Cambridge Assessment International Education

Cambridge IGCSE™

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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.

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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. $\quad A = \pi rl$

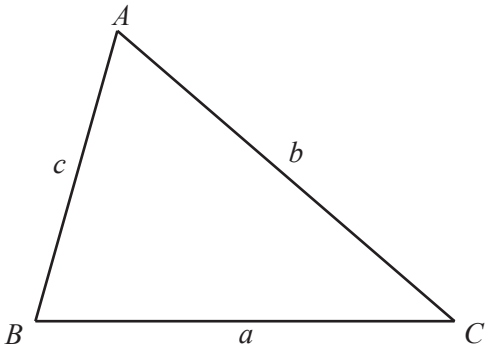
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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

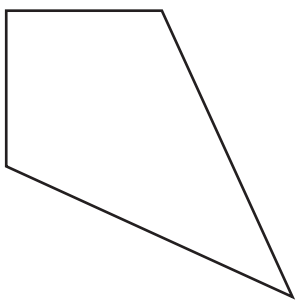
(a) a prime number,

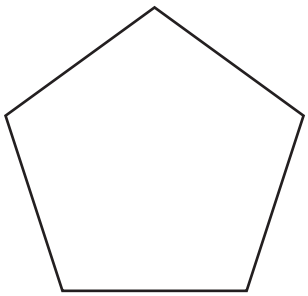
..... [1]

(b) a common multiple of 4 and 6.

..... [1]

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



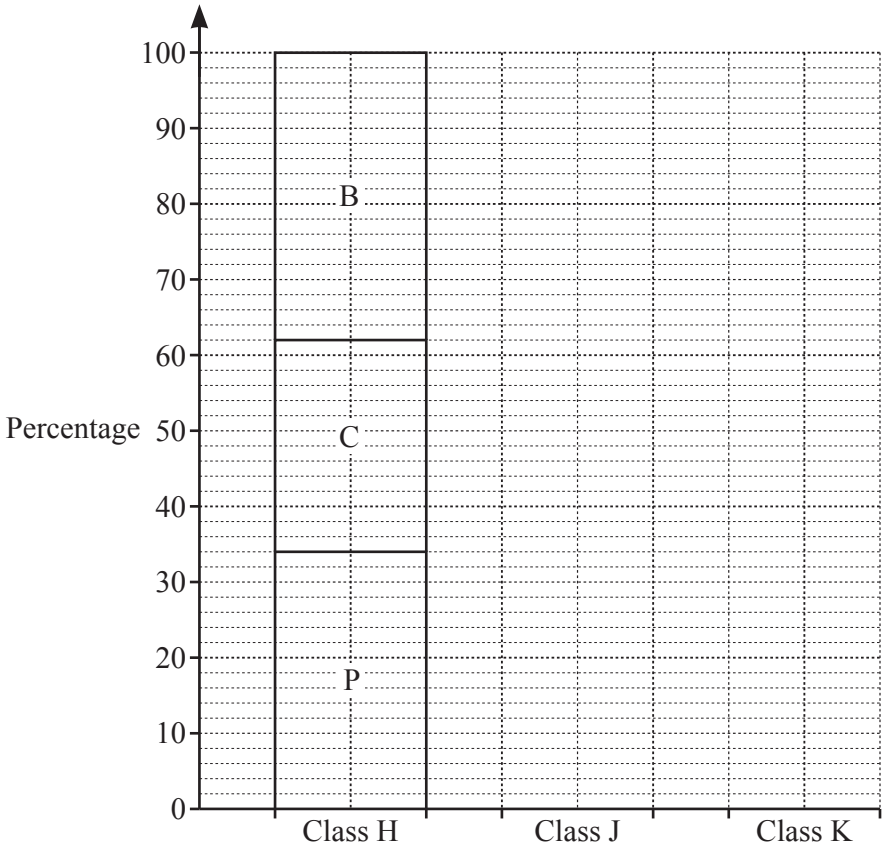


[2]

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.

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

$x =$ .....

