UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper for the guidance of teachers

0580 MATHEMATICS

0580/12

Paper 1 (Core), maximum raw mark 56

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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Abbreviations

cao correct answer only cso correct solution only

dep dependent

ft follow through after error isw ignore subsequent working

oe or equivalent SC Special Case

www without wrong working

		Part Marks
64	1cao	
52	1	
(a) $\frac{3}{10}$ or 0.3 or 30%	1	
(b) 0 or $\frac{0}{10}$ or 0%	1	
$58.25 \leq d < 58.35$	1,1	SC1 for both correct values but reversed
Working must be shown.	2	M1 $\frac{14}{9}$ and $\frac{16}{9}$ M1 $\frac{14}{16} = \frac{7}{8}$ oe or visible cancelling
0.8^{2}	2	M1 conversion of $\frac{16}{27}$ (= 0.5(9)) and 0.8^2 (= 0.64) to decimals seen
5.51×10^3	2	B1 for 5.508×10^3 or figs 551 or 5.5×10^3
euros (with correct working) or (6)€	2	M1 one of 6 × 1.9037 or 11.5 ÷ 1.9037 or 11.5 ÷ 6 seen
$4x^{-24}$ or $\frac{4}{x^{24}}$	2	B1 $4x^n$ B1 $\frac{k}{x^{24}}$ or kx^{-24} for any numerical k , n
14.4()	3	M2 for $\sqrt{(17^2 - 9^2)}$ or M1 for $17^2 = x^2 + 9^2$ or better seen
(a) (0)700 or 7 am (b) 1700 or 5 pm	2	M1 $100 - (5 \times \text{their}(22 - 6) + \text{their}(13 - 8))$ or better soi
	(a) $\frac{3}{10}$ or 0.3 or 30% (b) 0 or $\frac{0}{10}$ or 0% $58.25 \le d < 58.35$ Working must be shown. 0.8^2 5.51×10^3 euros (with correct working) or (6) \in $4x^{-24}$ or $\frac{4}{x^{24}}$ $14.4(\dots)$	(a) $\frac{3}{10}$ or 0.3 or 30% 1 (b) 0 or $\frac{0}{10}$ or 0% 1 58.25 $\leq d < 58.35$ 1,1 Working must be shown. 2 0.8 ² 2 euros (with correct working) or $(6) \in$ 2 $4x^{-24}$ or $\frac{4}{x^{24}}$ 2 1.1 3 (a) $(0)700$ or 7 am 2

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	<u> </u>		
12	(a) $\begin{pmatrix} -2\\3 \end{pmatrix}$ (b) $\begin{pmatrix} 2\\-3 \end{pmatrix}$	1,1	B1 for 1 correct component. SC1 for both correct but written as coordinates as the answer.
	(b) $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$	1ft	ft their (a) with signs reversed. Not a strict follow through.
13	(a) $\frac{80}{20-4\times4}$	1	Condone either 78 for 80 or 22 for 20 but not both.
	(b) 20	1	SC1 for answer 13 if clearly from
	(c) 14.0	2	$78 \div (22 - 4 \times 4)$ or $78 \div (22 - 16)$. B1 for 13.9(9) or 14 in working or in the answer.
14	(a) (1, 2,) 3, 6, 9, (18)	2	B1 for 2 correct.
	(b) 2, 3	1	
	(c) 54, 72, 90	1cao	
15	(a) $2x - 11y$ final answer	2	M1 for $6x - 15y$ or $-4x + 4y$ or better seen or
	(b) $3x(2x-3y)$ final answer	2	B1 for $2x \pm jy$ or $kx - 11y$. B1 for $3(2x^2 - 3xy)$ or $x(6x - 9y)$ or $3x(2x - by)$ or $3x(ax - 3y)$ $(a, b \ne 0)$
16	(a) 17.5()	2	M1 for $\sin 38 = \frac{x}{28.5}$ or better
	(b) 20.38 to 20.44	2ft	M1 for tan (<i>BCD</i> =) their (a) \div 47.1
17	(a) Diameter	1	
	(b) 27	3	M1 for (180 – 54) ÷ 2 M1 ind for 90 – their angle <i>OBD</i> .
18	(a) (i)	2	B1 correct line B1 2 sets of correct arcs
	(ii) R	2	B1 correct line B1 two sets of correct arcs correct region, shaded or shown by the letter R

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19	(a) (i) 8 (min) (ii) 7.8 (km)	1 1	
	(b) (i) Ruled line from (07 20, 0) to (08 16, 9.4)	1	Ignore line continued above school.
	(ii) (0)738 to (0)740 (iii) 5.8 (km) to 6.4 (km) (iv) 17 to 19 (min)	1ft 1ft 1ft	Follow through their graph Follow through their graph. Follow through their graph