



CANDIDATE  
NAME

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CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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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.

## 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  $l$ .  $A = \pi rl$

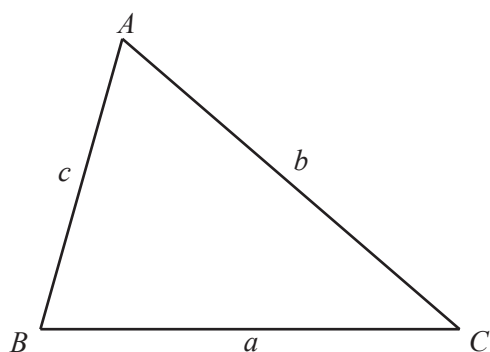
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

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 cuboid has a square base of side 10 cm and a volume of  $1200 \text{ cm}^3$ .

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  $\mathbf{p} + \mathbf{q}$ .

$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [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.

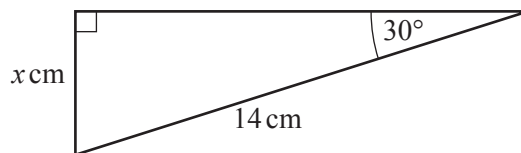
Find the time the truck takes to completely pass the gate.

..... s [2]

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

.....  $\text{cm}^3$  [2]

6



NOT TO  
SCALE

Work out the value of  $x$ .

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

- 7 Simplify.

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

..... [2]

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

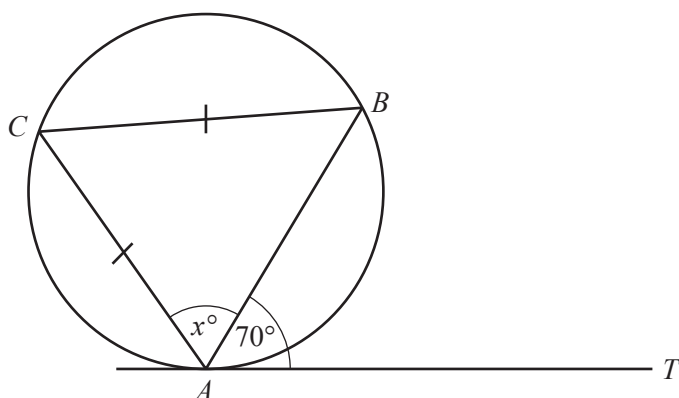
..... [2]

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

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

$h = \dots\dots\dots$  [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  $BAT = 70^\circ$ .

Work out the value of  $x$ .

$x = \dots\dots\dots$  [2]

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

Work out the price Jack paid for the computer.

\$  $\dots\dots\dots$  [2]

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

Find  $y$  in terms of  $x$ .

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

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

Find  $y$  in terms of  $x$  and  $w$ .

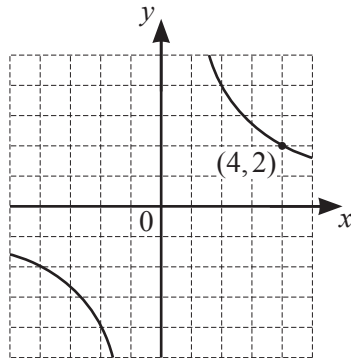
$$y = \dots\dots\dots [3]$$

- 13** Rationalise the denominator.

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

$$\dots\dots\dots [2]$$

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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