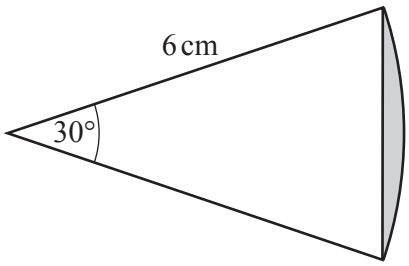
$y =$ ..... [3]

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

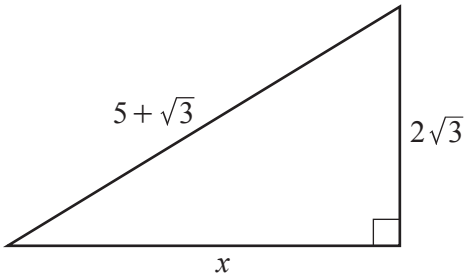
The diagram shows a sector of a circle with radius 6 cm and sector angle 30°.
The area of the shaded segment is $(a\pi - b)\,\text{cm}^2$.

Find the value of a and the value of b.

$a =$ .....

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

11 In this question all lengths are in centimetres.

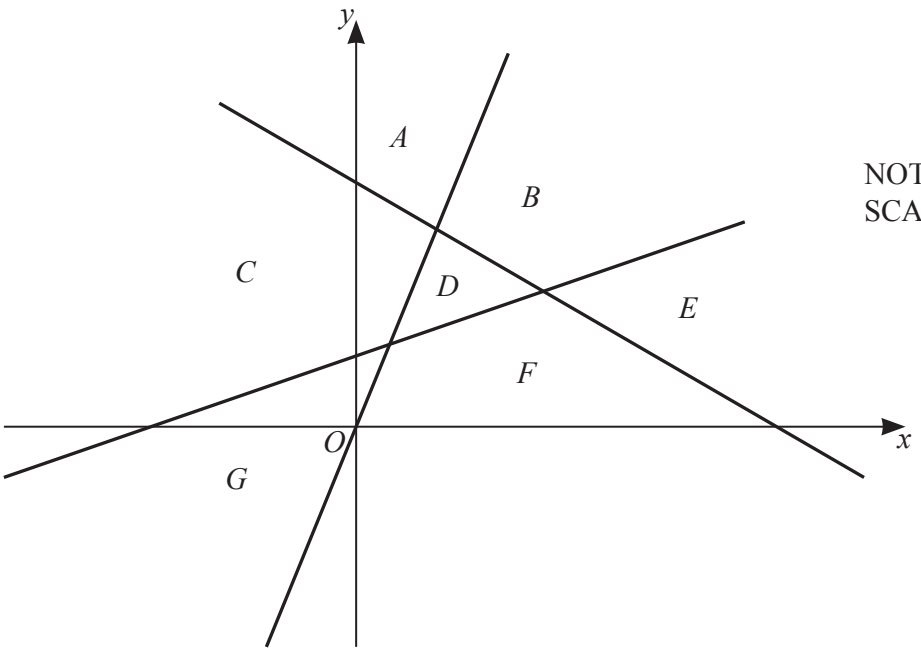


NOT TO SCALE

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



NOT TO SCALE

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

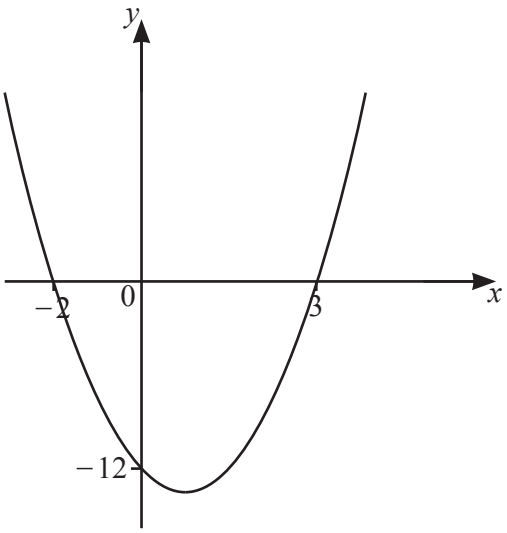
(a) $y \leqslant \frac{1}{2}x + 1$, $y \leqslant 3x$ and $3x + 4y \leqslant 12$,

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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