



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/02

Paper 2 (Extended)

May/June 2010

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 **10** printed pages and **2** blank 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 . $A = \pi rl$

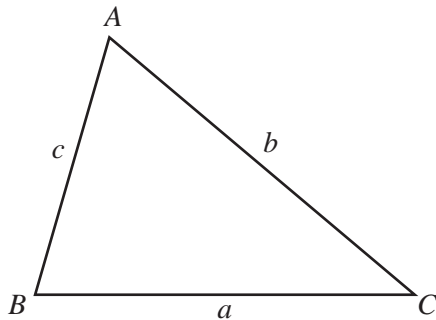
Curved surface area, A , of sphere of radius r . $A = 4\pi r^2$

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 Write 36 000 in standard form.

Answer [1]

- 2 (a) Find the value of

(i) 3^0 ,

Answer(a)(i) [1]

(ii) $36^{\frac{1}{2}}$.

Answer(a)(ii) [1]

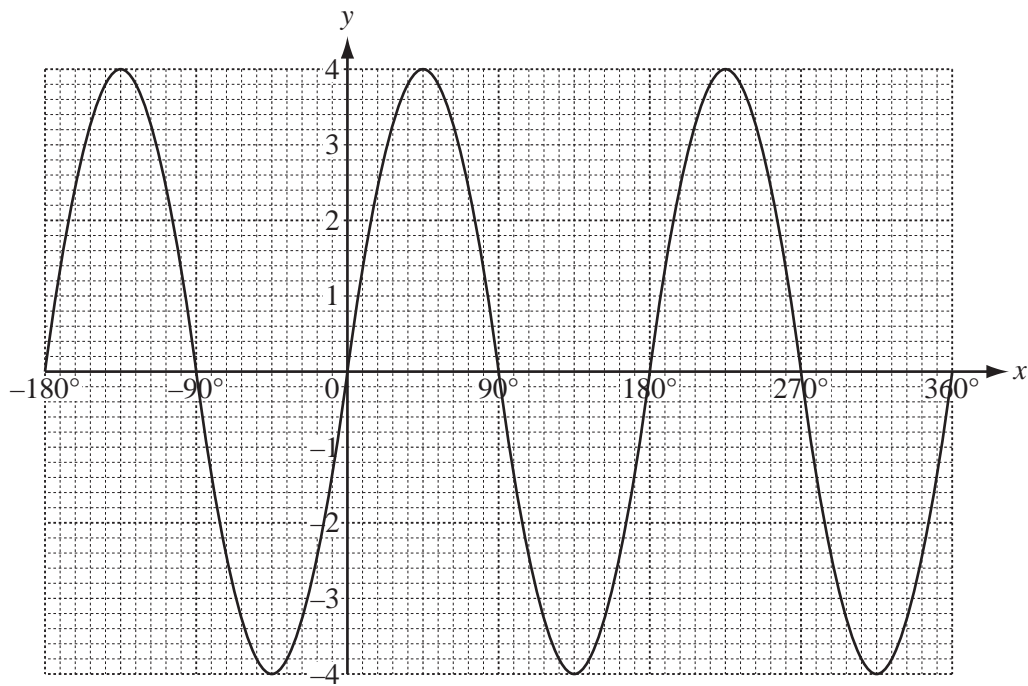
(b) $2^8 \div 2 = 2^x$

Find the value of x .

Answer(b) $x =$ [1]

- 3 Factorise **completely** $3x^2y - 12y^3$.

Answer [2]



The diagram shows the graph of $y = f(x)$, where $f(x) = a \sin(bx)$.

Find the values of a and b .

Answer $a =$ [1]

Answer $b =$ [1]

- 5 (a) Factorise $2x^2 + x - 6$.

Answer(a) [2]

- (b) Solve the equation.

$$2x^2 = 6 - x$$

Answer(b) $x =$ or $x =$ [2]

- 6 (a) $3\log 2 + 2\log 3 = \log k$

Find the value of k .

