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CAMBRIDGE INTERNATIONAL MATHEMATICS**0607/21**

Paper 2 Non-calculator (Extended)

October/November 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 .

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

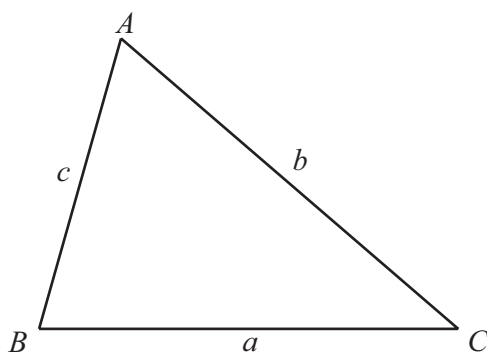
Volume, V , of sphere of radius r .

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

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 Complete the table.

Fraction		Decimal		Percentage
$\frac{3}{10}$	=	0.3	=	30
	=	0.09	=	
$\frac{7}{20}$	=		=	

[2]

- 2 Find the reciprocal of $1\frac{3}{5}$.

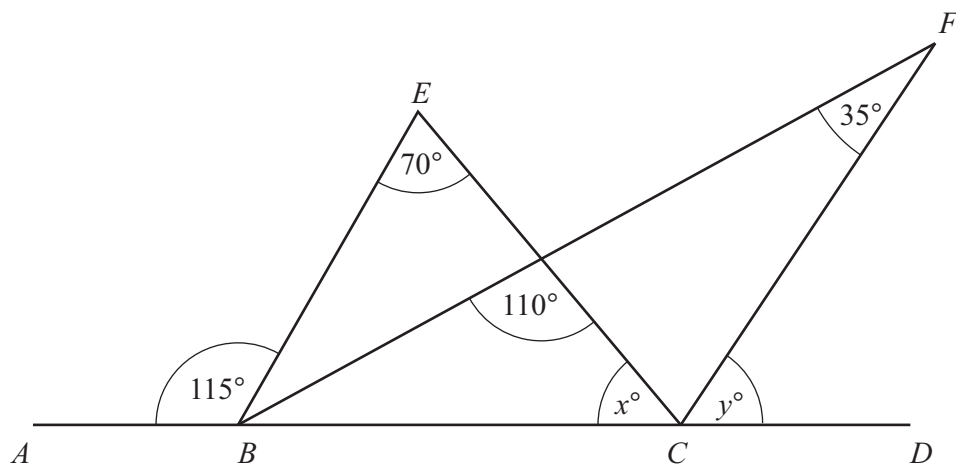
..... [2]

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

$$\frac{\sqrt{8.76} \times 43.82}{0.592}.$$

..... [2]





NOT TO
SCALE

$ABCD$ is a straight line.

(a) (i) Find the value of x .

..... [1]

(ii) Find the value of y .

..... [2]

(b) Give a reason why BE is **not** parallel to CF .

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

5 $\mathbf{a} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$

Find the vector $2\mathbf{a} - 3\mathbf{b}$.

$\begin{pmatrix} \\ \end{pmatrix}$ [2]



- 6 The types of vehicle travelling on a road were recorded.
The table shows the results for a sample of 200 vehicles.

Type of vehicle	Car	Van	Truck	Motorcycle
Number of vehicles	84	64	40	12
Relative frequency				

(a) Complete the table.

[2]

(b) One day 5000 vehicles use the road.

Work out an estimate for the number of trucks that use the road that day.

..... [1]

- 7 A quadrilateral has exactly one line of symmetry.
It has no pairs of parallel sides.

Write down the mathematical name for this quadrilateral.

..... [1]



8 Rearrange each formula to make b the subject.

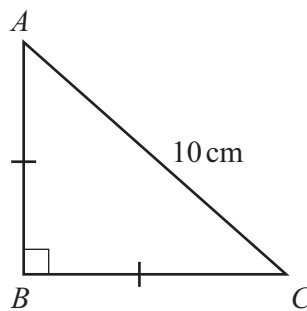
(a) $c = \sqrt{5ab}$

$b = \dots\dots\dots$ [2]

(b) $P = \frac{3a+2b}{5a-b}$

$b = \dots\dots\dots$ [3]

9



NOT TO
SCALE

In the diagram, angle $ABC = 90^\circ$.
 $AB = BC$ and $AC = 10$ cm.

Calculate the area of triangle ABC .

$\dots\dots\dots \text{ cm}^2$ [3]





- 10 Samina has two pieces of string.
The lengths of the two pieces of string are in the ratio 5 : 3.

