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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 . $A = \pi rl$

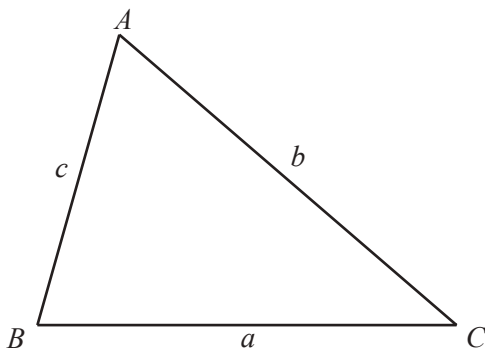
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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



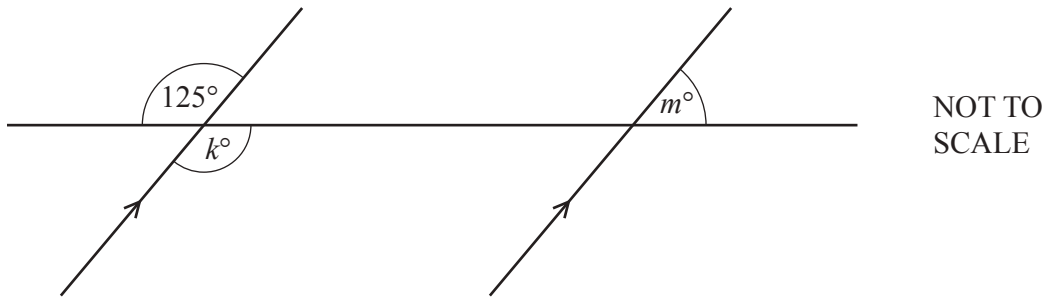
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

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

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 .

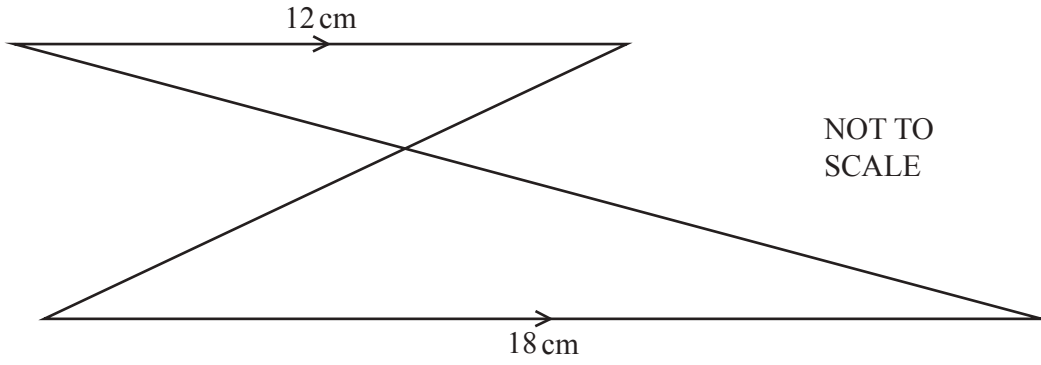
$r =$ [3]

- 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

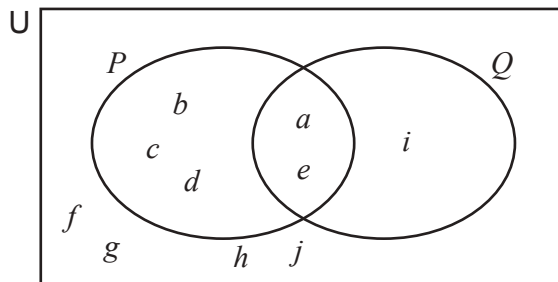
The triangles are [1]

(b) The area of the smaller triangle is 24 cm^2 .

Calculate the area of the larger triangle.

..... 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]

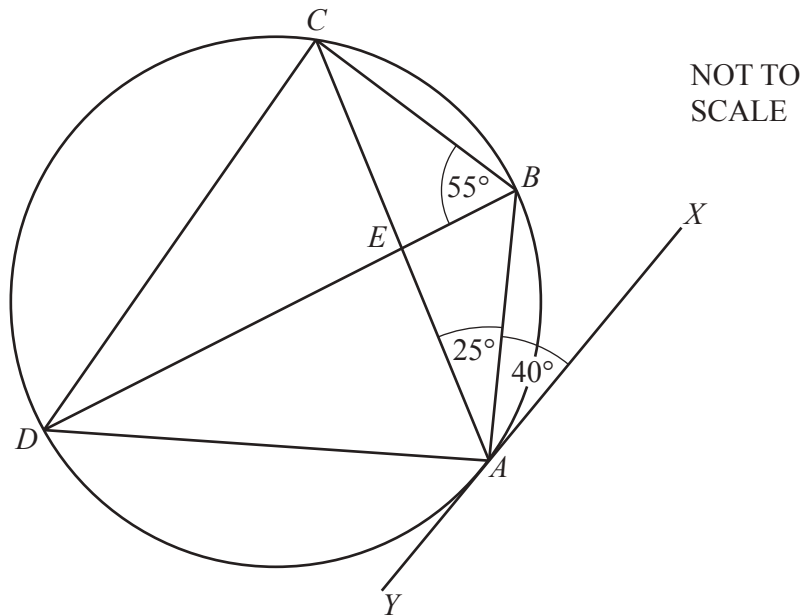
(c) $n(P' \cup Q) =$ [1]

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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