UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

3859409843

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/02**

Paper 2 (Extended) **October/November 2013**

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.

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. $\quad A = \pi rl$

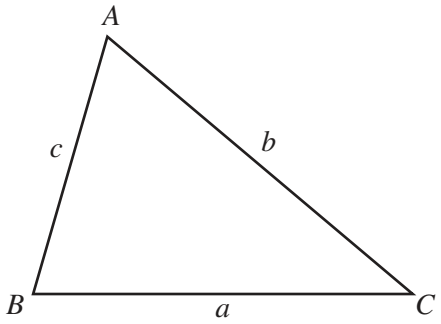
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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.

For Examiner's Use

1 Solve the simultaneous equations.

$$3g - 2h = 11$$
$$g - 2h = 5$$

Answer $g =$ .....

$h =$ ..... [2]

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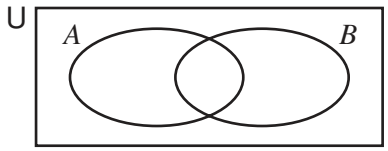
2 **(a)**

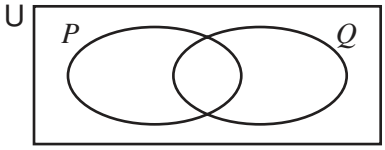


$n(U) = 20$, $n(A \cup B)' = 3$, $n(A) = 11$, $n(B) = 13$.

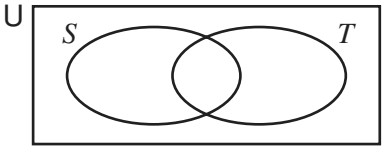
Find $n(A \cap B')$.

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

(b) On each Venn diagram, shade the region indicated.



$(P \cap Q)'$



$S \cup T'$

[2]

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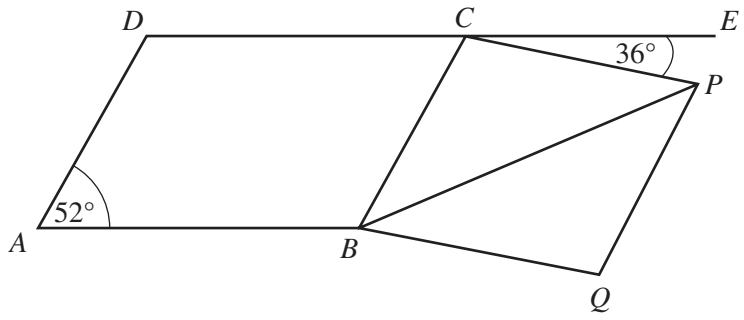
3 Tiago buys a concert ticket and then sells it for \$15.
He makes a profit of 20%.

Calculate how much Tiago paid for the ticket.

Answer \$ ..... [3]

4



NOT TO SCALE

ABCD is a parallelogram and *BQPC* is a rhombus.
DCE is a straight line.
Angle *DAB* = 52° and angle *ECP* = 36°.

Find the size of angle *BPC*.

Answer ..... [3]

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5 **(a)** Simplify $\sqrt{72}$.

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

(b) $\dfrac{\sqrt{2}+2}{\sqrt{2}-1} = p + q\sqrt{2}$

Find the values of p and q.

Answer(b) p = ...

q = ... [3]

For Examiner's Use

6 Simplify the following.

(a) $2y^2 \times 3y^3$

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

(b) $\sqrt[3]{27p^{27}}$

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

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7 **(a)** Find the amplitude and period of the function $f(x) = 4\cos(4x)$.

Answer(a) Amplitude = ...

Period = ... [2]

(b) $g(x) = 4\cos(4x) - 4$

Describe fully the **single** transformation that maps the graph of $y = f(x)$ onto the graph of $y = g(x)$.

Answer(b) .....

..... [2]

For Examiner's Use

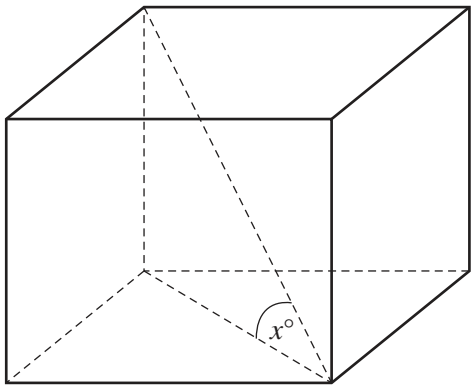
8 **(a)** Write down the value of $8^{\frac{1}{3}}$.

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

(b) Find the exact value of $\left(\frac{4}{3}\right)^{-2}$.

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

9



NOT TO SCALE

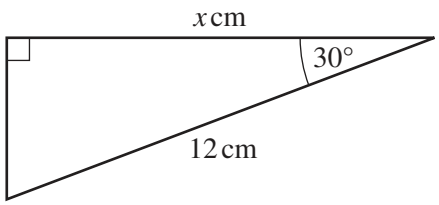
The diagram shows a cube of side length 1.

Find the value of $\tan x°$.

Answer ..... [3]

For Examiner's Use

10

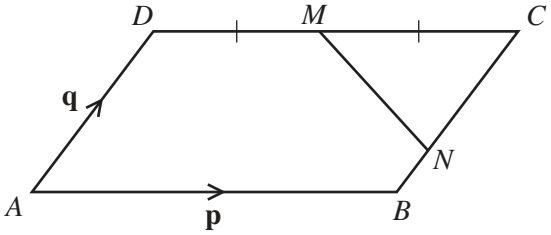


NOT TO SCALE

Find the exact value of x.

Answer $x =$ ..... [3]

11



NOT TO SCALE

$ABCD$ is a parallelogram.
$DM = MC$ and $CN = 2NB$.
$\overrightarrow{AB} = \mathbf{p}$ and $\overrightarrow{AD} = \mathbf{q}$.

(a) Write down $\overrightarrow{CN}$ in terms of **q**.

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

(b) Find $\overrightarrow{MN}$ in terms of **p** and **q**.

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

Question 12 is printed on the next page.

12 $f(x) = 3x - 1$ $g(x) = 12 - x$

For Examiner's Use

Find

(a) f(g(8)),

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

(b) f(g(x)), in its simplest form,

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

(c) $g^{-1}(x)$.

Answer(c) $g^{-1}(x) =$ ..... [1]