



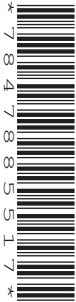
## Cambridge IGCSE™

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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.

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

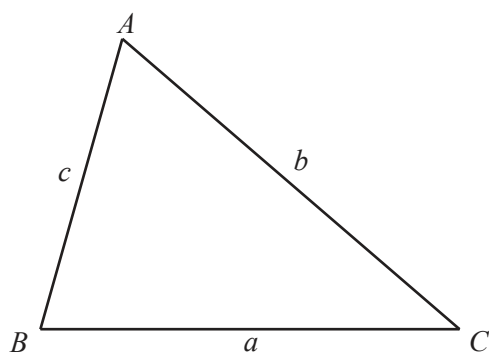
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

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** (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

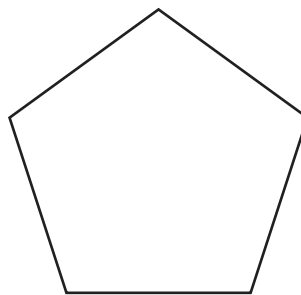
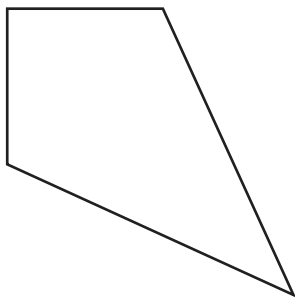
- (a) a prime number,

..... [1]

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

..... [1]

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

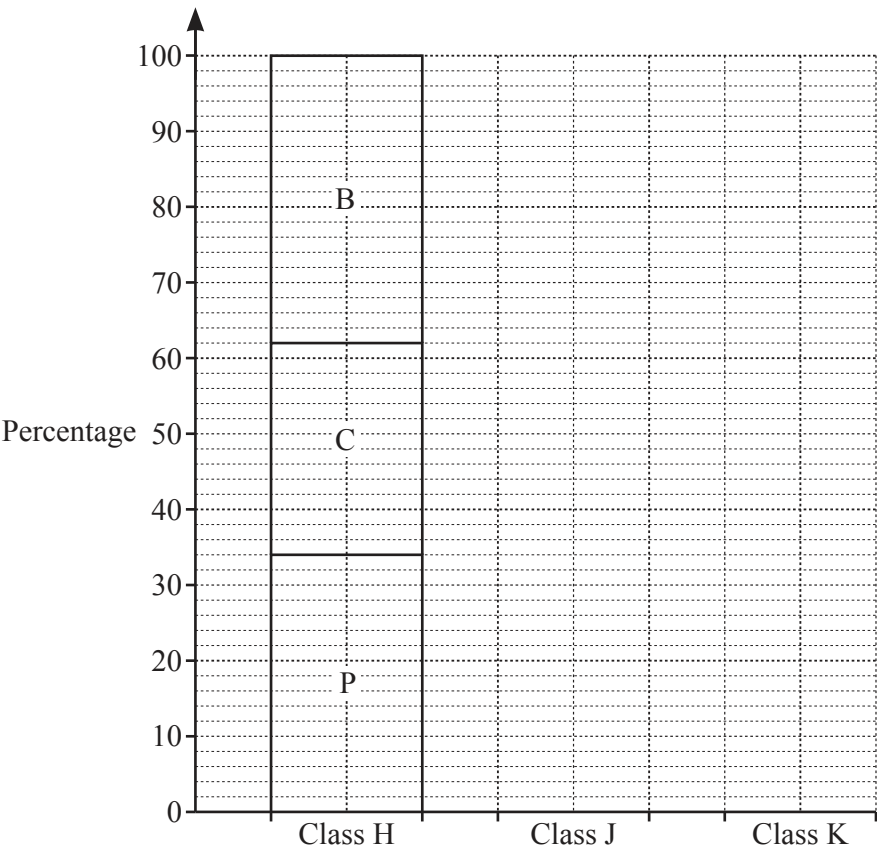


[2]

- 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****5** Solve.

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

$x = \dots\dots\dots [3]$

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

$\dots\dots\dots [1]$

**(b)**  $(2 \times 10^a) \div (8 \times 10^b) = k \times 10^n$  where  $1 \leq k < 10$ .**(i)** Find the value of  $k$ .

$k = \dots\dots\dots [1]$

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

$n = \dots\dots\dots [1]$

## 6

- 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.

$$3x - 2y = 12$$

$$5x + y = 7$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [3]$$

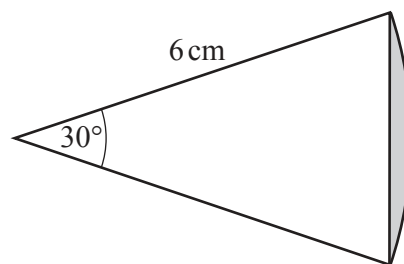
7

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

Find  $y$  in terms of  $x$ .

