Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

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5470271609

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/23**

Paper 2 (Extended) **May/June 2016**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 40.

This document consists of **8** printed pages.

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[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. $\quad A = \pi rl$

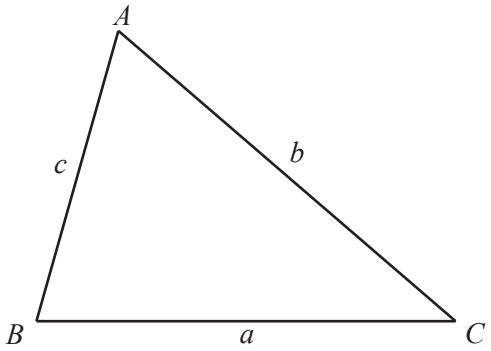
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 Alex drives 40 km to work at a speed of 50 km/h.
He leaves home at 07 45.

Find the time he arrives at work.

..... [3]

2 Alexis and Bertrand share a sum of money in the ratio 3 : 5.
Alexis receives $36.

Work out how much Bertrand receives.

$ ..... [2]

3 11 16 8 9 14 6 20 16 12 10

Find the median of these ten numbers.

..... [2]

4 **(a)** A regular polygon has 12 sides.

Work out the sum of the interior angles of the polygon.

..... [2]

(b) The interior angle of a regular polygon is 165°.

Find the number of sides of this polygon.

..... [2]

5 The total cost of 2 kg of apples and 1.5 kg of pears is $9.70 .
Apples cost $2.60 per kilogram.

Find the cost of 1 kg of pears.

$ ..... [3]

6 Find the next term in each of these sequences.

(a) 81, 77, 72, 66, 59, ... [1]

(b) 3, –6, 12, –24, 48, ... [1]

(c) 16, 8, 4, 2, 1, ... [1]

7 Work out, giving your answer in standard form.

(a) $(7.5 \times 10^{-4}) + (4 \times 10^{-6})$

..... [2]

(b) $(7.5 \times 10^{-4}) \times (4 \times 10^{-6})$

..... [2]

8 Expand the brackets.

$$x^2(x^3 - 7)$$

..... [2]

9 Write this list of numbers in order starting with the smallest.

$$\frac{2}{3} \qquad 65\% \qquad \sqrt{0.7} \qquad 0.069 \qquad 0.6^2$$

..... < ..... < ..... < ..... < ..... [2]
smallest

10 Expand the brackets and simplify.

$$2(3x - 4) - 3(2x - 3)$$

..... [2]

11 **(a)** Simplify.

$$\sqrt{3}(4\sqrt{12} - 7\sqrt{3})$$

..... [2]

(b) Rationalise the denominator.

$$\frac{7}{3 - \sqrt{2}}$$

..... [2]

12 Solve the simultaneous equations.
You must show all your working.

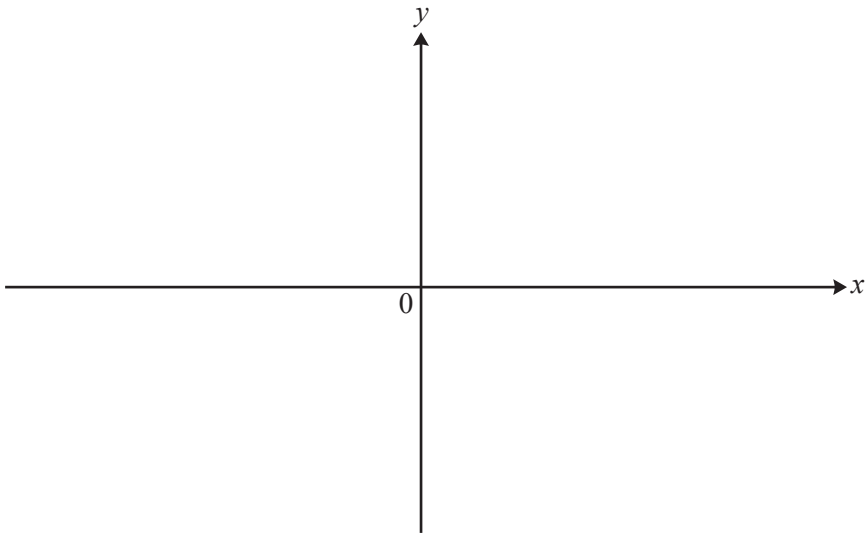
$$3x + 2y = -5$$
$$2x - 5y = 3$$

$x =$ .....

$y =$ ..... [4]

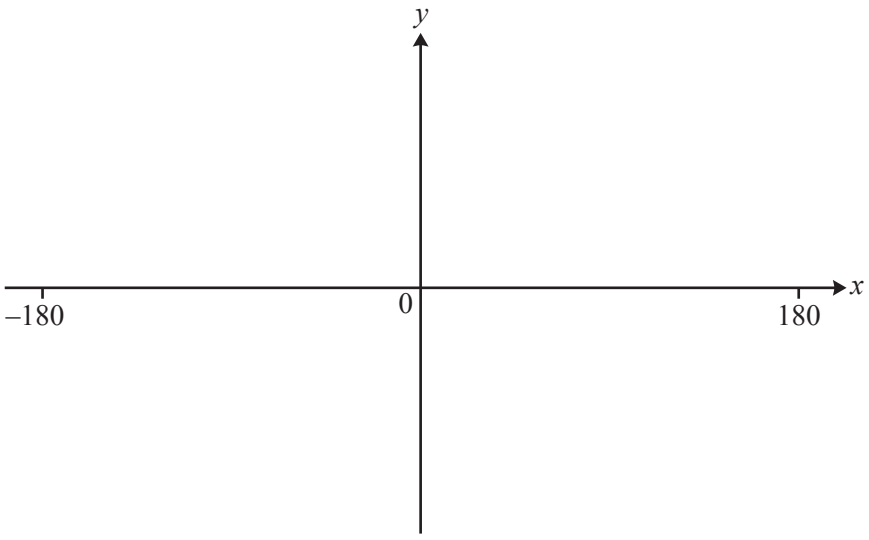
Question 13 is printed on the next page.

13 **(a)** Sketch the graph of $y = x^3 + 2$.
Give the co-ordinates of the point where the graph crosses the y-axis.



(..... , ...) [2]

(b) Sketch the graph of $y = 2\cos x$ for $-180° \leqslant x \leqslant 180°$.
Give the co-ordinates of the point where the graph crosses the y-axis.



(..... , ...) [3]