Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

8932327307

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/23**

Paper 2 (Extended) **May/June 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.

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. $\quad A = \pi rl$

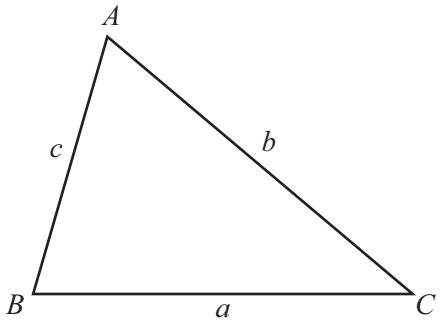
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

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 The price of a book was \$7.00 .
It is reduced by 20%.

Find the new price of the book.

Answer \$ ..... [2]

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2 **(a)** Write 0.0063 in standard form.

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

(b) $5.7 \times 10^9 + 2.4 \times 10^8 = k \times 10^9$

Find the value of k.

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

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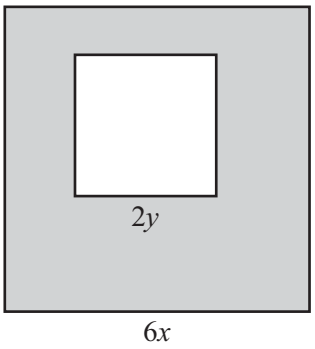
3 Find the next term in each of these sequences.

(a) 3, 5, 8, 12, 17, ... [1]

(b) 100, 91, 80, 67, 52, ... [1]

(c) 4, 12, 36, 108, 324, ... [1]

4



A small square of side $2y$ is inside a larger square of side $6x$.

(a) Find an expression for the shaded area, A, in terms of x and y.

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

(b) Rearrange your answer to **part (a)** to write x in terms of y and A.

Answer(b) $x =$ ..... [3]

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5 **(a)** Find 125^0.

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

(b) Simplify $\sqrt[3]{27y^{27}}$.

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

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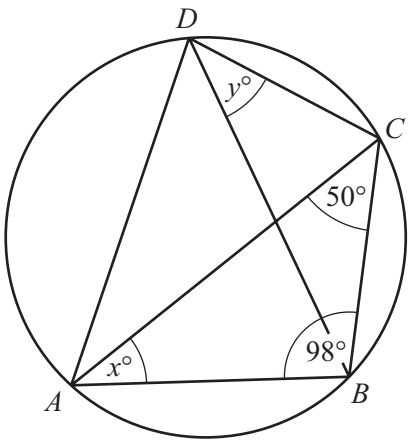
6 (a)



NOT TO SCALE

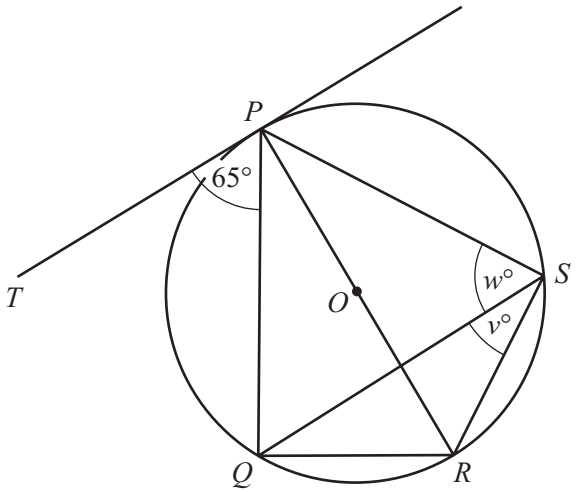
A, *B*, *C* and *D* lie on the circumference of a circle.
Angle *ABC* = 98° and angle *ACB* = 50°.

Find the value of *x* and the value of *y*.

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

$y =$ ..... [1]

(b)



NOT TO SCALE

P, *Q*, *R* and *S* lie on the circumference of a circle, centre *O*.
TP is a tangent to the circle at *P* and *PR* is a diameter.

Find the value of *v* and the value of *w*.

