Cambridge Assessment International Education

# Cambridge IGCSE™

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| CANDIDATE NAME | | | | | | | | | |
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*7847885517*

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

Paper 2 (Extended) **October/November 2021**

**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 **12** pages. Any blank pages are indicated.




**[Turn over**

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

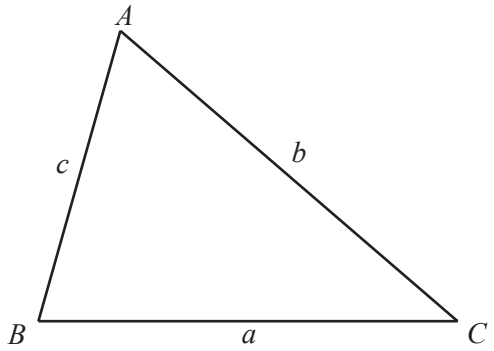
Curved surface area, $A$, of sphere of radius $r$. $\quad A = 4\pi r^2$

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)** Write 4 347 849 correct to the nearest ten thousand.

..... [1]

**(b)** Write 0.004 024 3 correct to 2 significant figures.

..... [1]

**2** 90 91 92 93 94 95 96 97 98 99

From this list, write down

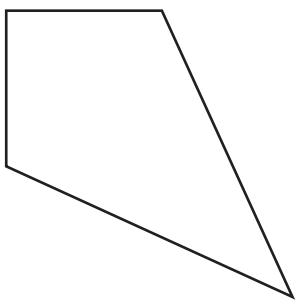
**(a)** a prime number,

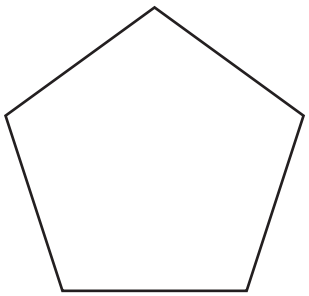
..... [1]

**(b)** a common multiple of 4 and 6.

..... [1]

**3** Draw **all** the lines of symmetry on each of these shapes.



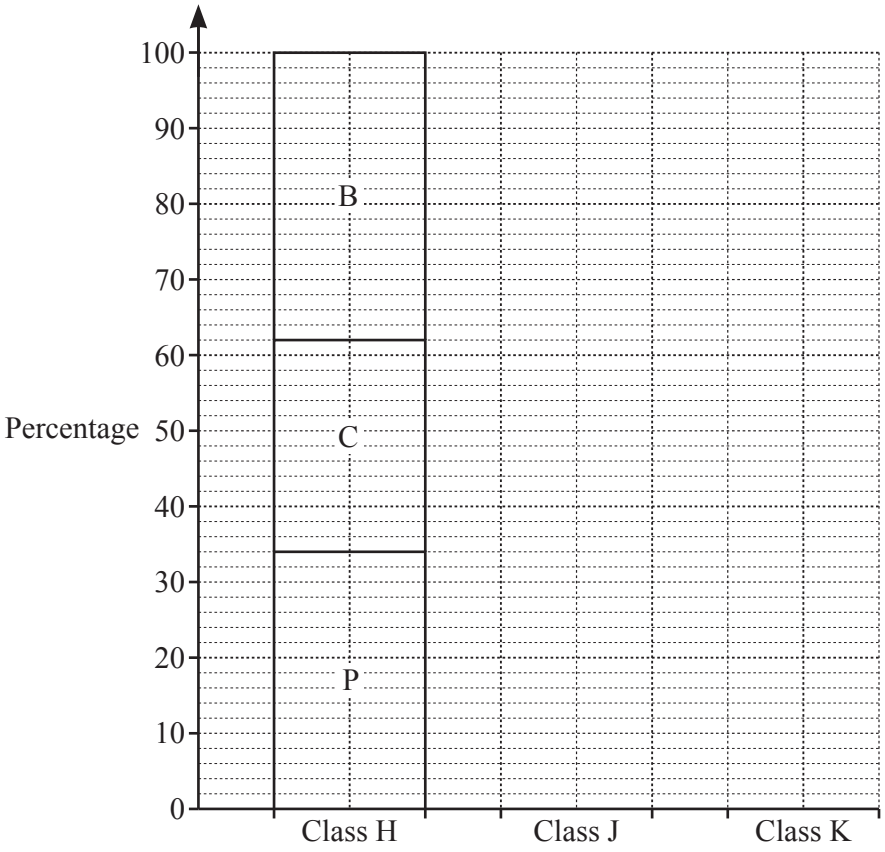


[2]

**4** The table shows the percentage of students in each of three classes who study physics, chemistry and biology.

| | Physics (P) | Chemistry (C) | Biology (B) |
|---|---|---|---|
| Class H | 34 | 28 | 38 |
| Class J | 24 | 18 | 58 |
| Class K | 46 | 32 | 22 |

Complete the compound bar chart to show this information.




[3]

**5** Solve.

$$2(4x-1) = 3(2x+1)$$

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

**6** **(a)** Write $0.000\,058\,6$ in standard form.

..... [1]

**(b)** $(2\times10^{a}) \div (8\times10^{b}) = k\times10^{n}$ where $1 \leqslant k < 10$.

**(i)** Find the value of $k$.

$k =$ ..... [1]

**(ii)** Write an expression for $n$ in terms of $a$ and $b$.

$n =$ ..... [1]

**7** Mia carries out a survey in a school to find out what students will do when they leave school. These are her results.

| | University | Job | Training | Travelling | Total |
|---|---|---|---|---|---|
| Frequency | 112 | 43 | 27 | 18 | 200 |

**(a)** Find the relative frequency of university.

..... [1]

**(b)** There are 1600 students in this school.

**(i)** Explain why the result in **part (a)** is a reasonable estimate of the probability that a student from this school will go to university.

