

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0444 MATHEMATICS (US)	
0444/33	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
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfww	not from wrong working
soi	seen or implied

Qu.	Answers	Mark	Part Marks
1	(a) (i) Line $x = 1$ drawn	1	
	(ii) Correct reflection	1FT	FT reflection in their drawn line
	(iii) Correct rotation	2	B1 for clockwise rotation 90° about origin or correct orientation incorrect position
	(b) (i) Translation $\begin{pmatrix} -3 \\ -4 \end{pmatrix}$	B1 B1	Accept 3 left 4 down
	(ii) Enlargement [scale factor] 2 [centre] (6, 0)	B1 B1 B1	
2	(a) (i) 4, 5, 3, 6, 2	2	B1 for 3 correct or for fully correct tally or for 4 5 6 3 2 in tally column
	(ii) Correct bar chart	3FT	B1 for linear vertical scale to at least 6 B2 for all bars correct height and equal width bars or B1 for unequal widths or at least four bars correct height and equal width
	(b) $\frac{14}{24}$ oe or 0.583[3...] or 58.3[3...]%	1	
	(c) No, 6 of each but different nos of boys and girls questioned oe	1	
	(d) 13	2	M1 for $1 - 0.35$ seen or for 0.35×20 seen

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3	(a)	249.75 cao	1		
	(b)	$1080 \times 0.8 [= 864]$	1	or $1080 - 1080 \times 0.2$	
	(c)	(i)	230.4[0]	2	M1 for $864 \div (9 + 4 + 2)$
		(ii)	$\frac{3}{5}$ cao	2	B1 for $\frac{9}{15}$ oe
	(d)	(i)	488.75	2	M1 for $425 (1 + 0.15)$ oe
		(ii)	19.15	2FT	M1 for <i>their</i> (d)(i) $\times 0.52$ [= 254.15]
	(e)	(i)	12.5	1	
		(ii)	172.93	3	M2 for 1225×1.045^3 [= 1397.93] or M1 for $1225 \times 1.045 \times 1.045$ seen
4	(a)	10	1		
	(b)	Before, steeper gradient oe	1		
	(c)	11 20	1		
	(d)	(i)	13 50	3	B2 for 1 h 30 mins oe or B1 for $\frac{18}{12}$ or better, seen
		(ii)	Correct ruled line drawn	1FT	B1FT for line (12 20, 18) to (<i>their</i> 13 50, 0)
	(e)	(i)	10 57	1	
		(ii)	24	1	
	(f)	Bearing 110° Length 3.25 cm	1 1		

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5	(a) (i)	85	1	
	(ii)	10	1FT	FT 95 – <i>their</i> (i)
	(iii)	320	1FT	FT 330 – <i>their</i> (ii)
	(iv)	95	1	
	(v)	95	1FT	FT <i>their</i> (iv)
	(vi)	55	1FT	FT 150 – <i>their</i> (iv)
	(vii)	<i>BCE</i> and <i>GCF</i> or <i>BCD</i> and <i>GCH</i> or <i>CED</i> and <i>CFH</i>	1	
	(b) (i)	30°	2	M1 for $360 \div 12$
	(ii)	150°	1FT	FT 180 – <i>their</i> (i)
	(c) (i)	Any correct radius	1	Must be ruled
	(ii)	Any correct chord	1	Must be ruled; may be the diameter
	(d) (i)	2	1	
(ii)	0	1		
6	(a) (i)	-2	2	M1 for change in y /change in x for two correct points
	(ii)	$-2x + 3$	1FT	FT <i>their</i> gradient
	(b) (i)	6, 7, 6	3	B1 for each value
	(ii)	8 points correctly plotted	3FT	B2FT for 6 or 7 points correctly plotted B1FT for 4 or 5 points correctly plotted
	(iii)	Correct smooth curve	1	
	(ii)	-3.8 to -3.5 and 1.5 to 1.8	2FT	B1FT for one correct
(c)	(1.6 to 1.9, -0.7 to -0.2) and (-1.9 to -1.6, 6.2 to 6.7)	2FT	FT intersection of line with <i>their</i> curve B1 for one correct	

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7	(a) $2x - 3$ (b) $5x - 4$ (c) (i) $4x + 4$ (ii) 8 (d) 12, 6 (e) 72	1 2 2 2FT 2FT 1FT	 M1FT for $2x - 3 + x + 2 +$ <i>their</i> ($2x - 3$) oe M1 for $2 \times [3(x - 4) + 14 - x]$ oe FT correct solution of <i>their</i> equation M1FT for <i>their</i> ($5x - 4$) = <i>their</i> ($4x + 4$) B1FT for each FT <i>their</i> length \times width
8	(a) (i) [Triangular] prism (ii) 70.5 or 70.52 to 70.53 (iii) 150.63 (iv) 120 (b) (i) 70.7 or 70.68 to 70.695 (ii) 37.7 or 37.69 to 37.704	1 2 1 1 3 3	 M1 for $\cos[\dots] = \frac{2}{6}$ M2 for $\pi \times 1.5^2 \times 10$ or B1 for 1.5 seen or SC2 for answer 283 or 282.74 to 282.78 M2 for $\pi \times 3 \times 4$ or M1 for $\pi \times 3$
9	(a) 10 12 20 14 18 34 (b) (i) $2n + 4$ oe (ii) $4n + 2$ oe (c) B [by] 15 [tables]	5 2 2 3	B4 for 5 correct B3 for 4 correct B2 for 3 correct B1 for 2 correct B1 for $2n + k$ or $jn + 4 \quad j \neq 0$ B1 for $4n + k$ or $jn + 2 \quad j \neq 0$ M1FT for <i>their</i> ($4n + 2$) = 66 or <i>their</i> ($2n + 4$) = 66 and A1FT for $n = 16$ or $n = 31$