$$(3a+4b)(a-2b)$$

..... [2]

16



NOT TO SCALE

The diagram shows a solid half cylinder.
The radius of the cross-section is 3 cm.
The length of the solid is 4 cm.

Find the total surface area of the solid.
Give your answer in terms of π.

..... cm^2 [4]

17 A is the point (–5, 7) and B is the point (5, –2).

Find the equation of the line AB.
Give your answer in the form $ax + by = k$ where a, b and k are integers.

..... [4]

18 **(a)** Rearrange the formula to make a the subject.

$$\sqrt{a-b} = 2c$$

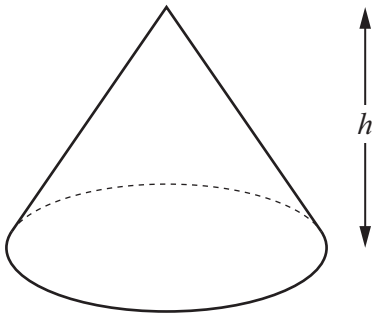
$a =$ ..... [2]

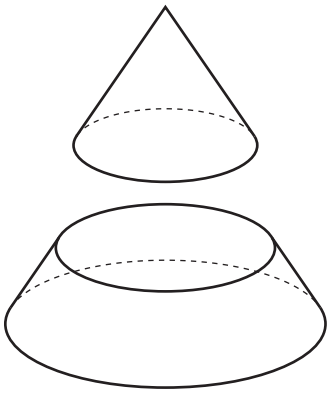
(b) Rearrange the formula to make p the subject.

$$\frac{p-5}{3p-2} = q$$

$p =$ ..... [3]

19





NOT TO SCALE

A large cone has height h.
The large cone is cut parallel to its base to make a smaller cone and a frustum.
The height of the frustum is $\frac{3}{5}h$.

Find the ratio volume of small cone : volume of frustum.

..... : ..... [3]

20 A box contains 2 yellow pencils, 3 blue pencils and 4 green pencils.
Micah takes two pencils from the box at random without replacement.

Find the probability that the pencils are both blue.

..... [2]

21 **(a)** Simplify.

$$3\sqrt{12} - \sqrt{48} + \sqrt{75}$$

..... [3]

(b) Rationalise the denominator and simplify.

$$\frac{6}{\sqrt{5} - \sqrt{2}}$$

..... [3]

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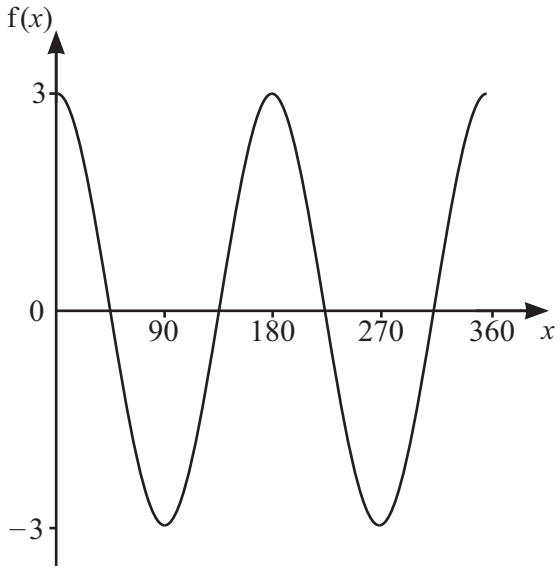
22 The equation of a quadratic function is $y = ax^2 + bx + c$.
The vertex of the quadratic function is at (1, 3).
The quadratic function passes through the point (2, 5).

Find the equation of the quadratic function.

$y =$ ..... [4]

23 (a)



The diagram shows the graph of $f(x°) = a\cos bx$.

Find the value of a and the value of b.

$a =$ .....

$b =$ .....

[2]

(b) Solve $\dfrac{\sqrt{3}}{\tan x} - 1 = 0$ for values of x between 0° and 360°.

..... [3]

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