Answer(a) $k =$ [2]

- (b) Find the value of $\frac{\log 25}{\log 5}$.

Answer(b) [1]

7 $\mathbf{p} = \begin{pmatrix} 5 \\ 1 \end{pmatrix}$ and $\mathbf{q} = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$

(a) Write $2\mathbf{p} - \frac{1}{2}\mathbf{q}$ as a column vector.

Answer(a) $\begin{pmatrix} \\ \end{pmatrix}$ [2]

(b) Find $|\mathbf{q}|$ leaving your answer in surd form.

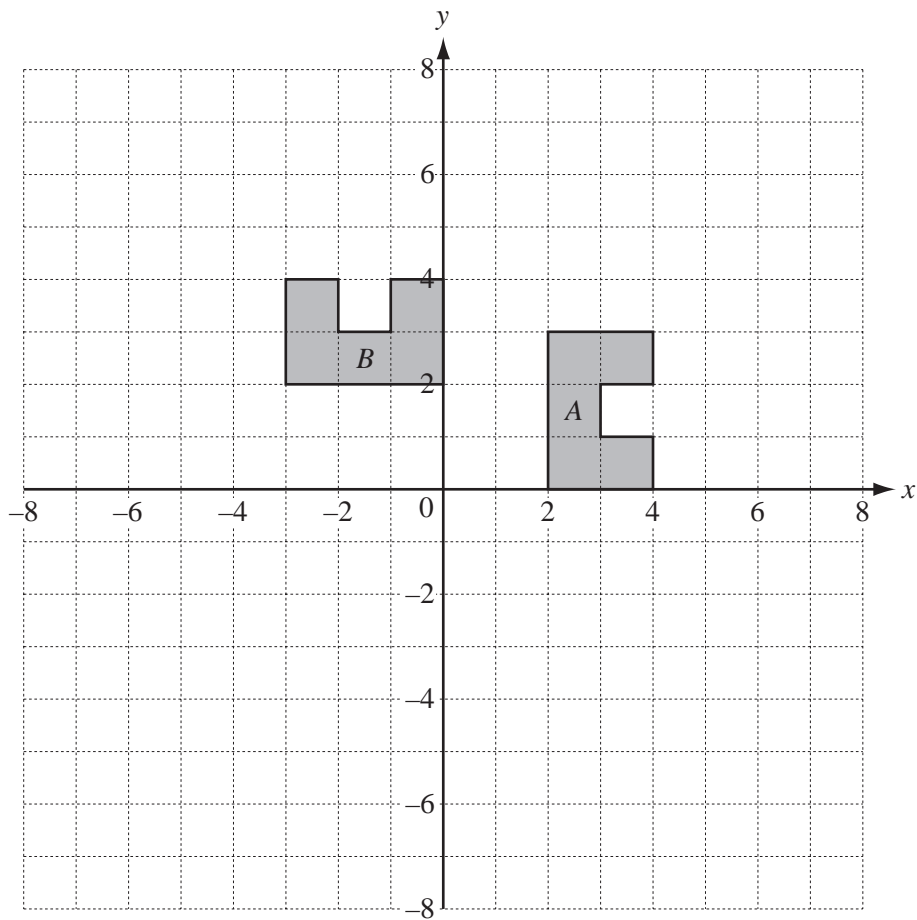
Answer(b) [2]

8 (a) Simplify $\sqrt{72} - \sqrt{50}$.

Answer(a) [2]

(b) Write $\frac{1}{2-\sqrt{3}}$ in its simplest form by rationalising the denominator.

