CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0581 MATHEMATICS

0581/33 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)**	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)	**(i)**	2	**2**	**M1** for 12th/13th value used
		(ii)	2.28	**3**	**M1** for $[0 \times 4] + 1 \times 6 + 2 \times 5 + 3 \times 3 + 4 \times 5 + [5 \times 0] + 6 \times 2$ **M1 dep** for *their* 57 ÷ 25
2	**(a)**		249.75 **cao**	**1**	
	(b)		1080 × 0.8 [= 864]	**1**	Or 1080 – 1080 × 0.2
	(c)	**(i)**	230.4[0]	**2**	**M1** for 864 ÷ (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 *their* **(d)(i)** × 0.52 [= 254.15]
	(e)	**(i)**	12.5	**1**	
		(ii)	172.93	**3**	**M2** for 1225 × 1.045³ [= 1397.93] Or **M1** for 1225 × 1.045 × 1.045 seen

3	(a)		10	1	
	(b)		Before, steeper gradient oe	1	
	(c)		11 20	1	
	(d)	(i)	1 hour 48 minutes	2	**M1** for $\frac{18}{10}$ [× 60] oe
		(ii)	Correct ruled lines drawn	2	**B1** line from (11 20, 18) to (12 10, 18) **B1FT** for line (*their* 12 10, 18) to (13 58, 0)
	(e)	(i)	10 57	1	
		(ii)	24	1	
	(f)		Bearing 110° Length 3.25 cm	1 1	
4	(a)	(i)	85	1	
		(ii)	10	1FT	**FT** 95 – *their* **(i)**
		(iii)	320	1FT	**FT** 330 – *their* **(ii)**
		(iv)	95	1	
		(v)	95	1FT	**FT** *their* **(iv)**
		(vi)	55	1FT	**FT** 150 – *their* **(iv)**
		(vii)	*BCE* and *GCF* or *BCD* and *GCH* or *CED* and *CFH*	1	
	(b)	(i)	30°	2	**M1** for 360 ÷ 12
		(ii)	150°	1FT	**FT** 180 – *their* **(i)**

5	(a)	(i)	–2	2	**M1** for change in y / change in x for correct points
		(ii)	$–2x + 3$	1FT	**FT** *their* gradient
	(b)	(i)	6, 7, 6, –9	3	**B2** for 3 correct Or **B1** for 2 correct
		(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 *their* curve **B1** for one correct
6	(a)		$2x – 3$	1	
	(b)		$5x – 4$	2	**M1FT** for $2x – 3 + x + 2 + $ *their* $(2x – 3)$ oe
	(c)	(i)	$4x + 4$	2	**M1** for $2 \times [3(x – 4) + 14 – x]$ oe
		(ii)	8	2FT	**FT** correct solution of *their* equation **M1FT** for *their* $(5x – 4) = $ *their* $(4x + 4)$
	(d)		12, 6	2FT	**B1FT** for each
	(e)		72	1FT	**FT** *their* length × width
7	(a)		10 12 20 14 18 34	5	**B4** for 5 correct **B3** for 4 correct **B2** for 3 correct **B1** for 2 correct
	(b)	(i)	$2n + 4$ oe final answer	2	**B1** for $2n + k$ or $jn + 4$ $j \neq 0$
		(ii)	$4n + 2$ oe final answer	2	**B1** for $4n + k$ or $jn + 2$ $j \neq 0$
	(c)		B [by] 15 [tables]	3	**M1FT** for *their* $(2n + 4) = 66$ or *their* $(4n + 2) = 66$ and **A1FT** for $n = 31$ or $n = 16$

8	(a)	(i)	[Triangular] prism	1	
		(ii)	Correct net	3	**B1** for 3 rectangles and two triangles, on... on each side, even if incorrect sizes **B1** for three correct ruled rectangles **B1** for two correct ruled equilateral triangles
		(iii)	109.86 **cao**	1	
		(iv)	115 **cao**	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)	(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	