UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

0841359003

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

Paper 2 (Extended) **October/November 2012**

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, highlighters, glue or correction fluid.
You may use a 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.

For Examiner's Use

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

UNIVERSITY of 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. $\quad A = \pi rl$

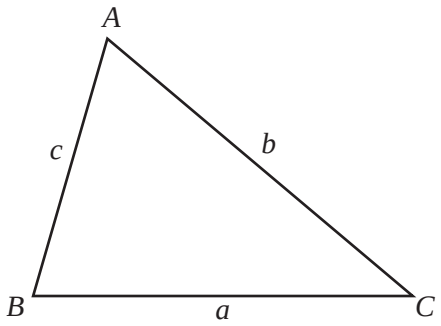
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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

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 Factorise completely.

$3xy - 6yz$

Answer ..... [2]

---

2 **(a)** Write 250 grams as a percentage of 2 kilograms.

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

(b) Manuel scores 46 in a test.
This is 15% more than his previous test score.

Calculate Manuel's previous test score.

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

---

3 Dariella leaves home at 07 49 and takes 24 minutes to walk to school.

(a) At what time does Dariella arrive at school?

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

(b) The distance to school is 1.4 km.

Calculate Dariella's walking speed.
Give your answer in kilometres per hour.

Answer(b) ..... km/h [2]

---

4 Calculate.

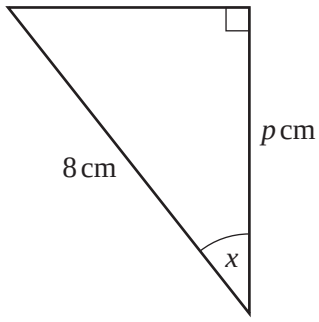
$(3.24 \times 10^{-3}) \div (4 \times 10^{4})$

Give your answer in standard form.

Answer ..... [2]

---

5 (a)



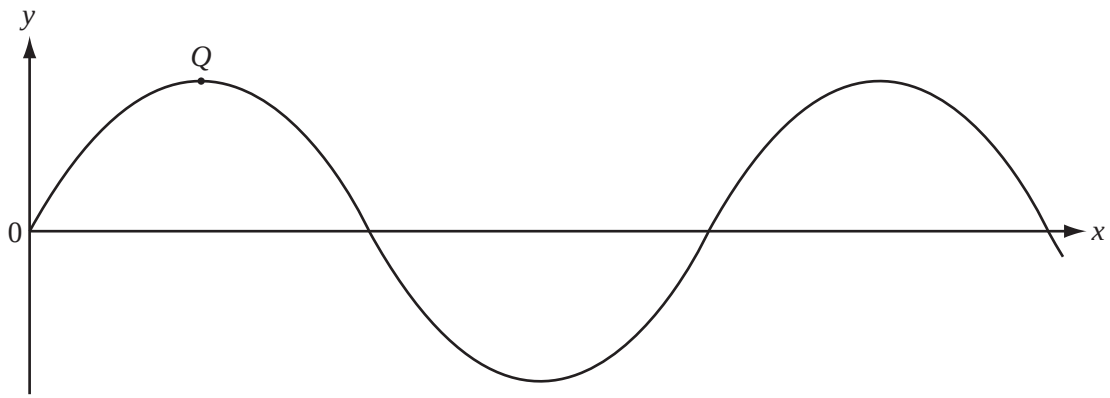
NOT TO SCALE

$\sin x = \frac{1}{3}$ $\cos x = \frac{2\sqrt{2}}{3}$ $\tan x = \frac{1}{2\sqrt{2}}$

Calculate the value of p giving your answer as a simplified fraction.

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

(b)



The diagram shows the graph of $y = 3\sin 2x$.
Q is a local maximum point.

Find the co-ordinates of Q.

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

6 **(a)** Simplify $\left(\frac{3}{2}\right)^{-3}$.

Give your answer as a fraction.

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

(b) $3\log 2 - 2\log 4 = \log t$

Find the value of t.

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

---

7 y varies inversely as the square root of x.
When $x = 16$, $y = 3$.

(a) Find y in terms of x.

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

(b) Find y when $x = 36$.

