



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

CANDIDATE  
NAME

CENTRE  
NUMBER

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CANDIDATE  
NUMBER

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**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**

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



## 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  $l$ .  $A = \pi rl$

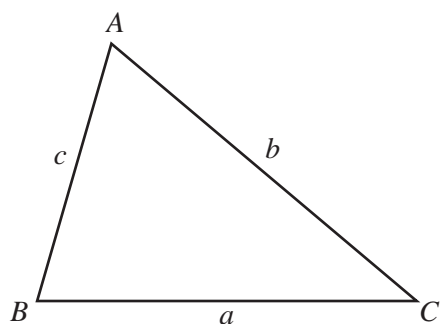
Curved surface area,  $A$ , of sphere of radius  $r$ .  $A = 4\pi r^2$

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



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

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

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

Answer **all** the questions.

For  
Examiner's  
Use

- 1 Factorise completely.

$$3xy - 6yz$$

Answer ..... [2]

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- 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]

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- 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]

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- 4 Calculate.

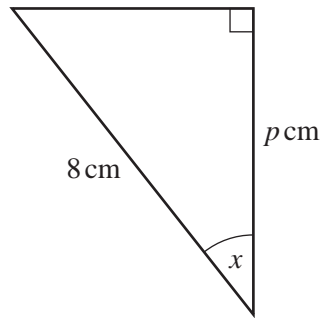
$$(3.24 \times 10^{-3}) \div (4 \times 10^4)$$

Give your answer in standard form.

Answer ..... [2]

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5 (a)

NOT TO  
SCALE

$$\sin x = \frac{1}{3}$$

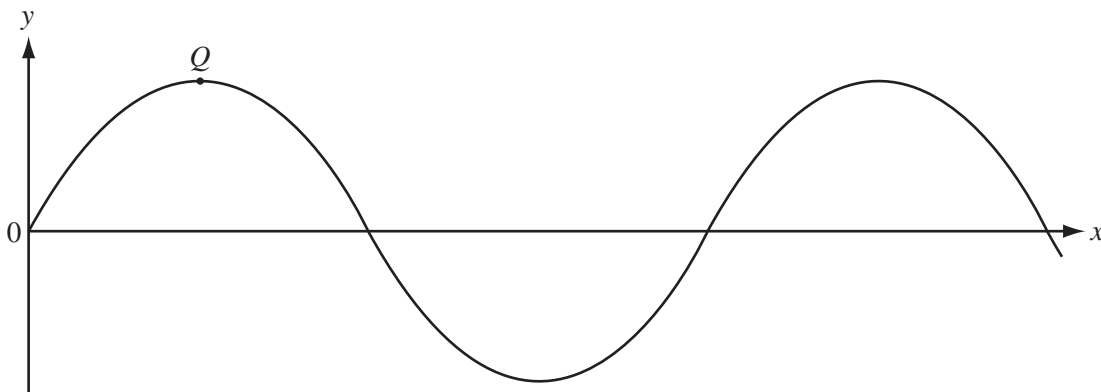
$$\cos x = \frac{2\sqrt{2}}{3}$$

$$\tan x = \frac{1}{2\sqrt{2}}$$

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]

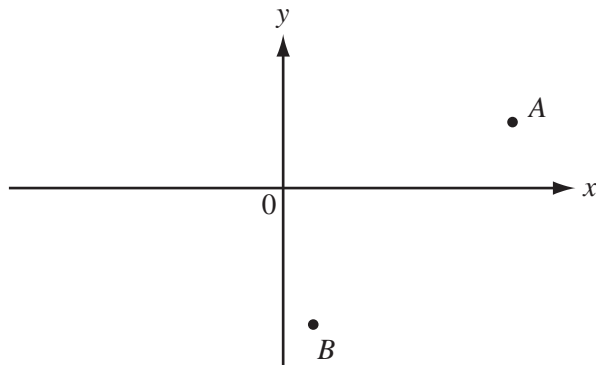
(b) Find  $y$  when  $x = 36$ .

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  $\vec{BA}$  in component form.

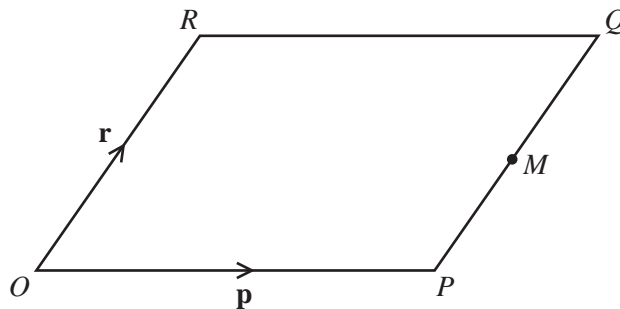
Answer(a)(i)  $\vec{BA} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

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

Write down the co-ordinates of  $C$ .

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

(b)

NOT TO  
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$OPQR$  is a parallelogram and  $M$  is the midpoint of  $PQ$ .  
 $\vec{OP} = \mathbf{p}$  and  $\vec{OR} = \mathbf{r}$ .

Find  $\vec{OM}$  in terms of  $\mathbf{p}$  and  $\mathbf{r}$ .

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

For  
Examiner's  
Use

10 Simplify the following.

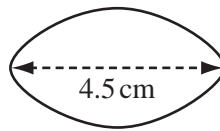
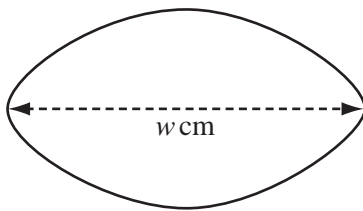
(a)  $\sqrt{32}$

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

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

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]

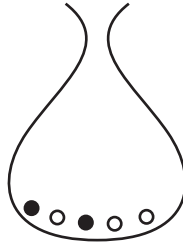
(b) The area of the larger shape is  $56 \text{ cm}^2$ .

Calculate the area of the smaller shape.

Answer(b) .....  $\text{cm}^2$  [2]

Question 12 is on the next page

12 (a)

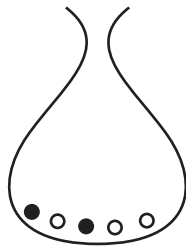


A bag contains 3 white beads and 2 black beads.  
Two beads are taken out of the bag at random, without replacement.

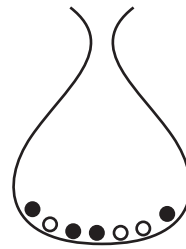
Calculate the probability that both beads are white.

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]