# Cambridge IGCSE™

CANDIDATE NAME
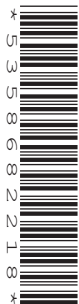
CENTRE NUMBER

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**CAMBRIDGE INTERNATIONAL MATHEMATICS** **0607/22**

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 $ax^2 + bx + c = 0$ $\qquad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area, $A$, of cylinder of radius $r$, height $h$. $\qquad A = 2\pi rh$

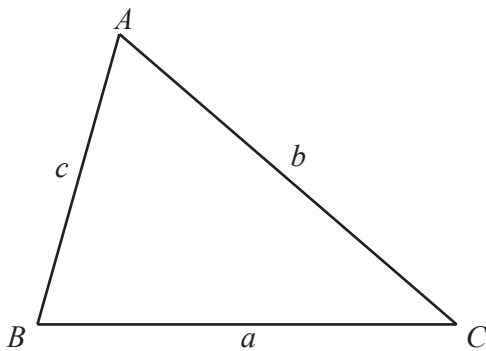Curved surface area, $A$, of cone of radius $r$, sloping edge $l$. $\qquad A = \pi rl$

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

Volume, $V$, of pyramid, base area $A$, height $h$. $\qquad V = \dfrac{1}{3}Ah$

Volume, $V$, of cylinder of radius $r$, height $h$. $\qquad V = \pi r^2 h$

Volume, $V$, of cone of radius $r$, height $h$. $\qquad V = \dfrac{1}{3}\pi r^2 h$

Volume, $V$, of sphere of radius $r$. $\qquad V = \dfrac{4}{3}\pi r^3$

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

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

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

Answer **all** the questions.

**1** Work out.

$$(0.03)^2$$

.................................................. [1]

**2 (a)** Write the fraction $\dfrac{15}{40}$ in its lowest terms.

.................................................. [1]

**(b)** Work out.

$$\frac{2}{3} + \frac{2}{9}$$

.................................................. [2]

**3** Solve the equation.

$$x - 11 = -4$$

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

**4** Change $600 \, \text{cm}^3$ into $\text{m}^3$.

................................................ $\text{m}^3$ [1]

**5** Work out $64^{\frac{1}{3}}$.

.................................................. [1]

**6**
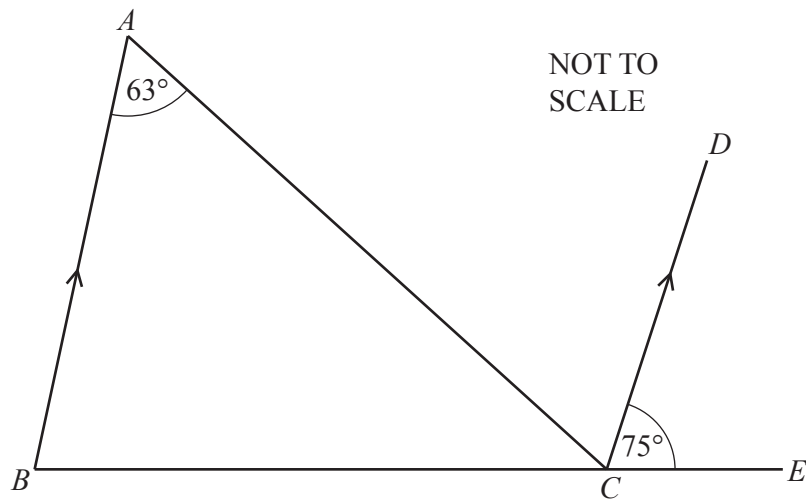


*AB* is parallel to *CD*.

Find angle *ACD*.

Angle *ACD* = ................................................. [1]

**7** Kendra jogs 7 km in 45 minutes.
She then runs at 12 km/h for 30 minutes.

Find her average speed in km/h for the whole journey.

.......................................... km/h [3]

**8** The mean of eight numbers is 25.
When two extra numbers are included the mean of the ten numbers is 24.

Find the mean of the two extra numbers.

.................................................. [2]

**9** Solve the simultaneous equations.

$$5x + 2y = -12$$
$$3x - y = -5$$

$x =$ ...................................................

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

**10** $A$ is the point $(-1, 13)$ and $B$ is the point $(3, 1)$.

Find the equation of the line $AB$, giving your answer in the form $y = mx + c$.

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

**11** Solve.

$$6x^2 - 5x - 6 = 0$$

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

**12** The lengths of the sides of a triangle are 3 cm, 4 cm and 5 cm.

Find the sine of the smallest angle.

.................................................. [1]

**13** John goes to a shop that sells newspapers and magazines only.

**(a)** Complete the table of probabilities of John buying something at the shop.

|  | Buys a newspaper | Does not buy a newspaper | Total |
|---|---|---|---|
| Buys a magazine |  |  | 0.40 |
| Does not buy a magazine | 0.25 |  |  |
| Total | 0.55 |  | 1.00 |

[2]

**(b)** Find the probability that John buys a magazine but not a newspaper.

.................................................. [1]

**14** $$f(x) = |2x + 3|$$

Find the values of $x$ when $f(x) = 15$.

.................................................. [2]

**15** A bag has 5 black counters, 4 white counters and 1 red counter.
One counter is chosen at random and is replaced.
A second counter is then chosen at random.

Find the probability that the two counters chosen are different colours.

..................................................... [4]

**16** Solve.

$$\log x = 1 + \log 9 - \log 8 + 2\log\frac{2}{3}$$

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

**Question 17 is printed on the next page.**

**17 (a)** Expand the brackets and simplify.

$$\left(\sqrt{a}+\sqrt{b}\right)\left(\sqrt{a}-\sqrt{b}\right)$$

.................................................... [2]

**(b)** Rationalise the denominator.

$$\frac{1}{\sqrt{7}+\sqrt{6}}$$

.................................................... [1]

**(c)** Work out the value of

$$\frac{1}{\sqrt{9}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{4}}.$$

.................................................... [2]