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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.



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 .

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

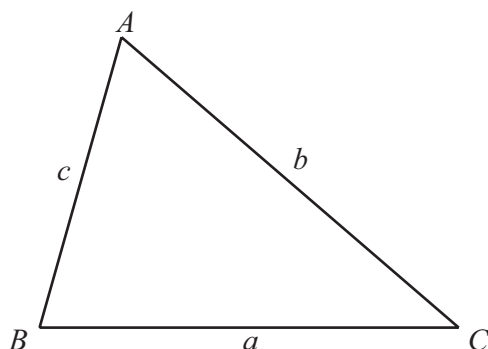
Volume, V , of sphere of radius r .

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

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,



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

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

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



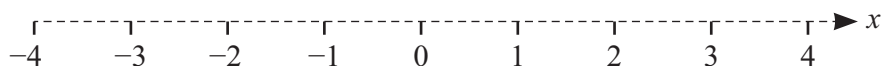


Calculators must **not** be used in this paper.

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

..... [1]

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



[2]

- 3 Draw an angle of 215° at A .



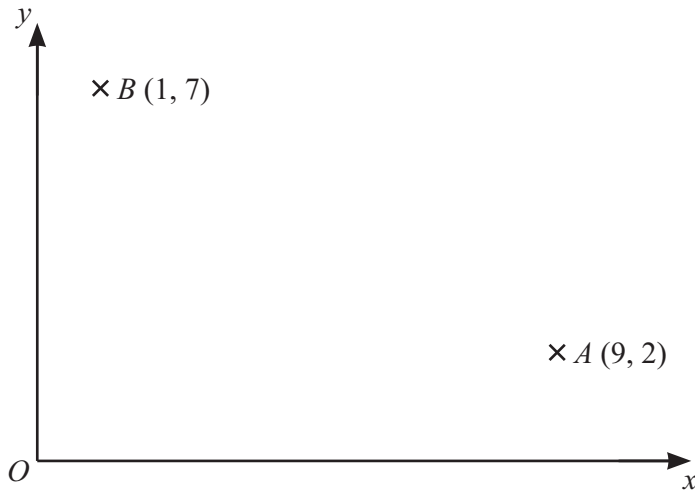
[1]

- 4 9 15 12 8 13 14

Find the range of these numbers.

..... [1]





NOT TO
SCALE

Point A is translated to point B .

Find vector $\overrightarrow{AB}$.

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

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

(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]

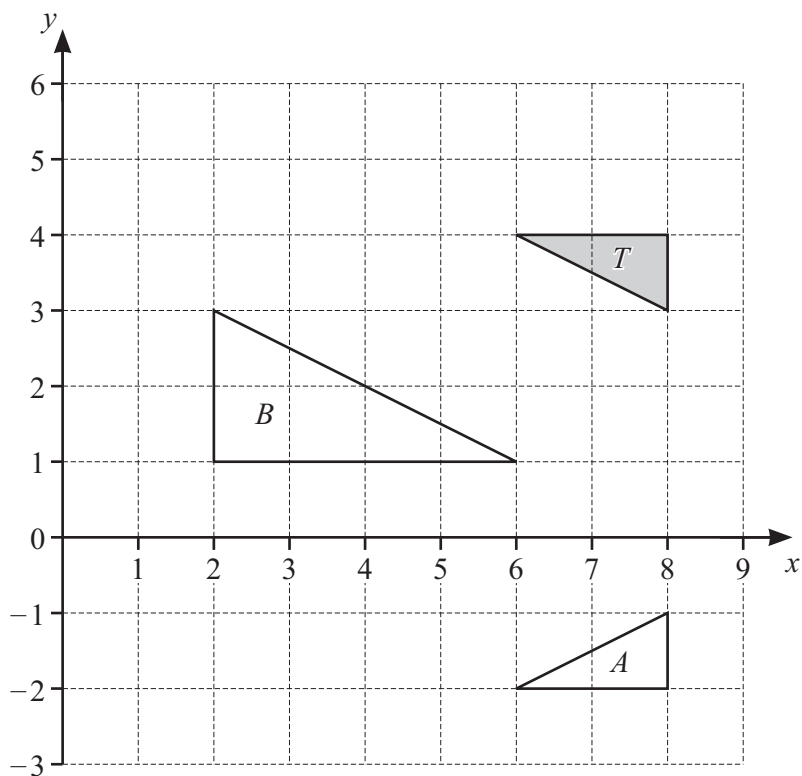
- 11 These are the first five terms of a sequence.

3 9 19 33 51

Find the n th term of this sequence.

