## Cambridge IGCSE ${ }^{\text {TM }}$



## CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/21
Paper 2 (Extended)
May/June 2020
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 [ ].


## Formula List

For the equation

$$
a x^{2}+b x+c=0
$$

$$
x=\frac{-b \pm \sqrt{b^{2}-4 a c}}{2 a}
$$

Curved surface area, $A$, of cylinder of radius $r$, height $h$.

Curved surface area, $A$, of cone of radius $r$, sloping edge $l$.

Curved surface area, $A$, of sphere of radius $r$.

Volume, $V$, of pyramid, base area $A$, height $h$.

Volume, $V$, of cylinder of radius $r$, height $h$.

Volume, $V$, of cone of radius $r$, height $h$.

Volume, $V$, of sphere of radius $r$.

$A=2 \pi r h$
$A=\pi r l$
$A=4 \pi r^{2}$
$V=\frac{1}{3} A h$
$V=\pi r^{2} h$
$V=\frac{1}{3} \pi r^{2} h$
$V=\frac{4}{3} \pi r^{3}$

$$
\begin{aligned}
& \frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C} \\
& a^{2}=b^{2}+c^{2}-2 b c \cos A \\
& \text { Area }=\frac{1}{2} b c \sin A
\end{aligned}
$$

Answer all the questions.
1 A cuboid has a square base of side 10 cm and a volume of $1200 \mathrm{~cm}^{3}$.
Work out the height of the cuboid.

2

$$
\mathbf{p}=\binom{3}{-1} \quad \mathbf{q}=\binom{1}{-2}
$$

(a) Find $\mathbf{p}+\mathbf{q}$.
(b) $A$ is the point $(2,7)$.

The point $A$ is translated to the point $B$ by the vector $\mathbf{p}+\mathbf{q}$.
Find the coordinates of $B$.
$\qquad$

3 Work out $\frac{3}{4} \div 2 \frac{1}{2}$.
Give your answer as a fraction in its lowest terms.

4 A truck of length 10 m passes a gate of length 2 m .
The speed of the truck is $8 \mathrm{~m} / \mathrm{s}$.
Find the time the truck takes to completely pass the gate.
s [2]

5 Find the volume of a cone with radius 3 cm and perpendicular height 8 cm . Give your answer in terms of $\pi$.
$\qquad$
$\mathrm{cm}^{3}$

6


NOT TO
SCALE

Work out the value of $x$.

$$
x=
$$

7 Simplify.
(a) $\frac{15 w^{15}}{3 w^{3}}$
(b) $\left(125 y^{6}\right)^{\frac{2}{3}}$

$$
A=2 \pi r h+3 \pi r^{2}
$$

Rearrange the formula to write $h$ in terms of $\pi, r$ and $A$.

$$
h=
$$

9


NOT TO
SCALE
$A, B$ and $C$ are points on a circle
$T A$ is a tangent to the circle at $A$.
$C A=C B$ and angle $B A T=70^{\circ}$.
Work out the value of $x$.

$$
x=
$$

10 When Jack sells a computer for \$264 he makes a profit of $20 \%$.

Work out the price Jack paid for the computer.
$11 y$ is inversely proportional to $\sqrt{x}$. When $x=9, y=2$.

Find $y$ in terms of $x$.

$$
y=
$$

$123 \log y=2 \log x-\log w$
Find $y$ in terms of $x$ and $w$.

$$
\begin{equation*}
y= \tag{3}
\end{equation*}
$$

13 Rationalise the denominator.

$$
\frac{9}{\sqrt{7}-2}
$$



In the diagram, the graph passes through the point $(4,2)$.
Write down the equation of the graph.

15 Simplify.

$$
\frac{3-a}{3 p-6 t-a p+2 a t}
$$

Question 16 is printed on the next page.

16 Write as a single fraction in its simplest form.

$$
\frac{1}{x-3}-\frac{2}{x}
$$

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