Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

1751561870

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/21**

Paper 2 (Extended) **October/November 2019**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 40.

This document consists of **8** printed pages.

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Formula List

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

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

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

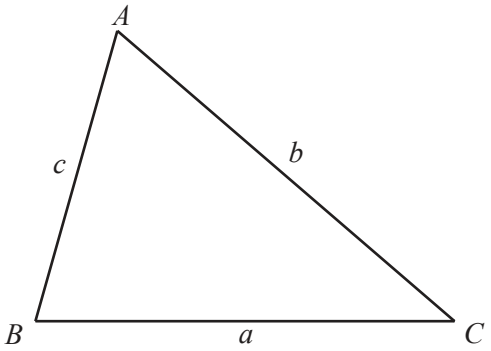
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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

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

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

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



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

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

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

Answer **all** the questions.

1 Work out $15 + 14 \times 2$.

..... [1]

2 Here is a list of numbers.

21 23 29 33 39 63 91 92

From the list, write down

(a) a factor of 46, ... [1]

(b) a prime number. ..... [1]

3 List the integer values of x such that $-3 < x \leqslant 1$.

..... [2]

4 At a railway station, the probability that any train departs on time is $\frac{7}{8}$.

The number of trains in one day is 72.

Work out the expected number of trains that depart on time.

..... [1]

5 Work out $\frac{3}{4} \div 4\frac{1}{2}$.

Give your answer as a fraction in its lowest terms.

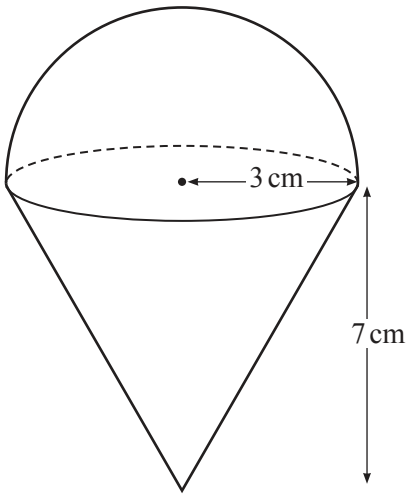
..... [2]

6 9, 27, 81, 243, …

Find the nth term of this sequence.

..... [2]

7



NOT TO SCALE

The diagram shows a hemisphere joined to a cone.
The hemisphere has a radius of 3 cm.
The cone has a radius of 3 cm and a height of 7 cm.
The total volume of the shape is $k\pi$ cm^3.

Find the value of k.

$k =$ ..... [3]

8 Find the value of $8^{\frac{4}{3}}$.

..... [1]

9 $\mathbf{p} = \begin{pmatrix} 12 \\ -5 \end{pmatrix}$

Find

(a) $2\mathbf{p}$,

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

(b) $|\mathbf{p}|$.

..... [2]

10 Solve.

$$4w^2 - 8w - 5 = 0$$

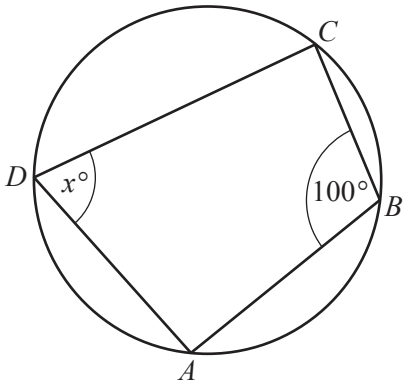
$w =$ ..... or $w =$ ..... [3]

11 y varies inversely as $\sqrt{x}$.
When $x = 16$, $y = 9$.

Find y in terms of x.

$y =$ ..... [2]

12 (a)



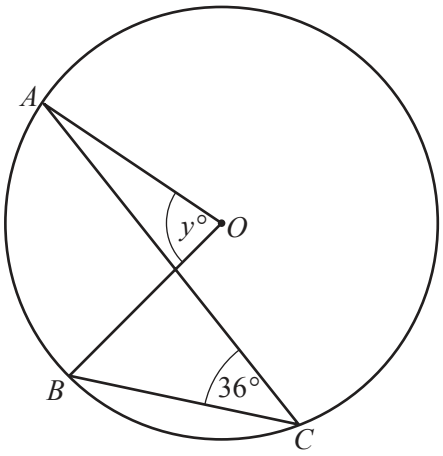
NOT TO SCALE

The points A, B, C and D lie on the circle.

Find the value of x.

$x =$ ..... [1]

(b)



NOT TO SCALE

The points A, B and C lie on the circle, centre O.

Find the value of y.

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

13 **(a)** Simplify $\sqrt{20} + \sqrt{125}$.

..... [2]

(b) Rationalise the denominator and simplify your answer.

$$\frac{18}{\sqrt{7} - 1}$$

..... [2]

14 Make l the subject of the formula $T = 2\pi\sqrt{\frac{l}{g}}$.

$l =$ ..... [3]

15 Simplify $(t^{27})^{\frac{1}{3}}$.

..... [1]

Questions 16 and 17 are printed on the next page.

16 A is the point (0, 8) and B is the point (6, 0).
The line L passes through B and is perpendicular to AB.

Find the equation of L.

..... [4]

17 Simplify $\dfrac{ab-ac+2b-2c}{a^2-4}$.

..... [4]