



# Cambridge IGCSE™

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/23**

Paper 2 (Extended)

**October/November 2022**

**45 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 and you will be given marks for correct methods even if your answer is incorrect.
- All answers should be given in their simplest form.

## INFORMATION

- The total mark for this paper is 40.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **8** pages.

## Formula List

For the equation  $ax^2 + bx + c = 0$   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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  $l$ .  $A = \pi rl$

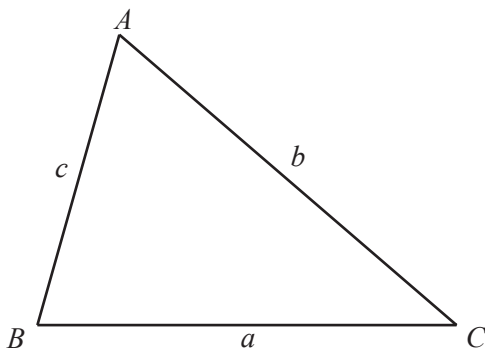
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

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



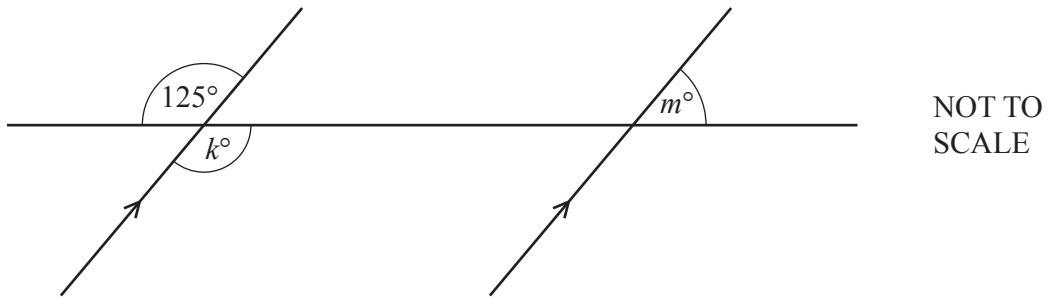
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

$$\text{Area} = \frac{1}{2}bc \sin A$$

Answer **all** the questions.

1



The diagram shows a straight line intersecting two parallel lines.

Find the value of  $k$  and the value of  $m$ .

$$k = \dots\dots\dots$$

$$m = \dots\dots\dots [2]$$

2 Solve the equation.

$$2q - 7 = 2 - 7q$$

$$q = \dots\dots\dots [2]$$

3  $1 \text{ m}^2 = 10^n \text{ cm}^2$ 

Find the value of  $n$ .

$$n = \dots\dots\dots [1]$$

4 Work out  $1\frac{1}{3} - \frac{5}{6}$ .

$$\dots\dots\dots [2]$$

- 5 An unbiased six-sided die is numbered 1, 2, 3, 4, 5, 6.  
The die is rolled.

Find the probability that it shows

- (a) 6,

..... [1]

- (b) a number greater than 6.

..... [1]

- 6 A cone has base radius 5 cm and height  $\frac{5}{4}$  cm.

A hemisphere has radius  $r$  cm.

The volume of the hemisphere is equal to the volume of the cone.

Find the value of  $r$ .

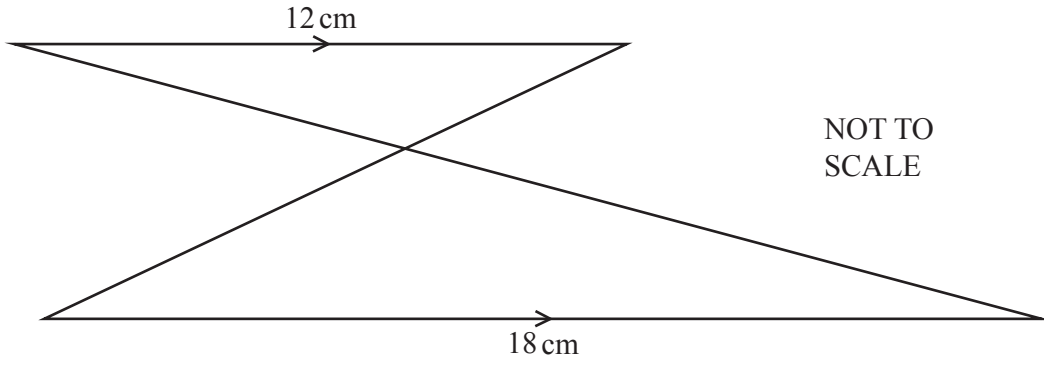
$r =$  ..... [3]

- 7 Simplify.

$$30t^{30} \div 5t^5$$

..... [2]

8



The diagram shows two triangles formed by two parallel lines and two intersecting lines.

