Cambridge Assessment International Education

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3103934013

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 [ ].

This document has **8** pages. Blank pages are indicated.

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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. $\quad A = \pi rl$

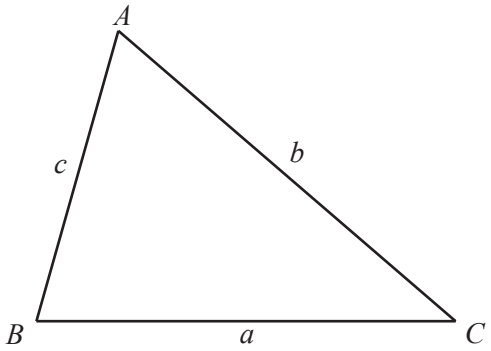
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 A cuboid has a square base of side 10 cm and a volume of 1200 cm^3.

Work out the height of the cuboid.

..... cm [2]

2 $\mathbf{p} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} 1 \\ -2 \end{pmatrix}$

(a) Find $\mathbf{p} + \mathbf{q}$.

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

(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.

(....., ...) [2]

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

Give your answer as a fraction in its lowest terms.

..... [3]

4 A truck of length 10 m passes a gate of length 2 m.
The speed of the truck is 8 m/s.

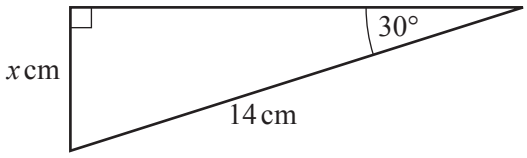
Find the time the truck takes to completely pass the gate.

..... s [2]

5 Find the volume of a cone with radius 3 cm and perpendicular height 8 cm.
Give your answer in terms of π.

..... cm^3 [2]

6



NOT TO SCALE

Work out the value of x.

$x =$ ..... [3]

7 Simplify.

(a) $\dfrac{15w^{15}}{3w^3}$

..... [2]

(b) $\left(125y^6\right)^{\frac{2}{3}}$

..... [2]

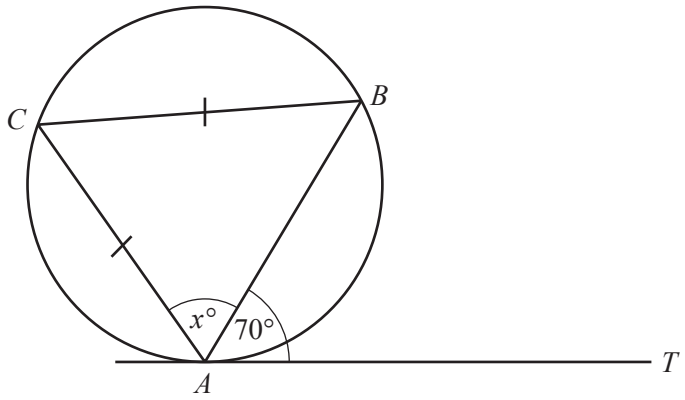
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8 $A = 2\pi rh + 3\pi r^2$

Rearrange the formula to write h in terms of π, r and A.

$h =$ ..... [2]

9



NOT TO SCALE

A, B and C are points on a circle.
TA is a tangent to the circle at A.
$CA = CB$ and angle $BAT = 70°$.

Work out the value of x.

$x =$ ..... [2]

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

Work out the price Jack paid for the computer.

\$ ..... [2]

11 y is inversely proportional to $\sqrt{x}$.
When $x = 9$, $y = 2$.

Find y in terms of x.

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

12 $3\log y = 2\log x - \log w$

Find y in terms of x and w.

$y =$ ..... [3]

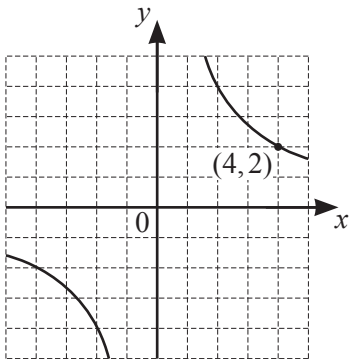
13 Rationalise the denominator.

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

..... [2]

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14



In the diagram, the graph passes through the point (4, 2).

Write down the equation of the graph.

..... [2]

15 Simplify.

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

..... [3]

Question 16 is printed on the next page.

16 Write as a single fraction in its simplest form.

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

..... [3]

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