



Cambridge IGCSE™

CANDIDATE
NAME

CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



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 . $A = \pi rl$

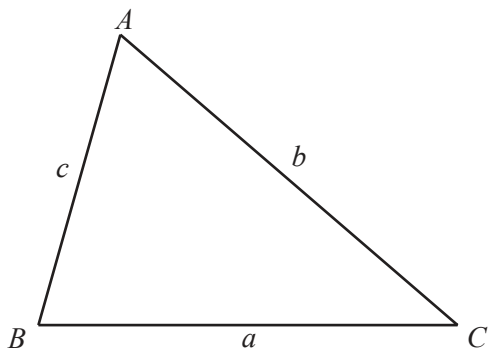
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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



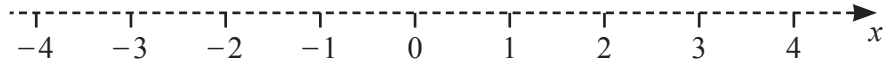
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

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

Answer **all** the questions.

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



[2]

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

$\begin{pmatrix} \\ \end{pmatrix}$ [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 7.29784 correct to 3 significant figures.

..... [1]

- (b) Write 0.00000306 in standard form.

..... [1]

- 6 Solve.

- (a) $4x = 28$

$x =$ [1]

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

$a =$ [2]

- 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.

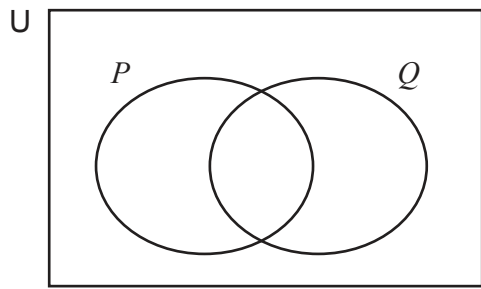
..... [2]

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

Give your answer in simplest surd form.

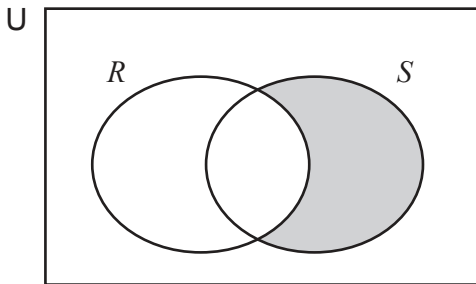
..... [2]

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



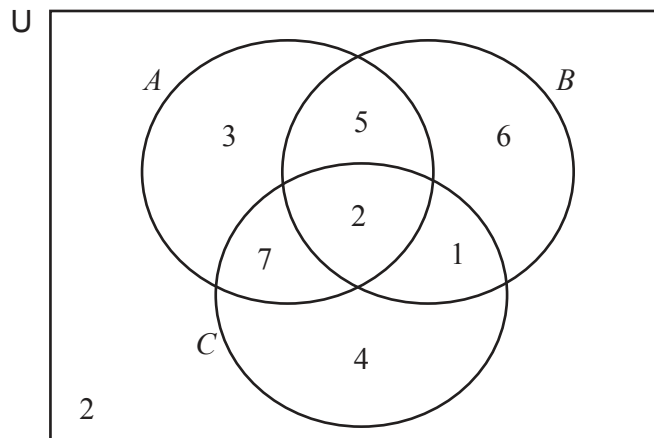
[1]

(b) Describe the shaded area using set notation.



..... [1]

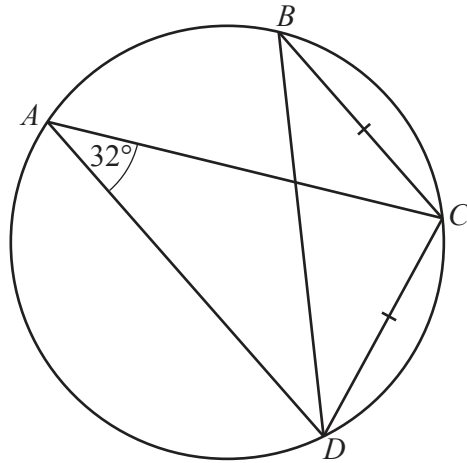
(c) The Venn diagram shows the number of elements in each subset.



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

..... [1]

12 (a)

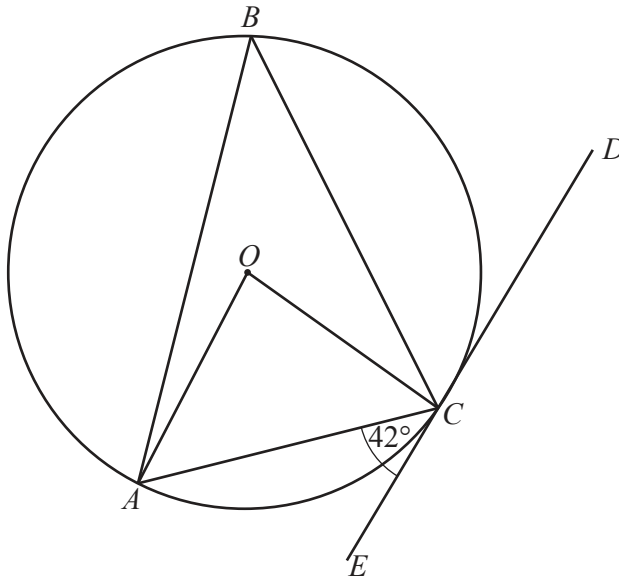
NOT TO
SCALE

$A, B, C,$ 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 .

$c =$

$d =$ [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]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.