

MARK SCHEME for the May/June 2013 series

0580 MATHEMATICS

0580/33

Paper 3 (Core), maximum raw mark 104

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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)	$900 \times 86 \div 100 = 74$	2 M1 for $900 \times 14 \div 100$ A1 for $900 - 126 = 774$
	(b)	[\$] 172	1
	(c)	[\$] 270	2 M1 for $480 \div (9 + 3 + 4)$
	(d)	15.8 or 15.76(...)	2ft B1 for $774 - \text{their (b)} - 480$ Or $294 - \text{their (b)}$ 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

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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 $LM \times$ their height $\div 2$
	(iv)	27	2ft	M1 their base \times their height $\div 2$ 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) $\div 1.5$
	(b)	Bisector of angle CBD with 2 correct pairs of arcs.	2	B1 correct line ($\pm 2^\circ$), 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 $\div 55$
	(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

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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 \times 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 5.17 or 5.16(8...) seen	M1 A1	
	(iii)	54.3 or 54.34 or 54.(0...)	2	M1 for $0.5 (8.4 + 12.5) \times 5.2$ oe
	(iv)	370	2ft	B1ft Their (a)(iii) $\times 6.8$ not correctly rounded to 2sf
	(b) (i)	64 21 116	1 1ft 1	ft 85 – their (b)(i)
	(ii)	154	2ft	M1 for $540 - (90 + 95 + 64 + \text{their } x + \text{their } y)$
8	(a) (i)	$4m$	1	
	(ii)	$2e - 10f$	2	B1 for $ae - 10f$ or $2e \pm bf (a, b \neq 0)$
	(b) (i)	-3	2	M1 for $27 + (-2) \times 15$ or better
	(ii)	$[t=] \frac{s-u}{a}$ or $\frac{s}{a} - \frac{u}{a}$	2	M1 first step correct SC1 for $s - u \div a$ www
	(c)	$[x=] 2, [y=] -3$	3	M1 for correct method to eliminate one variable. A1 for x or y correct

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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