

**MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers**

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/02

Paper 2 (Extended), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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- M** marks are given for a correct method.
A marks are given for an accurate answer following a correct method.
B marks are given for a correct statement or step.
D marks are given for a clear and appropriately accurate drawing.
P marks are given for accurate plotting of points.
E marks are given for correctly explaining or establishing a given result.

Abbreviations

- cao correct answer only
 cso correct solution only
 ft follow through
 oe or equivalent
 soi seen or implied
 ww without working
 www without wrong working

1 (a)	$4 \times 3.8 \times 10^5$ $1.52(0\dots) \times 10^6$	M1 A1	If zero scored SC1 for 1.5×10^6 ww. www 2 [2]
2 (a)	2	B1	Accept $\frac{2\pi}{3}$ [2]
(b)	120	B1	
3	$x = 45$ $y = 40$ $z = 70$	B1 B1 B1	Answers on the diagram can be accepted on the diagram unless contradicted in the answer spaces. [3]
4 (a)	$\frac{1}{3}(p+q)$ oe	B1	Accept $\pm, -, +$ Not \sqrt{xy} [2]
(b)	\sqrt{xy} or any unambiguous equivalent	B1	
5 (a)	-3, -2, -1, 0, 1	B1	[3]
(b)	29, 31	B1	
(c)	-4, 4	B1	
6 (a)	log 9	B1	Accept 2 log 3
(b)	$4\sqrt{2}$ or $2\sqrt{8}$ or $\sqrt{32}$	B2	B1 for two of $7\sqrt{2}$ or $5\sqrt{2}$ or $2\sqrt{2}$ seen [3]
7 (a)	35, 48	B1	[3]
(b)	$n^2 - 1$ oe	B2	

8 (a)	Correct translation. Top of flag at (2,1)	D2	D1 any other translation. Ignor
(b)	Correct reflection. Top of flag at (3,3)	D2	D1 Reflection $y = 1$, or reflecting the P in $x = 1$
			[4]
9	Attempt to get 2 equations for elimination Correct addition/subtractions of their equations $x = -1$ $y = 3$ OR Equation $x =$ or $y =$ from one equation Substitute their expression into other equation correctly $x = -1$ $y = 3$ www 4	M1 M1 A1 A1 OR M1 M1 A1 A1	Condone 1 slip Condone 1 further slip (dep on first M1) Condone 1 slip No further slips (dep on first M1)
			[4]
10	For correct multiplication by $t - 2$ For a correct division by y For adding 2 or $2y$ correctly as appropriate Leading to $t = \frac{a + 2y}{y}$ or $t = \frac{a}{y} + 2$ www 3	M1 M1 M1	Can be in any order Final answer must be correct to score M3
			[3]
11 (a) (i)	$\begin{pmatrix} 6 \\ -3 \end{pmatrix}$ cao	B1	
(ii)	$6^2 + 3^2$ $= \sqrt{45}$ or $3\sqrt{5}$	M1 A1ft	Only if (a)(i) is in non zero integer form
(b)	Gradient = $\frac{-3}{6}$ oe	B2	If B0 then B1ft for Gradient = $\frac{\text{change in their } y}{\text{change in their } x}$ B1 for negative gradient (indep)
			If still B0 SC1 for $\frac{-3}{6}x$ oe
(c)	Midpoint = $(0, \frac{7}{2})$ oe cao	B1	
(d)	Gradient of perpendicular = 2 or $\frac{-1}{\text{their}(b)}$ $y = mx + \frac{7}{2}$ oe (indep)	B1ft B1	Implied by $(y =) 2x \pm c$
			[8]
12 (a)	64	B1	
(b)	$\frac{3}{4}$ or 0.75	B2	If B0, then B1 for $(\frac{\sqrt{3}}{2})^2$ seen
			[3]