

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

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MARK SCHEME for the October/November 2014 series

0444 MATHEMATICS (US)

0444/33

Paper 3 (Core), maximum raw mark 104

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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	

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		

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
		Correct smooth curve	1	
	(iii)	-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	

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