Answer(b) [2]

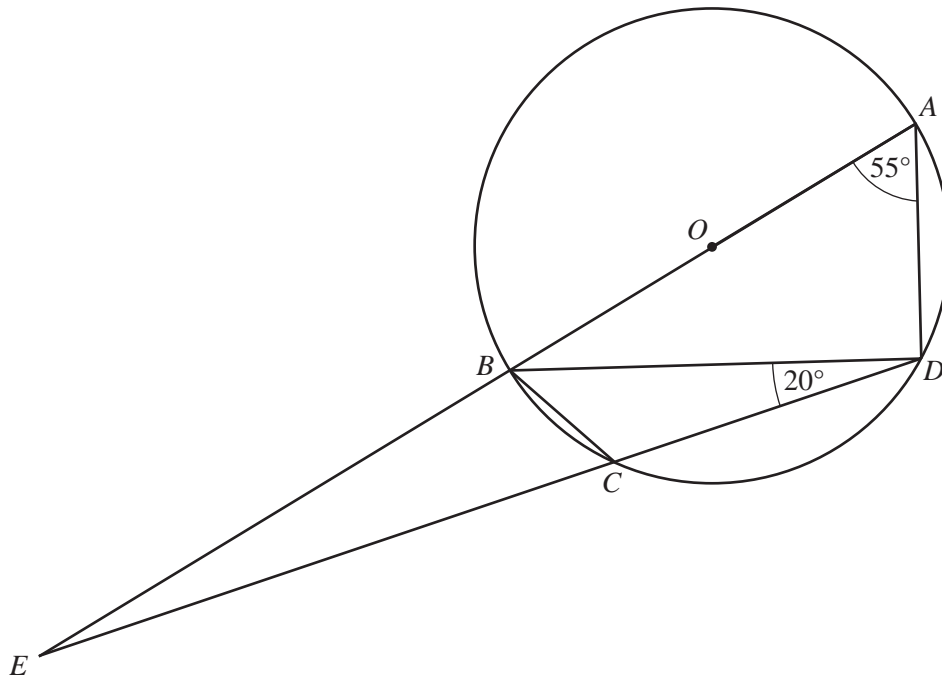


- (a) Describe fully the **single** transformation which maps shape A onto shape B .

.....
 [3]

- (b) Draw the image of shape A after a stretch, with y -axis invariant and scale factor 2. [2]

10

For
Examiner's
UseNOT TO
SCALE

The points A , B , C and D lie on a circle, centre O .
 AB is a diameter, angle $BAD = 55^\circ$ and angle $BDC = 20^\circ$.
 ABE and DCE are straight lines.

Find

(a) angle ABD ,

Answer(a) [1]

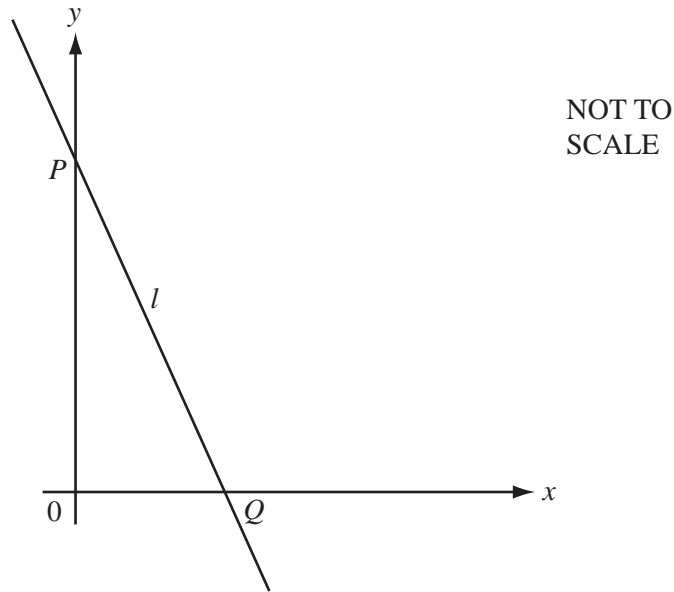
(b) angle BCD ,

Answer(b) [1]

(c) angle AED .

Answer(c) [1]

11



The diagram shows a line, l , which passes through the points $P(0, 4)$ and $Q(2, 0)$.