..... [1]

**(ii)** Calculate an estimate for the number of students in this school who will go travelling.

..... [2]

**8** Solve the simultaneous equations.

$$3x - 2y = 12$$
$$5x + y = 7$$

$x =$ .....

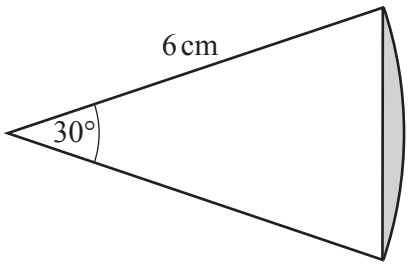
$y =$ ..... [3]

**9** $y$ varies inversely as the square of $(x+2)$.
When $x = 4$, $y = 0.5$.

Find $y$ in terms of $x$.

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

**10**




NOT TO SCALE

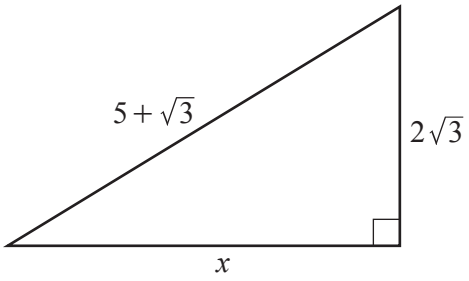
The diagram shows a sector of a circle with radius 6 cm and sector angle 30°.
The area of the shaded segment is $(a\pi - b)\,\text{cm}^2$.

Find the value of $a$ and the value of $b$.

$a =$ .....

$b =$ ..... [3]

**11** In this question all lengths are in centimetres.

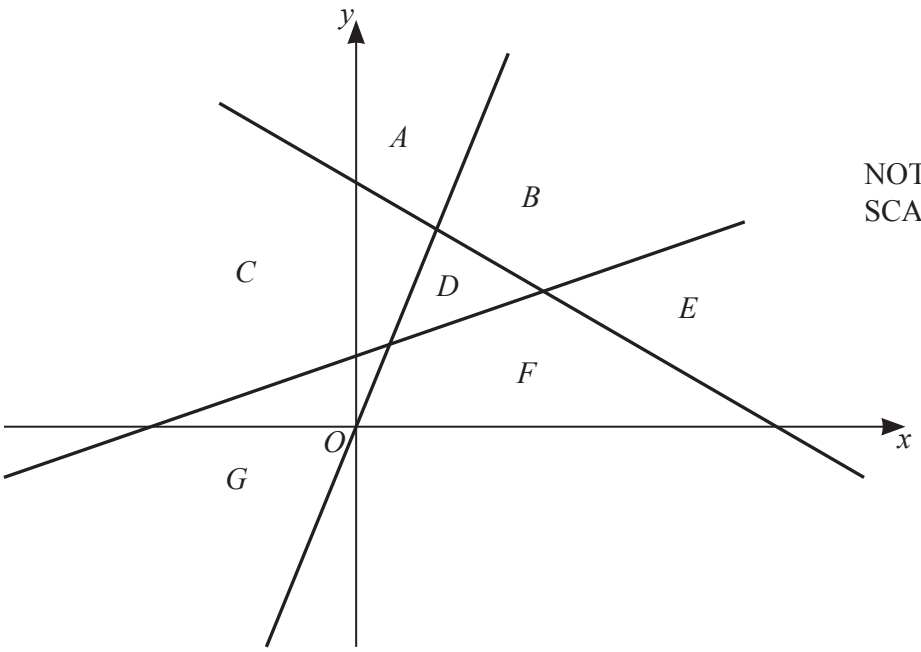



NOT TO SCALE

Find the value of $x^2$.
Give your answer in the form $a+b\sqrt{3}$ where $a$ and $b$ are integers.

$x^2 =$ ..... [4]

**12**




The diagram shows the lines $y = \frac{1}{2}x + 1$, $y = 3x$ and $3x + 4y = 12$.

These lines divide the space into 7 regions, $A$, $B$, $C$, $D$, $E$, $F$, and $G$.

Write down the letter of the region which is defined by

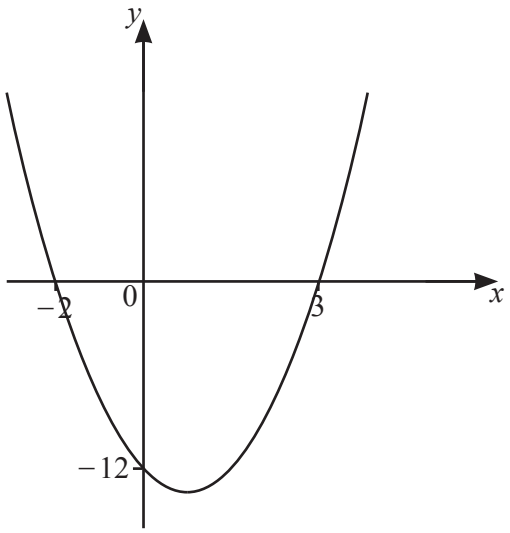
**(a)** $y \leqslant \frac{1}{2}x + 1$, $y \leqslant 3x$ and $3x + 4y \leqslant 12$,

Region ..... [1]

**(b)** $y \geqslant \frac{1}{2}x + 1$, $y \geqslant 3x$ and $3x + 4y \leqslant 12$.

Region ..... [1]

**13**




NOT TO SCALE

The equation of the curve is $y = ax^2 + bx - 12$.

Find the value of $a$ and the value of $b$.

$a =$ .....

$b =$ ..... [3]

**14** Solve.

**(a)** $\log_3 x = 4$

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

**(b)** $2\log x - 3\log 2 = \log 50$

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

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