Answer(b) $v =$ ..... [1]

$w =$ ..... [1]

7 y varies directly as the square of x.
When $x = 8$, $y = 40$.

Find y when $x = 12$.

Answer ..... [3]

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8 **(a)** Simplify $(3\sqrt{2} - 2)(2\sqrt{2} + 1)$.

Answer(a) ..... [3]

(b) Rationalise the denominator of $\frac{10}{\sqrt{5}}$.

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

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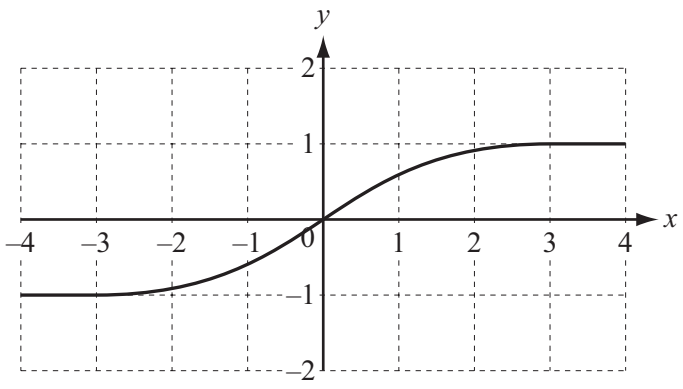
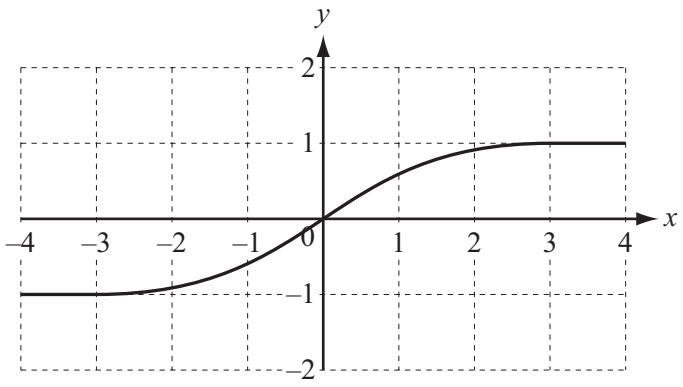
9 (a)



The diagram shows the graph of $y = f(x)$.

On the same diagram, sketch the graph of $y = 2f(x)$. [1]

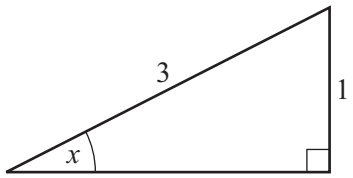
(b)



The diagram shows the graph of $y = f(x)$.

On the same diagram, sketch the graph of $y = f(x + 1)$. [1]

10

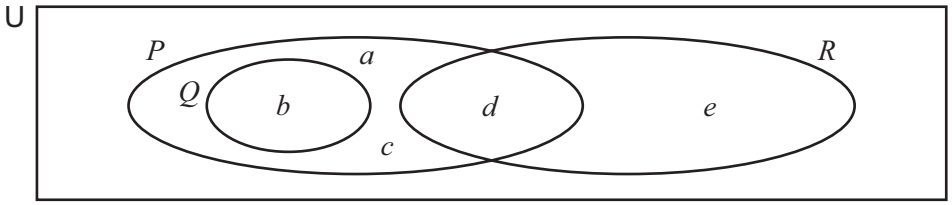


Find the exact value of $\cos x$.

Answer ..... [3]

Questions 11 and 12 are printed on the next page.

11



The Venn diagram shows the sets P, Q and R.

Complete the following statements using set notation.

(a) P …….. $R = \{a, b, c, d, e\}$ [1]

(b) Q …….. $R = \varnothing$ [1]

(c) e …….. R [1]

(d) P …….. $Q = P$ [1]

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12 $\mathrm{f}(x) = x + 3$ and $\mathrm{g}(x) = \dfrac{12}{x}$, $x \neq 0$

Find

(a) $\mathrm{g}(\mathrm{f}(1))$,

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

(b) $\mathrm{g}^{-1}(x)$.

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