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CANDIDATE NAME

CENTRE NUMBER

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CAMBRIDGE INTERNATIONAL MATHEMATICS　　　　　　　　　**0607/21**

Paper 2 (Extended)　　　　　　　　　　　　　　　**October/November 2024**

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. Any blank pages are indicated.

[Turn over

Formula List

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

Curved surface area, A, of cylinder of radius r, height h. $\qquad A = 2\pi rh$

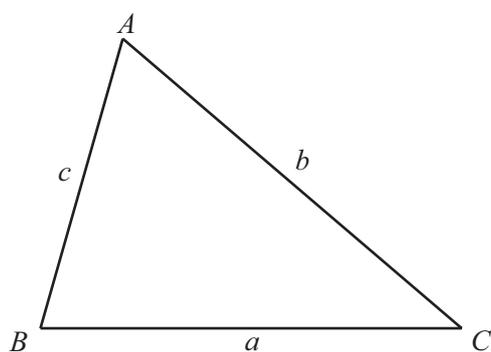Curved surface area, A, of cone of radius r, sloping edge l. $\qquad A = \pi rl$

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

Volume, V, of pyramid, base area A, height h. $\qquad V = \dfrac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\qquad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\qquad V = \dfrac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\qquad V = \dfrac{4}{3}\pi r^3$

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

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

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

Answer **all** the questions.

1   Work out.

$$(0.01)^2$$

.... [1]

2   **(a)** Write $\dfrac{24}{60}$ in its lowest terms.

.... [1]

(b) Work out $\dfrac{5}{7} - \dfrac{1}{14}$.

.... [2]

3   This is a list of ten numbers.

19   24   16   17   22   14   28   34   20   18

(a) Find the range.

.... [1]

(b) Find the median.

.... [2]

4   Expand $x^3\left(8x - x^2\right)$.

.... [2]

5   Simplify $\left(9x^9 y^4\right)^{0.5}$.

.... [2]

0607/21/O/N/24   **[Turn over**

6 A regular polygon has 12 sides.

Find the size of an exterior angle of this polygon.

.... [2]

7 y varies as the square of $(x + 1)$.
When $y = 18$, $x = 2$.

Find y when $x = 3$.

$y =$ .... [3]

8 Factorise.

(a) $6ax - 8by - 3ay + 16bx$

.... [2]

(b) $5x^2 - 7x - 6$

.... [2]

9 Write in standard form.

(a) 760 900

.... [1]

(b) 0.080 07

.... [1]

10
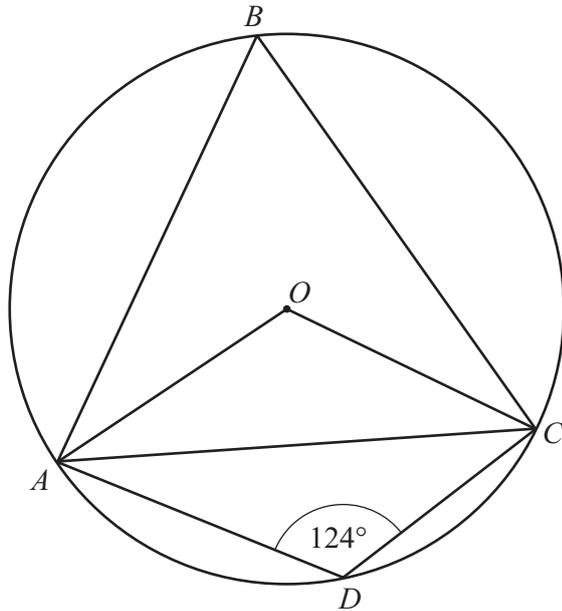
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A, *B*, *C*, and *D* lie on a circle, centre *O*.

Find

(a) angle *ABC*

Angle *ABC* = ... [1]

(b) obtuse angle *AOC*

Angle *AOC* = ... [1]

(c) angle *OCA*.

Angle *OCA* = ... [1]

DO NOT WRITE IN THIS MARGIN

11 (a) Simplify.

$$\sqrt{2}\left(5\sqrt{8} - 7\sqrt{2}\right)$$

.... [2]

(b) Rationalise the denominator.

$$\frac{21}{3 - \sqrt{2}}$$

.... [2]

12 Vlad has two unbiased dice, each numbered 1, 2, 3, 4, 5, 6.
Vlad rolls the two dice and records the **total** score.

Find the probability that the total score is

(a) 13

.... [1]

(b) 11.

.... [2]

13 The point A has coordinates $(4, -1)$ and the point B has coordinates $(8, -3)$.

Find the equation of the perpendicular bisector of the line AB.
Give your answer in the form $y = mx + c$.

$y = $ .... [5]

14 Write as a single fraction in its simplest form.

$$\frac{8}{4x - 1} - \frac{3}{2x + 1}$$

.... [3]

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