Samina cuts 4 cm off each piece of string.
The lengths of the two remaining pieces of string are in the ratio 2 : 1.

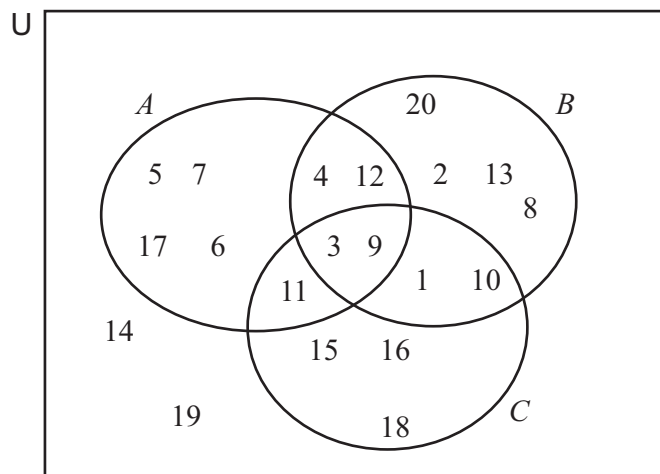
Find the original lengths of Samina's pieces of string.

..... cm

..... cm
[4]



11 The numbers 1 to 20 are shown in the Venn diagram.



(a) List the elements of $A \cap B$.

..... [1]

(b) Find

(i) $n(A \cup C)$

..... [1]

(ii) $n[(A \cup B)' \cap C]$.

..... [1]

(c) Two of the 20 numbers are picked at random without replacement.

Find the probability that

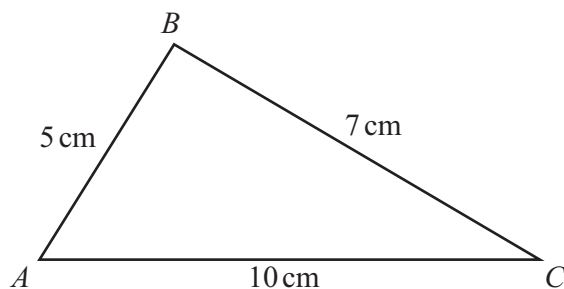
(i) both numbers are in $(A \cup B)' \cap C$

..... [2]

(ii) one number is in A but not B and the other number is in B but not A .

..... [3]





NOT TO
SCALE

In triangle ABC , $AB = 5$ cm, $BC = 7$ cm and $AC = 10$ cm.

Show by calculation that angle ABC is obtuse.

[3]

13 (a) $\frac{2^5 \times 2^p}{2^3} = 2^6$

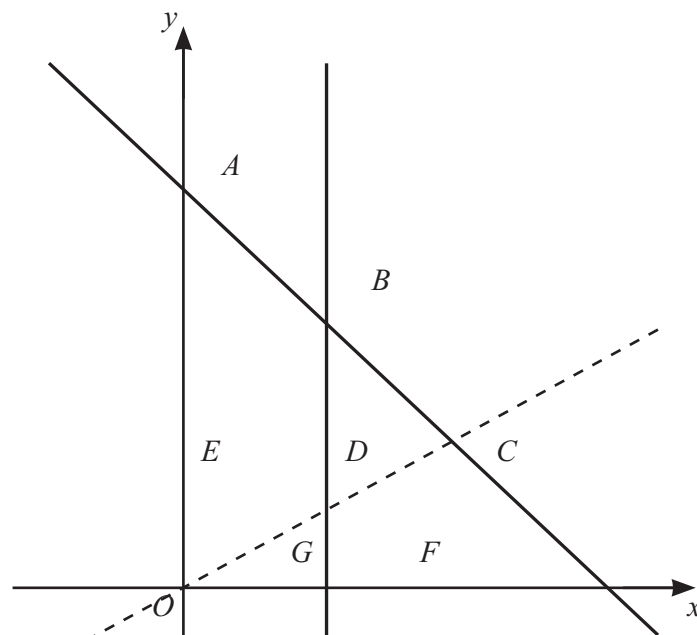
Find the value of p .

$p = \dots\dots\dots$ [1]

(b) Find the value of $64^{-\frac{2}{3}}$.

$\dots\dots\dots$ [2]





The lines with equations $x = 2$, $y = \frac{1}{2}x$ and $x + y = 5$ are shown on the diagram.

These lines divide the space into 7 different regions A , B , C , D , E , F and G .

