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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/21

Paper 2 (Extended)

May/June 2023

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 . $A = \pi rl$

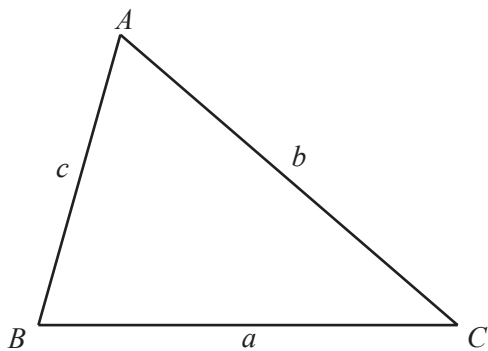
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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 (a) Insert **one** pair of brackets to make the statement correct.

$$3 \times 7 + 2 + 9 = 36 \quad [1]$$

- (b) Work out $(0.2)^3$.

..... [1]

- (c) Write down a prime number between 80 and 90.

..... [1]

- 2 Solve the equation.

$$7 - 5x = -3$$

$x =$ [2]

- 3 (a) Work out $\begin{pmatrix} 1 \\ 2 \end{pmatrix} - \begin{pmatrix} -5 \\ 3 \end{pmatrix}$.

$\begin{pmatrix} \\ \end{pmatrix}$ [1]

- (b) P is the point $(-3, 6)$.
 Q is the point $(0, 2)$.

Find the translation vector that maps the point P onto the point Q .

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

- 4 (a) Factorise.

$$2p^2 - pq$$

..... [1]

- (b) Expand the brackets and simplify.

$$(p - 7)(p + 3)$$

..... [2]

- 5 (a) Work out $\frac{11}{12} + \frac{3}{4}$.

Give your answer as a mixed number in its simplest form.

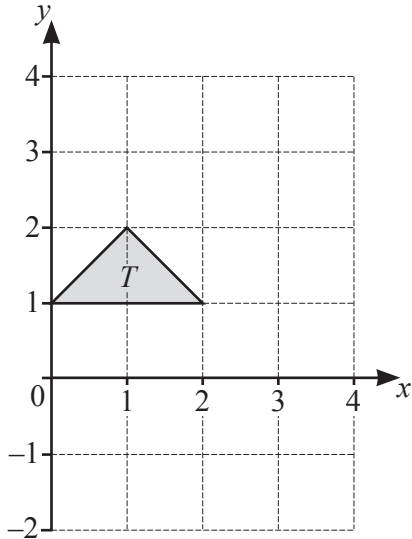
..... [2]

- (b) Simplify $\frac{a}{x} \div \frac{b}{2y}$.

Give your answer as a single fraction.

..... [1]

6



Rotate triangle T 90° clockwise about the point $(2, 1)$.

[2]

7 The interior angle of a regular polygon is 140° .

Find the number of sides of this polygon.

..... [3]

8 Rearrange this equation to make x the subject.

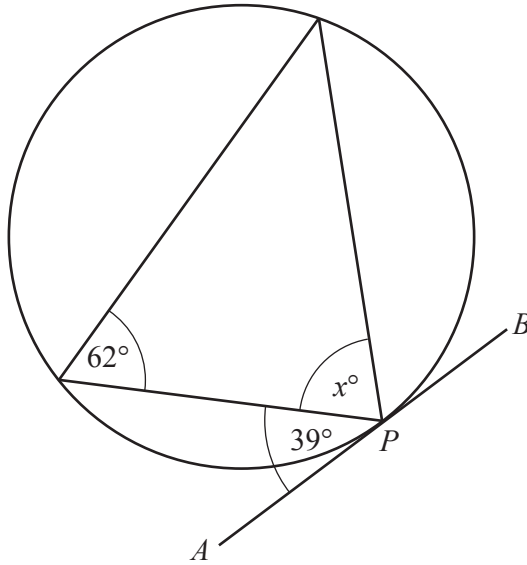
$$y = 7x + 2$$

$x =$ [2]

9 Simplify $(3w^3)^3$.

..... [2]

10



NOT TO
SCALE

APB is a tangent to the circle at P .

Work out the value of x .

$x =$ [2]

11 Simplify $\sqrt{27} + \sqrt{12} - \sqrt{108}$.

..... [2]

12 $f(x) = 3 \sin(4x^\circ)$

Find the amplitude and period of $f(x)$.

Amplitude =

Period = [2]

13 y varies inversely as \sqrt{x} .

When $x = 9$, $y = 2$.

Find y in terms of x .

$y = \dots\dots\dots$ [2]

14 $f(x) = x^{\frac{1}{7}}$

Find $f^{-1}(x)$.

$f^{-1}(x) = \dots\dots\dots$ [1]

Question 15 is printed on the next page.

15 Simplify.

(a) $\frac{3}{x+2} - \frac{2}{x-1}$

..... [3]

(b) $\frac{6x^2 + x - 12}{6ax - 8a - 3x + 4}$

..... [5]

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