(a) Use one of these words to complete the statement.

- alternate      congruent      similar      cyclic      parallel

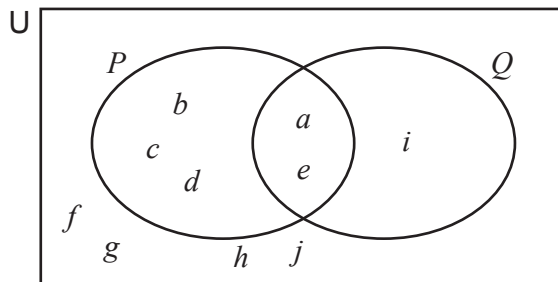
The triangles are ..... [1]

(b) The area of the smaller triangle is  $24 \text{ cm}^2$ .

Calculate the area of the larger triangle.

.....  $\text{cm}^2$  [2]

9



$U = \{a, b, c, d, e, f, g, h, i, j\}$

Complete each statement.

(a)  $(P \cup Q)' = \{.....\}$  [1]

(b)  $\{a, e\} = P.....Q$  [1]

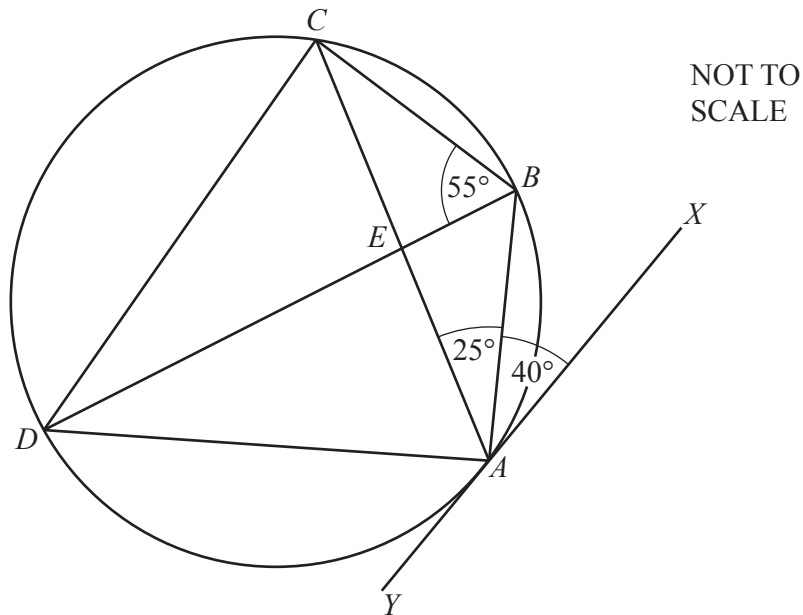
(c)  $n(P' \cup Q) = .....$  [1]

10 Rearrange the formula to write  $x$  in terms of  $a$  and  $y$ .

$$y = \sqrt{x^2 + 2a^2}$$

$x = \dots\dots\dots$  [3]

11



$A, B, C$  and  $D$  are four points on a circle.  
 $AC$  and  $BD$  meet at  $E$ .  
 $XAY$  is a tangent to the circle at  $A$ .

Find

(a) angle  $CDB$ ,

Angle  $CDB = \dots\dots\dots$  [1]

(b) angle  $ACB$ ,

Angle  $ACB = \dots\dots\dots$  [1]

(c) angle  $DCE$ ,

Angle  $DCE = \dots\dots\dots$  [1]

(d) angle  $YAD$ .

Angle  $YAD = \dots\dots\dots$  [1]

- 12 Simplify  $(3 \times 10^{85}) \times (7 \times 10^{15})$ .  
Give your answer in standard form.

..... [2]

- 13 Factorise.

(a)  $49 - 16u^2$

..... [1]

(b)  $1 + 4xy - 2x - 2y$

..... [2]

- 14 Rationalise the denominator.

$$\frac{5}{\sqrt{3} - \sqrt{2}}$$

..... [2]

- 15  $\log y = \log h + \log p - \log x$

Find  $y$  in terms of  $h$ ,  $p$  and  $x$ .

$y =$  ..... [1]

**Questions 16 and 17 are printed on the next page.**

16  $8^{\frac{4}{3}} = 32^x$

Find the value of  $x$ .

$x = \dots\dots\dots$  [2]

17 Simplify.

$$2 - \frac{4 - 3x}{x - 2}$$

Write your answer as a single fraction in its simplest form.

$\dots\dots\dots$  [3]

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