Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

7601043393

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

Paper 2 (Extended) **October/November 2014**

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.

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. $\quad A = \pi rl$

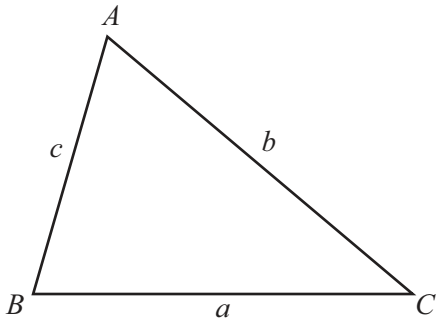
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

Volume, V, of pyramid, base area A, height h. $\quad V = \dfrac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\quad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\quad V = \dfrac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\quad V = \dfrac{4}{3}\pi r^3$



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

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

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

Answer **all** the questions.

1 $|x-2|=3$

Find the values of x.

Answer ..... [2]

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2 Find the nth term of this sequence.

– 1, 0, 3, 8, 15, …...

Answer ..... [3]

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3 Find the value of $\left(\frac{16}{9}\right)^{-\frac{3}{2}}$.

Answer ..... [2]

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4 $\dfrac{3}{\sqrt{2}+1} = a\sqrt{2} + b$

Find the values of a and b.

Answer $a =$ .....

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

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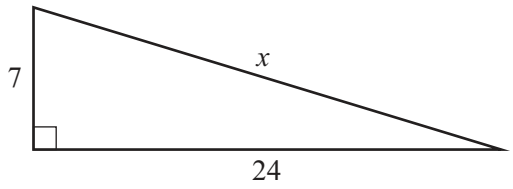
5 **(a)**

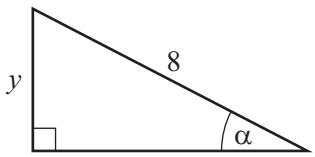


NOT TO SCALE

Find x.

Answer(a) $x =$ ..... [2]

(b)



NOT TO SCALE

$\sin\alpha = \dfrac{3}{5}$ $\cos\alpha = \dfrac{4}{5}$ $\tan\alpha = \dfrac{3}{4}$

Find y.

Answer(b) $y =$ ..... [2]

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6 Factorise.

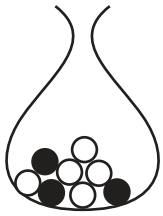
(a) $x^2 - 5x - 24$

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

(b) $pq + p - tq - t$

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

7



The bag contains 5 white beads and 3 black beads.
Two beads are taken from the bag at random, without replacement.

Find the probability that the two beads are different colours.

Answer ..... [3]

---

8 y varies inversely as the square root of x.
When $x = 4$, $y = 3$.

Find

(a) y in terms of x,

Answer(a) $y =$ ..... [2]

(b) y when $x = 9$,

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

(c) x in terms of y.

Answer(c) $x =$ ..... [2]

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9 **(a)** Find the value of $\log_3\left(\frac{1}{9}\right)$.

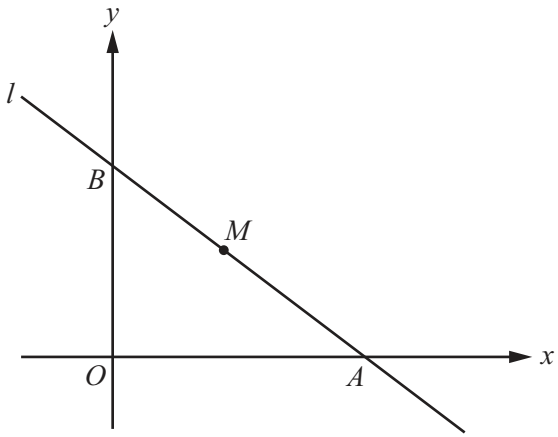
Answer(a) ..... [1]

(b) $p = \frac{\log q}{\log 3}$

Find q in terms of p.

Answer(b) $q =$ ..... [2]

10



NOT TO SCALE

The equation of the line l is $3x + 4y = 12$.
The line cuts the x-axis at A and the y-axis at B.
The midpoint of AB is M.

(a) Find the co-ordinates of

(i) A,

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

(ii) B,

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

(iii) M.

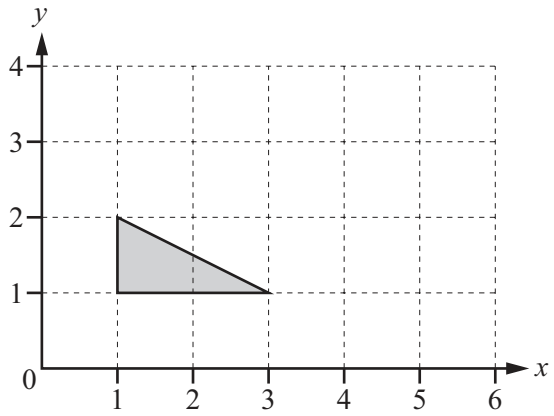
Answer(a)(iii) (..... , ...) [1]

(b) Find the equation of the line through the origin which is perpendicular to the line l.

Answer(b) ..... [3]

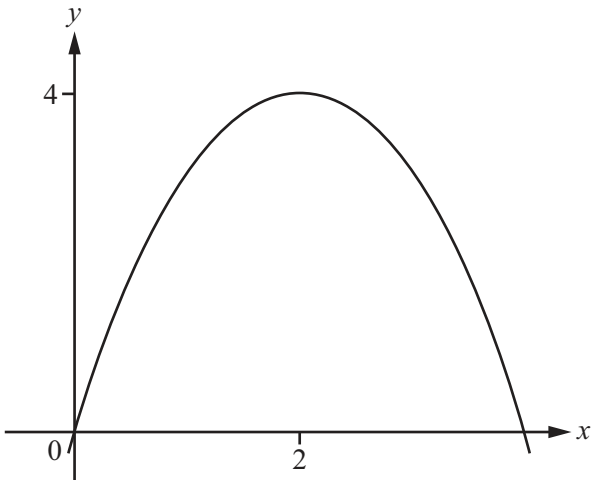
Questions 11 and 12 are printed on the next page.

11



Draw the stretch of the shaded triangle with the y-axis invariant and factor 2. [2]

12



NOT TO SCALE

The diagram shows the graph of $y = ax^2 + bx + c$.
The graph passes through (0, 0) and has a maximum point (2, 4).

Find the values of a, b and c.

Answer $a =$ .....

$b =$ .....

$c =$ ..... [3]
