CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0580 MATHEMATICS

0580/33 Paper 3 (Core), maximum raw mark 104

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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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
soi seen or implied

Qu.	Answers	Mark	Part Marks
1 (a)	900 × 86 ÷ 100 = 74	**2**	M1 for 900 × 14 ÷ 100 A1 for 900 – 126 = 774
(b)	[$] 172	**1**	
(c)	[$] 270	**2**	M1 for 480 ÷ (9 + 3 + 4)
(d)	15.8 or 15.76(...)	**2ft**	B1 for 774 – their (b) – 480 Or 294 – their (b) SC1 for 38 or 37.9
2 (a) (i)	11	**1**	
(ii)	144 or 4 or 0.25	**1**	
(iii)	0.25	**1**	
(iv)	$\sqrt{12}$	**1**	
(v)	40 cao	**2**	B1 for 80 or any common multiple of 40
(vi)	2	**1**	
(b) (i)	3	**1**	
(ii)	3 [×] 11 [×] 61	**2**	B1 for two of 3, 11 and 61 seen

3	**(a)**	2	**1**	
	(b)	Reflection $x = -1$	**1** **1**	
	(c) (i)	Translation $\begin{pmatrix} -7 \\ -5 \end{pmatrix}$	**2**	B1 for 7 left **or** 5 down SC1 for translation $\begin{pmatrix} -5 \\ -7 \end{pmatrix}$
	(ii)	Rotation 90° clockwise about the origin shown.	**2**	B1 for any other rotation of 90° about other point
	(d) (i)	Correct enlargement shown	**2**	B1 for an enlargement with any correct scale factor and/or correct shape incorrect position
	(ii)	3, 2	**1, 1**	SC1 for 2, 3
	(iii)	3	**2ft**	M1 their LM × their height ÷ 2
	(iv)	27	**2ft**	M1 their base × their height ÷ 2 from their enlarged triangle.
4	**(a) (i)**	7, –1, 2	**2**	B1 for any 2 correct
	(ii)	8 points plotted Correct smooth curve	**3ft** **1**	P2ft for 6 or 7 correct P1ft for 4 or 5 correct
	(b)	$x = 1$	**1**	
	(c) (i)	Two correct points	**1,1**	x –2 –1 0 1 2 3 4 y 6 5 4 3 2 1 0
	(ii)	Correct line drawn	**1**	Must be ruled and continuous
	(iii)	–1.9 to –1.7, 2.7 to 2.9	**2ft**	1 for each correct
5	**(a) (i)**	(0)35 to (0)39	**1**	
	(ii)	117.6 to 122.4 [km]	**2**	B1 for (10 ± 0.2) cm seen
	(iii)	80 or 78.4 to 81.6	**1ft**	ft their (a)(ii) ÷ 1.5
	(b)	Bisector of angle CBD with 2 correct pairs of arcs.	**2**	B1 correct line (±2°), some or all arcs absent
	(c)	Ruled line from C to BD on a bearing of 165°	**1**	
	(d)	1 [h] 18 [min] to 1 [h] 26 [min] www	**4**	B1ft measure BE M1 change to kilometres. M1 for their distance ÷ 55
	(e)	Circle, centre D, with radius 2.5 ± 0.2 cm	**2**	M1 for 2.5 ± 0.2 soi. SC1 for circle, centre D, incorrect radius or freehand 'correct' circle

6	**(a) (i)**	Frequency table completed	**2**	M1 for 8 correct frequencies SC1 for all correct tallies if no frequencies. OR SC1 for all correct frequencies in tally column
	(ii)	$\frac{3}{70}$ oe	**1 ft**	ft their table
	(b) (i)	6	**1**	
	(ii)	10	**1**	
	(iii)	6	**2**	M1 for clear recognition of mid values used
	(iv)	6.43 to 3sf	**3**	M1 for total of freq × their result M1 dep for division by their 70
	(c) (i)	All totals filled in	**1**	Allow 1 error or omission
	(ii)	More ways of getting 7	**1**	Any equivalent explanation
7	**(a) (i)**	Trapezium	**1**	
	(ii)	$\frac{h}{5.5}$ = sin 70 or better	**M1**	
		5.17 or 5.16(8...) seen	**A1**	
	(iii)	54.3 or 54.34 or 54.(0...)	**2**	M1 for 0.5 (8.4 + 12.5) × 5.2 oe
	(iv)	370	**2ft**	B1ft Their (a)(iii) × 6.8 not correctly rounded to 2sf
	(b) (i)	64 21 116	**1** **1ft** **1**	 ft 85 – their (b)(i)
	(ii)	154	**2ft**	M1 for 540 – (90 + 95 + 64 + their x + their y)
8	**(a) (i)**	$4m$	**1**	
	(ii)	$2e - 10f$	**2**	B1 for $ae - 10$f or $2e \pm bf$ $(a,b \neq 0)$
	(b) (i)	–3	**2**	M1 for 27 + (–2) × 15 or better
	(ii)	$[t=] \frac{s-u}{a}$ or $\frac{s}{a} - \frac{u}{a}$	**2**	M1 first step correct SC1 for s – u ÷ a www
	(c)	$[x =] 2$, $[y =] -3$	**3**	M1 for correct method to eliminate one variable. A1 for x or y correct

9	**(a) (i)**	243 Multiply by 3 oe	**1** **1**	
	(ii)	27 Add next odd number oe	**1** **1**	Add 1 first and keep adding 2 more each time
	(iii)	$\frac{1}{4}$ or 0.25 Halve or divide by 2	**1** **1**	
	(iv)	80 Multiply by –2 oe	**1** **1**	
	(b) (i)	37, 45	**1, 1ft**	ft is (ans) + 8
	(ii)	$8n - 3$ oe final answer	**2**	B1 for $8n + a$ or $bn - 3$ ($b \neq 0$)
	(iii)	797	**1ft**	Only follow through a linear expression