$y = \dots\dots\dots$  [2]

10



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

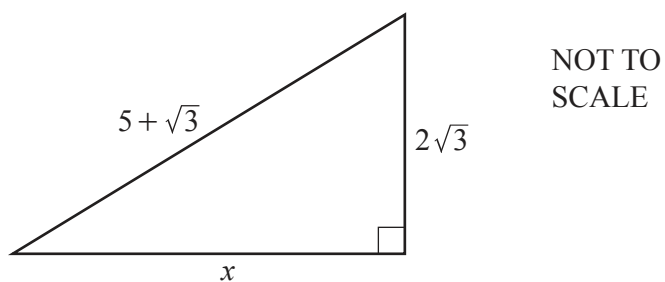
Find the value of  $a$  and the value of  $b$ .

$a = \dots\dots\dots$

$b = \dots\dots\dots$  [3]

8

11 In this question all lengths are in centimetres.

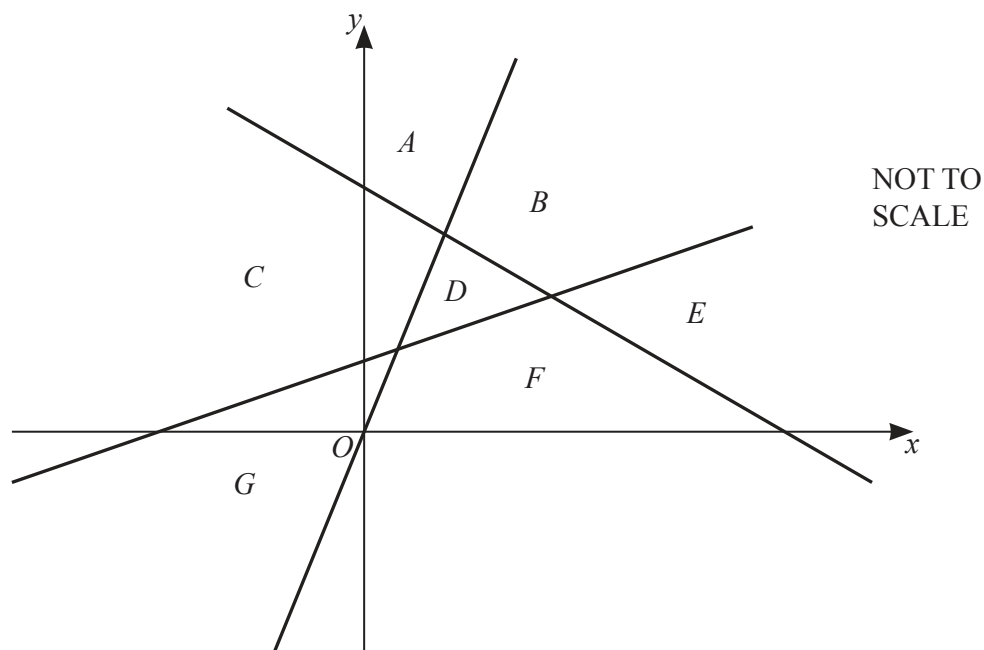


Find the value of  $x^2$ .

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

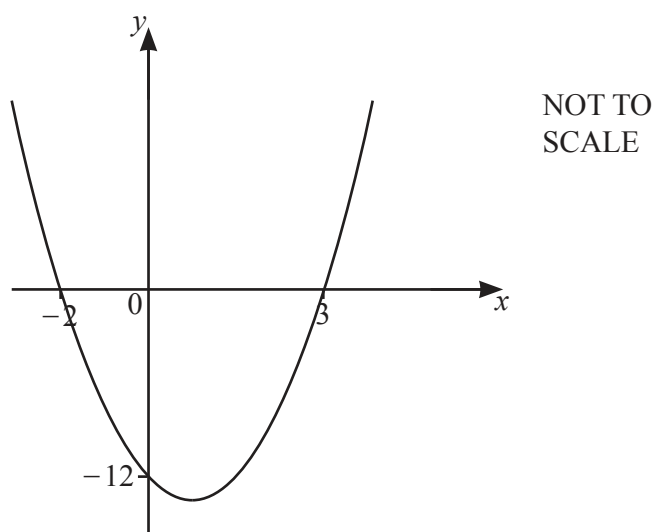
Region ..... [1]

(b)  $y \geq \frac{1}{2}x + 1$ ,  $y \geq 3x$  and  $3x + 4y \leq 12$ .

Region ..... [1]

10

13



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

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

$a =$  .....

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

**11****14** Solve.

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

$x = \dots\dots\dots [1]$

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

$x = \dots\dots\dots [3]$

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