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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the March 2016 series

0580 MATHEMATICS

0580/32 Paper 32 (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

Question	Answer	Mark	Part marks
1 (a)	1092	**1**	
(b) (i)	$\frac{1}{12}$ cao	**2**	**M1** for $\frac{2}{24}$ or $\frac{120}{1440}$ oe
(ii)	$\frac{11}{12}$ oe	**1FT**	**FT** is for $1-\textit{their}\frac{1}{12}$
(c)	428.5 429.5	**1** **1**	**SC1** for both answers correct but reversed
2 (a) (i)	rotation [centre] (6, 7) 180° oe	**1** **1** **1**	or enlargement SF = –1 centre (6, 7)
(ii)	reflection $x = 1$	**1** **1**	
(iii)	enlargement [centre] (6, 11) scale factor 2	**1** **1** **1**	
(b)	correct translation shown	**2**	**B1** for translation by $\begin{pmatrix}-3\\k\end{pmatrix}$ or $\begin{pmatrix}k\\2\end{pmatrix}$
3 (a)	$\frac{2}{10}$ oe	**1**	
(b) (i)	4 points correctly plotted	**2**	**B1** for 3 correct points
(ii)	positive	**1**	
(iii)	correct ruled line	**1**	
(iv)	46 to 48	**1FT**	strict **FT** from their line if positive
(v)	10 is not in range of recorded test 1 results	**1**	

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Question	Answer	Mark	Part marks
4 (a) (i)	9 : 4	**1**	
(ii)	7	**2**	**M1** for $\frac{3}{5}\times 45$ or $45 : 3\times 9$
(b) (i)	4218.24 cao	**3**	**M2** for 3750×1.04^3 oe or **M1** for 3750×1.04^2 oe If zero scored **SC2** for 468.24
(ii)	33	**2FT**	**M1FT** for *their* $\frac{4218.24}{126}$
	60.24	**2FT**	**M1FT** for *their* 4218.24 – 126 × *their* 33 or (*their* $\frac{4218.24}{126}$ – *their*33)×126
(c)	17.28	**1**	
(d) (i)	1.85	**3**	**M1** for $0 \times 1 + 1 \times 4 + 2 \times 12 + 3 \times 3$ **M1dep** for $\frac{\textit{their}\,37}{20}$
(ii)	1 1 18 [0]	**2**	**B1** for 1 answer correct and total number of sheep = 20 or 18
(iii)	Same total number of sheep and same total number of lambs oe	**1**	
5 (a)	constant cross-sectional area oe	**1**	
(b)	$[AB^2] + 4^2 = 5^2$	**M1**	
	$[AB] = \sqrt{5^2 - 4^2} = \sqrt{9}$	**M1**	
(c)	42	**3**	**M2** for $\frac{3\times 4}{2}\times 7$ or **M1** for $\frac{3\times 4}{2}$ If zero scored **SC1** for answer 84
	cm^3	**1**	**B1** independent
(d)	correct net drawn	**3**	**M1** for 7 × 4 rectangle drawn in correct place **M1** for one 3,4,5 triangle drawn correctly

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Question	Answer	Mark	Part marks
(e)	96	2	**M1FT** for $5 \times 7 + 4 \times 7 + 3 \times 7$ oe or $2 \times \frac{1}{2} \times 3 \times 4$ or **FT** their net
6 (a)	shop	1	
(b)	[graph] steepest oe	1	
(c) (i)	0.2×20 or $12 \times \frac{1}{3}$ oe	M2	**M1** for 12×20
(ii)	distance axis numbered correctly with at least 2 more numbers	1	
(d)	12	2	**M1** for $\frac{3}{0.25}$ or $\frac{3}{15} \times [60]$
(e)	ruled line from (1034, 8) to (1058, 0)	1	
(f)	16.6 or 16.55…	3	**M2** for $\frac{\textit{their swimming pool distance} \times 2}{\textit{their}\,1058 - 1000} \times 60$ or **M1** for a $\frac{dist}{time\,interval}$
(g) (i)	182.2	3	**M1** for $2\pi \times 29$ **A1** for 182.2 to 182.24 **A1FT** for their A1 rounded correctly to 1dp
(ii)	274	2FT	**M1FT** $\frac{50000}{\textit{their}(g)(i)}$ or $\frac{500}{\textit{their}(g)(i) \div 100}$ If zero scored **SC1** for figs 27[44…]
7 (a) (i)	34	2	**M1** for $\frac{1732}{52}$
(ii)	3.90	3FT	**M1FT** for $\frac{198 \times \textit{their}\,34}{1732}$ **A1FT** 3.88 to 3.89 **A1FT** *their* answer rounded to nearest 10c
(b) (i)	3.9	2	**M1** for 7.8 If zero scored **SC1** for figs 38 to 40
(ii)	football ground indicated in correct position	3	**B1** for bearing of 105° from *A* **B1** for bearing of 068° from *M* **B1FT** for indication of the football ground's position, dpt on at least one B1

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Question	Answer	Mark	Part marks
(c) (i)	24	1	
(ii)	$3w + 4d = 29$	2	**B1** for $3w + 4d$ seen
(iii)	[w] 7 [d] 2	4	**M1FT** for correctly equating one set of coefficients **M1FT** for correct method to eliminate one variable **A1** for $w = 7$ **A1** for $d = 2$ If zero scored, **SC1** for either: 2 correct answers given or 2 values satisfying one of their original equations
(iv)	38	1FT	**FT** is $4 \times$ *their* 7 + $5 \times$ *their* 2
8 (a)	correct perpendicular bisector drawn with 2 pairs of arcs	2	**B1** for correct bisector drawn without arcs or 2 pairs of correct arcs drawn
(b) (i)	correct angle bisector drawn with 2 pairs of arcs	2	**B1** for correct bisector drawn without arcs or 2 pairs of correct arcs drawn
(ii)	correct region shaded	1	dependent on a line drawn from A to BC
(c)	correct loci drawn	3	**B1** two 4 cm arcs drawn centres M and N **B1** two straight lines drawn parallel to MN and 4 cm from MN, one on each side of MN **B1** completely correct loci drawn within tolerance throughout
9 (a)	(9), 3, (–1), –3, –3, –1, 3, 9	3	**B2** for any 5 correct or **B1** for any 3 or 4 correct
(b)	completely correct curve	4	**B3FT** for 7 or 8 correct plots **B2FT** for 5 or 6 correct plots **B1FT** for 3 or 4 correct plots
(c)	(1.5, k) where $-3.5 \leqslant k < -3$	1	
(d) (i)	ruled line $x = 1.5$ drawn	1	
(ii)	$x = 1.5$ oe	1	

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