(a) Find the equation of the line l .

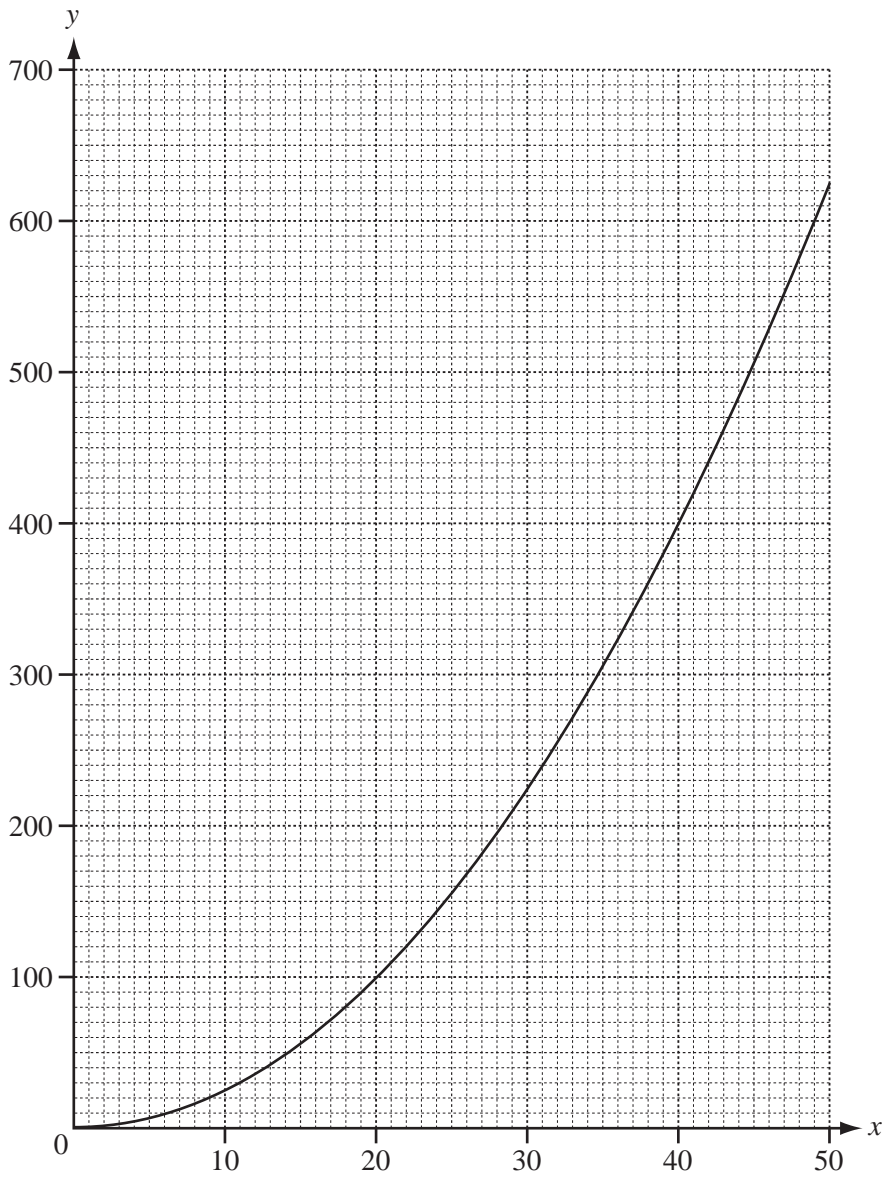
Answer(a) [2]

(b) Find the equation of the line which is perpendicular to l and passes through the midpoint of PQ .

Answer(b) [4]

12

For
Examiner's
Use



The graph shows the result of an experiment measuring x and y .
It is known that y is directly proportional to the **square** of x .

Find the equation connecting y and x .

Answer [3]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.