..... [2]





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

(i) triangle T onto triangle A

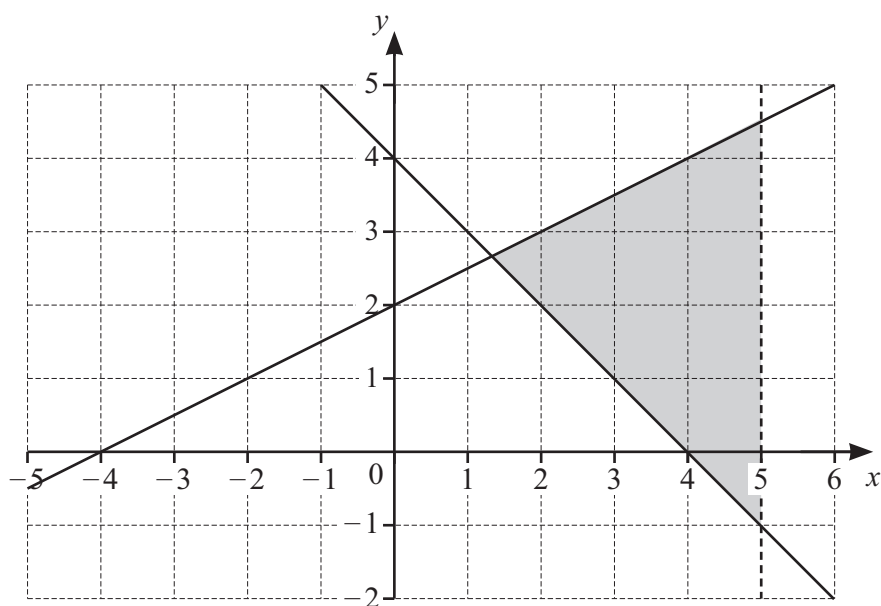
.....
 [2]

(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]





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]



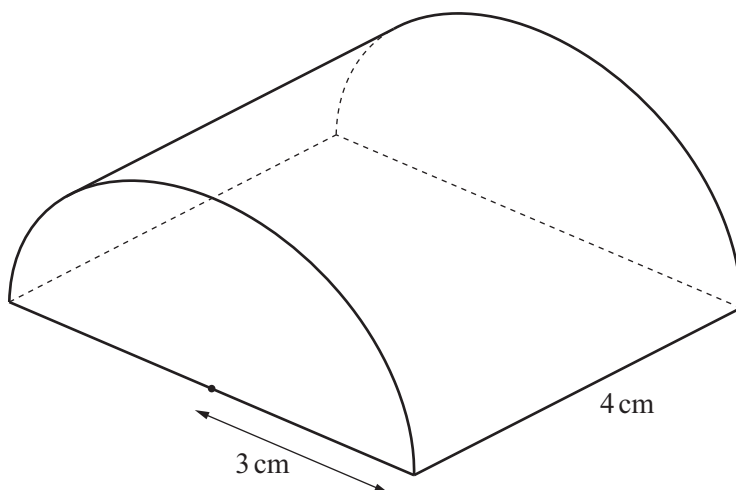


15 Expand and simplify.

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

..... [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 .

..... cm² [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.

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

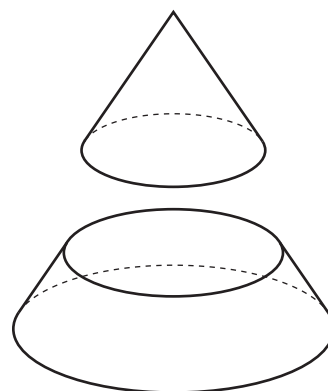
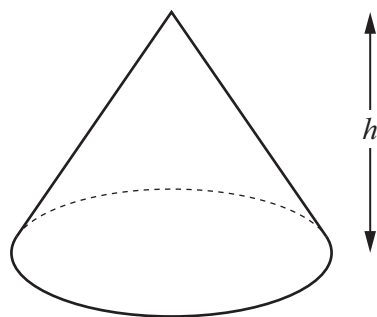
$a =$ [2]

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

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

$p =$ [3]





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]





- 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).

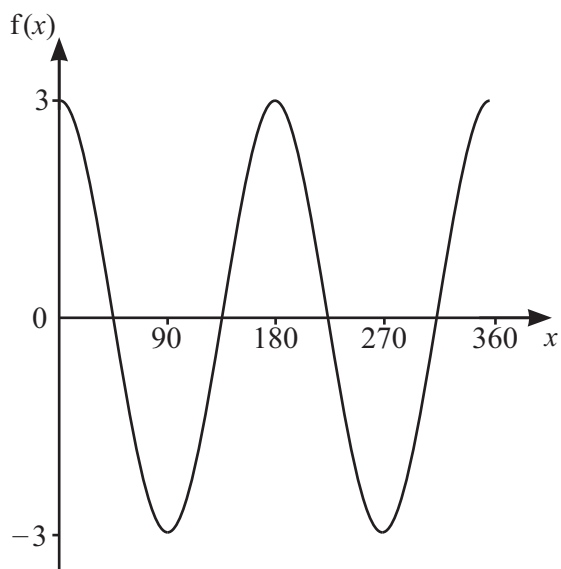
Find the equation of the quadratic function.

$y = \dots\dots\dots$ [4]





23 (a)



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

Find the value of a and the value of b .

$a =$

$b =$

[2]

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

..... [3]







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