



## Cambridge IGCSE™

CANDIDATE  
NAME

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**CAMBRIDGE INTERNATIONAL MATHEMATICS****0607/21**

Paper 2 (Extended)

**May/June 2022****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  $l$ .  $A = \pi rl$

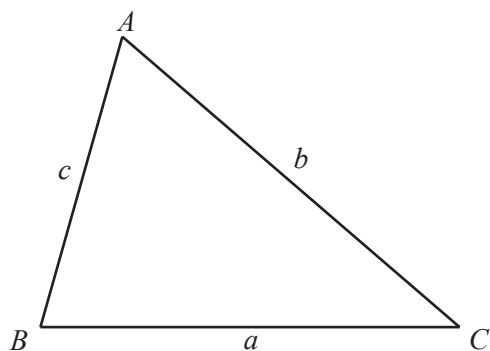
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

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  $r$ .  $V = \frac{4}{3}\pi r^3$



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

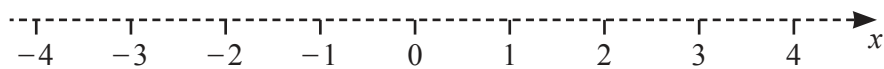
$$a^2 = b^2 + c^2 - 2bc \cos A$$

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

## 3

Answer **all** the questions.

- 1 On the number line, show the inequality  $-2 \leq x < 3$ .



[2]

- 2 Work out  $4 \times \begin{pmatrix} 6 \\ -2 \end{pmatrix}$ .

$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

- 3 21 24 25 27 29 39 48

From the list of numbers, write down

- (a) the prime number,

..... [1]

- (b) the cube number.

..... [1]

- 4 Factorise  $x^3 - 2x$ .

..... [1]

- 5 (a) Write 7.297 84 correct to 3 significant figures.

..... [1]

- (b) Write 0.000 003 06 in standard form.

..... [1]

- 6 Solve.

- (a)  $4x = 28$

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

- (b)  $3(a - 6) = 24$

$a =$  ..... [2]

4

7 Karen has 3 blue hats, 5 red hats and 2 white hats.  
She also has 4 blue scarves, 3 red scarves and 1 white scarf.

(a) Karen takes a hat at random and replaces it.

Find the probability that it is white.

..... [1]

(b) Karen takes a hat and a scarf at random.

Find the probability that both the hat and the scarf are blue.

..... [2]

8 Find the value of  $49^{\frac{1}{2}}$ .

..... [1]

9 Write 90 as the product of its prime factors.

..... [2]

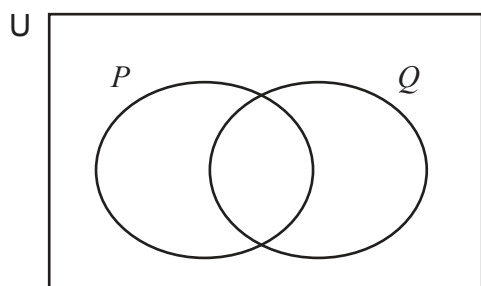
10 Find the magnitude of the vector  $\begin{pmatrix} 2 \\ 6 \end{pmatrix}$ .

Give your answer in simplest surd form.

..... [2]

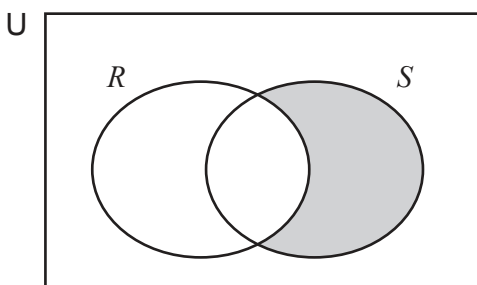
5

- 11 (a) Shade  $P \cup Q$ .



