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CAMBRIDGE INTERNATIONAL MATHEMATICS**0607/23**

Paper 2 (Extended)

October/November 2021**45 minutes**

You must answer on the question paper.

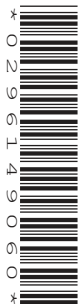
You will need: Geometrical instruments

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 **8** 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 . $V = \frac{4}{3}\pi r^3$



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

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

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

3Answer **all** the questions.**1** Work out.

(a) $(-2) + (-3) - (-4)$

..... [1]

(b) $(-2) \times (-3) \times (-4)$

..... [1]

2 91 93 95 97 99

From this list write down a prime number.

..... [1]

3 \$126 is divided into 3 shares in the ratio 1 : 2 : 4 .

Find the value of the largest share.

\$ [2]

4 Solve.

(a) $5 - 2x = 0$

 $x =$ [1]

(b) $-12 + 2x = 5x - 3$

 $x =$ [2]

4

- 5** There are 640 students in a school.
The table shows the favourite colour of each of the students.

Favourite colour	Blue	Green	Red	Yellow
Number of students	120	$2x$	280	x

- (a)** Find the value of x .

$x =$ [2]

- (b)** Find the relative frequency of students whose favourite colour is red.
Give your answer as a fraction in its lowest terms.

..... [2]

- 6 (a)** Simplify.

$$\sqrt{75} - \sqrt{27}$$

..... [2]

- (b)** Rationalise the denominator and simplify your answer.

$$\frac{10}{5 - \sqrt{5}}$$

..... [3]

5

- 7** A is the point $(3, 7)$ and B is the point $(9, -1)$.

Calculate the length AB .

$AB = \dots\dots\dots$ [3]

- 8 (a)** A regular polygon has 12 sides.

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

$\dots\dots\dots$ [2]

- (b)** The interior angle of a regular polygon is x° .

Find an expression, in terms of x , for the number of sides of this polygon.

$\dots\dots\dots$ [2]

6

- 9** Expand the brackets and simplify.

$$5x(2 - 3x) - 3x(3x - 2)$$

..... [2]

- 10** Solve the simultaneous equations.
You must show all your working.

$$4x + 3y = -10$$

$$3x - 4y = 5$$

$x =$

$y =$ [4]

- 11** $f(x) = \frac{1}{2x-5}$, $x \neq 2.5$

- (a)** Find $f(2)$.

..... [1]

- (b)** Solve $f(x) = 5$.

..... [2]

7

12 $\frac{2x-3}{2x+3} - \frac{2x+3}{2x-3} = \frac{ax}{bx^2-c}$

Find the values of a , b and c .

$a =$

$b =$

$c =$ [4]

13 A bag contains 12 discs.

There are 2 red discs, 4 blue discs, 5 green discs and 1 yellow disc.

A disc is chosen at random and not replaced.

A second disc is then chosen at random.

Find the probability that both discs are the same colour.

..... [3]

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