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

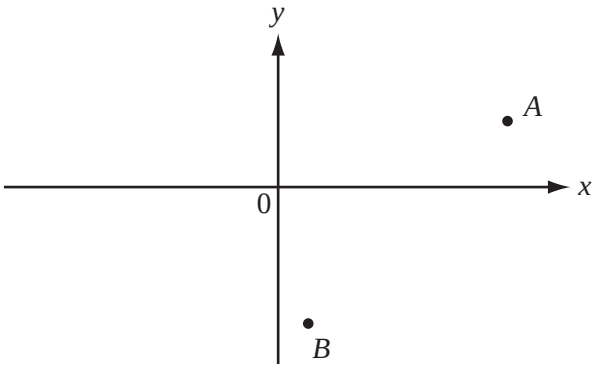
---

8 Write $1 - \frac{1}{x-1}$ as a single fraction.

Answer ..... [2]

---

9 (a)



NOT TO SCALE

A is the point (4, 2) and B is the point (1, – 3).

(i) Write down the vector $\overrightarrow{BA}$ in component form.

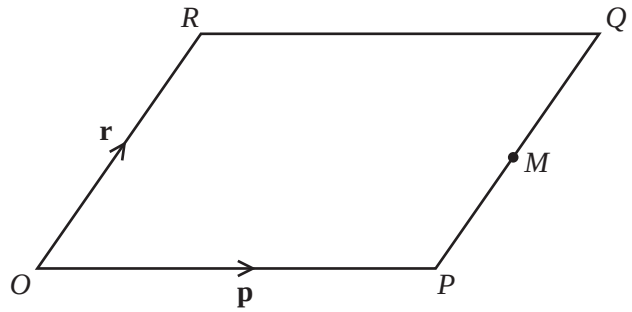
Answer(a)(i) $\overrightarrow{BA} = \begin{pmatrix} \\ \\ \end{pmatrix}$ [1]

(ii) $\overrightarrow{BC} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$

Write down the co-ordinates of C.

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

(b)



NOT TO SCALE

$OPQR$ is a parallelogram and M is the midpoint of PQ.
$\overrightarrow{OP} = \mathbf{p}$ and $\overrightarrow{OR} = \mathbf{r}$.

Find $\overrightarrow{OM}$ in terms of **p** and **r**.

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

10 Simplify the following.

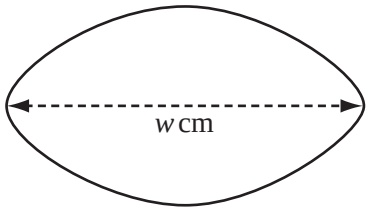
(a) $\sqrt{32}$

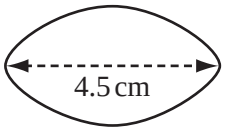
Answer(a) ..... [1]

(b) $\dfrac{1}{\sqrt{2}+1}$

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

11





NOT TO SCALE

The diagrams show two similar shapes.
The lengths shown in the diagrams are in the ratio 2 : 1.

(a) Calculate the value of w.

Answer(a) $w =$ ..... [1]

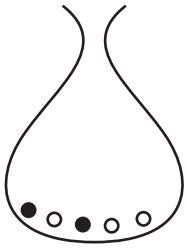
(b) The area of the larger shape is 56 cm^2.

Calculate the area of the smaller shape.

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

Question 12 is on the next page

12 (a)

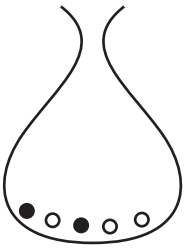


A bag contains 3 white beads and 2 black beads.
Two beads are taken out of the bag at random, without replacement.

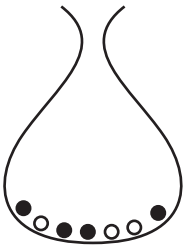
Calculate the probability that both beads are white.

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

(b)



Bag A



Bag B

Bag *A* contains 3 white beads and 2 black beads.
Bag *B* contains 3 white beads and 4 black beads.

One bead is taken out of **each** bag at random.

Calculate the probability that one bead is white and one bead is black.

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