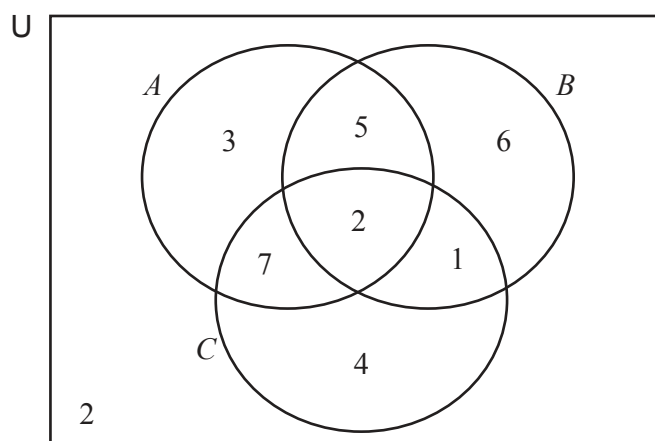
[1]

- (b) Describe the shaded area using set notation.



..... [1]

- (c) The Venn diagram shows the number of elements in each subset.

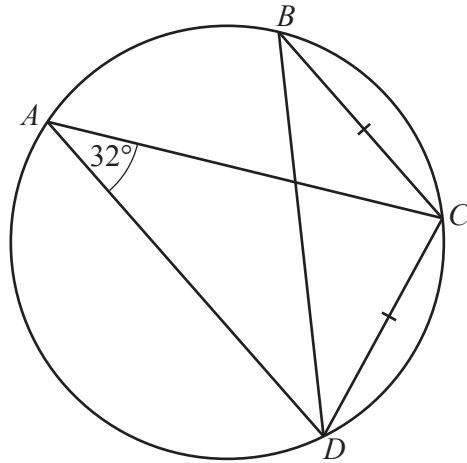


Find  $n((B' \cap C) \cap A)$ .

..... [1]

6

12 (a)

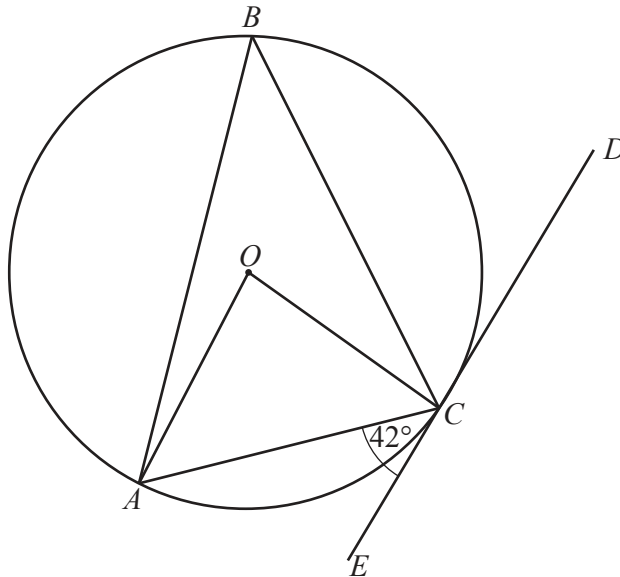
NOT TO  
SCALE

$A, B, C$ , and  $D$  are points on a circle.  
 Angle  $DAC = 32^\circ$ .  
 $BC = DC$ .

Find angle  $BCD$ .

Angle  $BCD = \dots\dots\dots$  [2]

(b)

NOT TO  
SCALE

$A, B$  and  $C$  are points on the circle centre  $O$ .  
 $ECD$  is a tangent to the circle at  $C$ .  
 Angle  $ACE = 42^\circ$ .

Find angle  $AOC$ .

Angle  $AOC = \dots\dots\dots$  [2]

**13 (a)** Simplify fully.

$$\sqrt{75} - \sqrt{48} + \sqrt{12}$$

..... [2]

**(b)** Rationalise the denominator, giving your answer in its simplest form.

$$\frac{1}{\sqrt{3} + 5}$$

..... [2]

**14**  $x^2 - 14x + c = (x + d)^2$

Find the value of  $c$  and the value of  $d$ .

$$c = \dots\dots\dots$$

$$d = \dots\dots\dots [3]$$

**Questions 15 and 16 are printed on the next page.**

**15 (a)** Factorise fully.

$$6x^2 - 7x - 3$$

..... [2]

**(b)** Solve.

$$6x^2 - 7x - 3 < 0$$

..... [3]

**16** Solve.

$$2\log 3 - \log 2 = \log p$$

$p =$  ..... [2]

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