Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/23**

Paper 2 (Extended) **October/November 2015**

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.

CAMBRIDGE International Examinations

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. $\quad A = \pi rl$

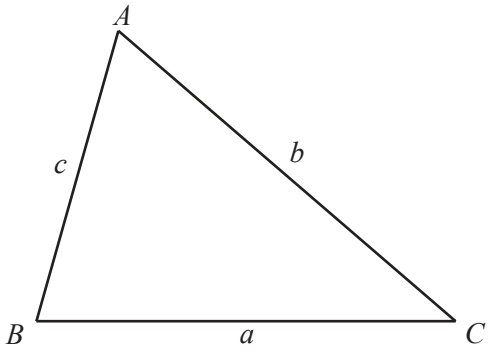
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 Find the highest common factor (HCF) of 60 and 90.

Answer ..... [1]

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2 Insert one pair of brackets to make the statement correct.

$$5 - 2 + 3 \times 2 = -5$$ [1]

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3 $\mathbf{p} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} 1 \\ 6 \end{pmatrix}$

Find $2\mathbf{p} - 3\mathbf{q}$.

Answer ..... [2]

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4 Write 0.72 as a fraction in its lowest terms.

Answer ..... [1]

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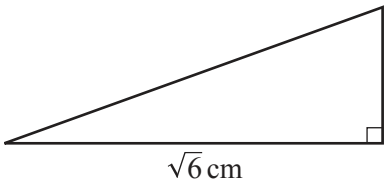
5 The mean of a list of 9 numbers is 6.
When a 10th number is included in the list the mean is 5.5 .

Find the value of this 10th number.

Answer ..... [2]

6



NOT TO SCALE

Find the length of the hypotenuse of the triangle.

Answer ..... cm [2]

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7 Solve the simultaneous equations.

$$u - w = 9$$
$$3u + w = 19$$

Answer $u =$ .....

$w =$ ..... [2]

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8 The scale of a map is 1 : 250 000 .

Find the actual distance, in kilometres, between two cities which are 42 cm apart on the map.

Answer ..... km [2]

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9 $|x| < 4$ and x is an integer.

Find the smallest possible value of x.

Answer ..... [1]

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10 The first 4 terms of a sequence are 20, 13, 6 and -1.

Find

(a) the next term,

Answer(a) ..... [1]

(b) the nth term.

Answer(b) ..... [2]

---

11 Make u the subject of the formula.

$$v^2 = u^2 + 2as$$

Answer $u =$ ..... [2]

---

12 Factorise completely.

$$2a - b + 2ax - bx$$

Answer ..... [2]

---

13 Find the exact value of

(a) 3^{-3},

Answer(a) ..... [1]

(b) $16^{\frac{3}{4}}$,

Answer(b) ..... [1]

(c) cos 30°.

Answer(c) ..... [1]

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14 Simplify $(64x^{12})^{\frac{1}{6}}$.

Answer ..... [2]

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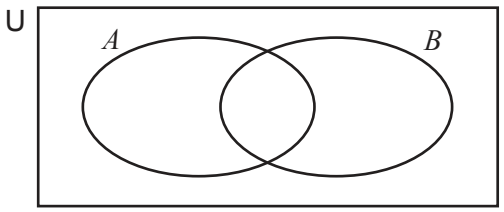
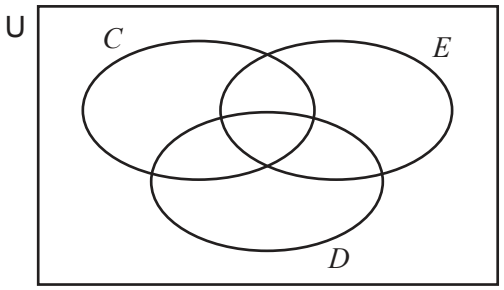
15 On each Venn diagram, shade the region indicated.

$(A \cup B)'$



$(C \cup D) \cap E'$



[2]

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16 Find the equation of the straight line passing through (– 2, – 4) and (2, 0).

Answer ..... [3]

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17 Rationalise the denominator.

$$\frac{3}{\sqrt{5}+2}$$

Answer ..... [2]

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18 **(a)** Factorise $3y - y^2$.

Answer(a) ..... [1]

(b) Simplify $\dfrac{3y - y^2}{9 - y^2}$.

Answer(b) ..... [2]

Questions 19 and 20 are printed on the next page.

19 Find the value of

(a) $\dfrac{\log 4}{\log 8}$,

Answer(a) ..... [2]

(b) $\log_4 8$.

Answer(b) ..... [1]

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20 $g(x) = \dfrac{2x+1}{x-1}, \ x \neq 1$

Solve the equation $g^{-1}(x) = 2$.

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