Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

5294002521

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

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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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. $\quad A = \pi rl$

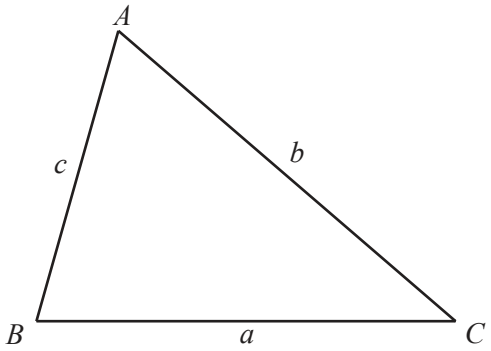
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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.

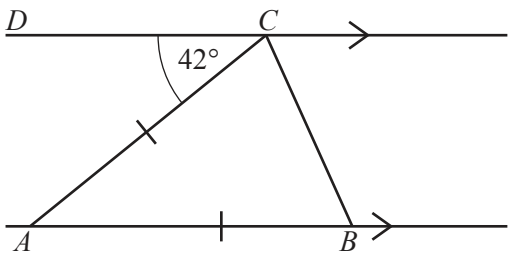
1 Work out $1\frac{1}{2} + 3\frac{1}{3}$.

..... [2]

2 Increase 1 h 30 min by 10%.

..... h ..... min [2]

3



NOT TO SCALE

In the diagram, DC is parallel to AB and $AC = AB$.

Work out angle ACB.

Angle ACB = ... [2]

4 $t = \dfrac{1}{p^2}$

Rearrange the formula to write p in terms of t.

$p =$ ..... [2]

5 A biased die, that has six faces, is numbered 1 to 6.
The table shows the results when the die is rolled 60 times.

Number	1	2	3	4	5	6
Frequency	3	12	8	16	7	14

(a) Jose rolls the die.

Find the probability that the number shown is even.

..... [1]

(b) Jose rolls the die 1200 times.

Find the expected number of times that the number shown on the die is even.

..... [1]

6 Solve the simultaneous equations.

$$3x - 2y = 7$$
$$5x + 2y = 1$$

$x =$ .....

$y =$ ..... [2]

7 Work out $\frac{8\times10^{7}}{5\times10^{-12}}$.

Give your answer in standard form.

..... [2]

8 Solve the inequality.

$$9-x>6x+2$$

..... [2]

9 **(a)** $x^{3}\div x^{p}=x^{5}$

Find the value of p.

$p =$ ..... [1]

(b) Work out.

(i) $(\sqrt{2})^{6}$

..... [1]

(ii) $\frac{1}{8^{-\frac{1}{3}}}$

..... [2]

10 The line $2x + 3y = 36$ intersects the x-axis at P and the y-axis at Q.
M is the midpoint of PQ.

Find the column vector $\overrightarrow{OM}$ where O is the origin.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [4]

11 Factorise completely.

$$2p - q + 2xp - xq$$

..... [2]

12 Rationalise the denominator.

$$\frac{5}{\sqrt{2}+1}$$

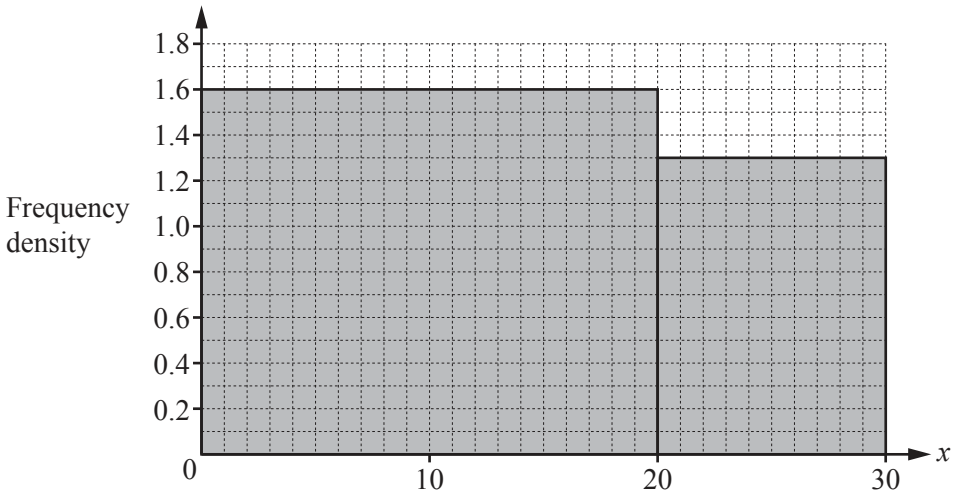
..... [2]

13 The area of a semicircle is $32\pi\,\text{cm}^2$.

Work out the perimeter of the semicircle.
Give your answer in terms of π.

..... cm [3]

14



Complete the frequency table using the information in the histogram.

Class interval	Frequency
$0 < x \leqslant 20$	
$20 < x \leqslant 30$	

[2]

Questions 15, 16 and 17 are printed on the next page

15 $y \propto \frac{1}{\sqrt{x}}$

When $x = 4$, $y = 3$.

Find y in terms of x.

$y =$ ..... [2]

16 $\log y = 2\log 3 + 3\log 2 - \log 6$

Find the value of y.

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

17 Describe fully the **single** transformation that maps the graph of $y = \cos x$ onto the graph of $y = 3\cos x$.

.....

..... [2]