Write down the inequalities which define

(a) region A

..... [1]

(b) region C

..... [1]

(c) region E .

..... [2]



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

(a) Find $f(-3)$.

..... [1]

(b) Find $f^{-1}(10)$.

..... [2]

(c) Find and simplify $gh(x)$.

..... [2]

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

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

(e) Solve $h(x) = f(x)$.

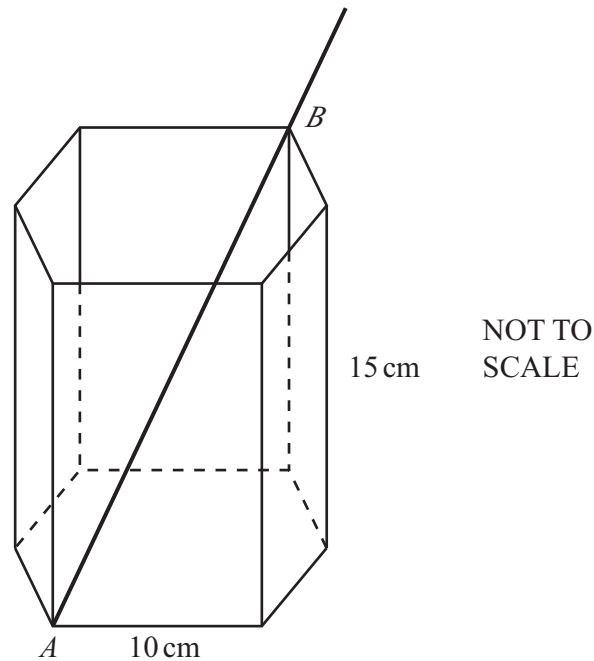
$x =$ or $x =$ [4]



- 16 (a) Show that the interior angle of a regular hexagon is 120° .

[1]

(b)



The diagram shows a container in the shape of a prism.
 The cross-section of the prism is a regular hexagon with side length 10 cm.
 The height of the prism is 15 cm.

A stick has one end at A and rests against B .
 The stick makes an angle of x with the base.

Find $\tan x$.

$\tan x = \dots\dots\dots$ [4]

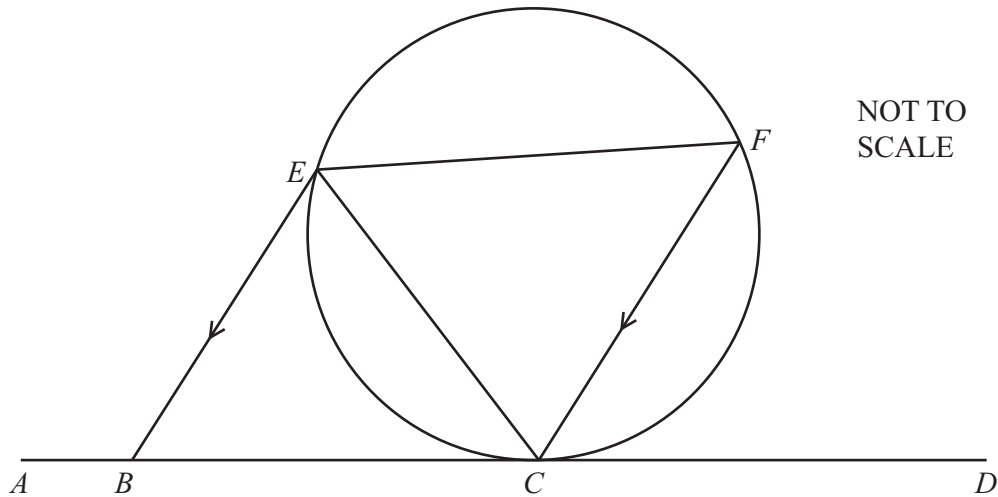




17 Write $(5 - 2\sqrt{3})^2$ in the form $a + b\sqrt{3}$.

..... [2]





C , E and F are points on a circle.
 $ABCD$ is a tangent to the circle at C .
 EB is parallel to FC .

- (a) Show that triangle CEB is similar to triangle FCE .

.....

.....

.....

.....

..... [3]

- (b) $CB = 6$ cm, $FE = 8$ cm and $EB = 5$ cm.

Calculate CE .

..... cm [2]

- (c) Find $\frac{\text{Area of triangle } CEB}{\text{Area of triangle } FCE}$.

..... [1]





19 Simplify.

$$\frac{4a^2 + 4ab - 15b^2}{2a^2 + 2ac - 3ab - 3bc}$$

..... [5]





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