CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0581 MATHEMATICS

0581/32 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
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.	Answers	Mark	Part Marks
1 (a)	$4 \times 1000 \times 1000$ or 4×1000^2	**1**	
(b)	$0.95 \times 4\,000\,000$ oe	**1**	
(c) (i)	$3 \div 19 \times 3\,800\,000$	**2**	**M1** for $3 \div (11 + 5 + 3)$ or $3\,800\,000 \div (11 + 5 + 3)$
(ii)	2 200 000	**1**	
(iii)	15 710	**2FT**	**M1FT** for *their* $2\,200\,000 \div 140$
(d) (i)	$1-\left(\frac{24}{40}+\frac{5}{40}\right)$	**M2**	**M1** for $\frac{24}{40}$ *or* $\frac{5}{40}$ *or* $\frac{3\times8}{5\times8}$ *or* $\frac{1\times5}{8\times5}$
	$\frac{11}{40}$ or $\frac{11\,k}{40k}$ final answer	**A1**	If zero scored, **SC3** for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000}$ = [$\frac{11}{40}$ or $\frac{11\,k}{40k}$] or **SC2** for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000}$ followed by incorrect fraction **SC1** for $\frac{11}{40}$ or $\frac{11\,k}{40k}$ final answer
(ii)	165 000	**1FT**	**FT** *their* **(d)(i)** $\times$ 600 000
(e)	281 216 cao	**3**	**M2** for $250\,000 \times 1.04^3$ oe or **M1** for $250\,000 \times 1.04^2$ oe If zero scored, **SC1** for 31 216

2	**(a)**	Octagon	**1**	
	(b)	135	**3**	**M2** for $180 - (360 \div 8)$ or **M2** for $\frac{(8-2)\times 180}{8}$ or **M1** for $(360 \div 8)$ or **M1** for $(8-2)\times 180$
	(c) (i)	22 29 36	**2**	**B1** for two terms in correct places or 2 terms with a difference of 7.
	(ii)	$7n + 1$ oe	**2**	**B1** for $7n + j$ or $kn + 1$ ($k \neq 0$)
	(iii)	71	**1FT**	**FT** for *their* **(c)(ii)** if linear
	(iv)	13 **nfww**	**2**	**M1FT** for *their* **(c)(ii)** = 92 or **M1** for $(92 - 1) \div 7$ or $91 \div 7$ or **M1** for $7 \times 13 + 1 = 92$
3	**(a)**	Reflection [in] *AB*	**1** **1**	
		Rotation 180° oe Midpoint of *AB* oe	**1** **1** **1**	
	(b) (i)	Translation 2 left and 7 up	**2**	**SC1** for one of 7 up or 2 left
	(ii)	Correct Enlargement	**2**	**SC1** for enlargement scale factor 3 but incorrectly placed
	(c)	Correct line of symmetry	**1FT**	**FT** is *their* **(b)(ii)**
4	**(a) (i)**	Line (0700, 0) to (08 40, 310) Horizontal line 2 squares Line *their* (08 50, 310) to (09 40, 470)	**1** **1FT** **1FT**	Lines need not be ruled and could be curves with positive gradients throughout.
	(ii)	2[h]40[min]	**1**	
	(iii)	176.25	**2**	**M1FT** for 470 ÷ *their* **(a)(ii)**
	(b) (i)	2[h]21[min]	**2**	**M1** for 470 ÷ 200 soi
	(ii)	Line from (07 45, 470) to (*their* 10 06, 0)	**2FT**	**B1** for (07 45, 470) correctly plotted or **B1FT** for (*their* 10 06, 0) correctly plotted
	(c)	290 to 300	**1FT**	(Correct or follow through) **FT** from intersection on *their* graph.

5	**(a) (i)**	Trapezium	**1**	
	(ii)	Pentagon	**1**	
	(b) (i)	[BC =] $\sqrt{52^2 - 20^2}$ [= 48]	**B2**	**B1** for $52^2 = BC^2 + (70 - 50)^2$ or $52^2 = BC^2 + 20^2$ or $BC^2 = 52^2 - 20^2$
	(ii)	3936 or 3940	**2**	**M1** for $(70 + 12) \times 48$ oe
	(c) (i)	220	**1**	
	(ii)	2880	**2**	**M1** for $0.5(50 + 70) \times 48$ oe
	(d)	108	**3**	**B1** for [AE=] 24 **M1** for $0.5 \times$ *their* $AE \times 9$
	(e)	948	**1FT**	**FT** *their* **(b)(ii)** – (*their* **(c)(ii)** + *their* **(d)**)
6	**(a) (i)**	–5 –8 5 2.5	**2**	**B1** for 3 correct
	(ii)	8 points correctly plotted Correct curve	**B3FT** **1**	**B2FT** for 6 or 7 correct points **B1FT** for 4 or 5 correct points
	(iii)	Ruled line $y = 6$ drawn 3.1 to 3.6	**1** **1**	Independent marks
	(b) (i)	–5 –1 3	**2**	**B1** for 2 correct
	(ii)	Ruled correct line	**1**	
	(iii)	$\frac{1}{2}$ oe	**1**	
	(c)	7.2 to 7.6 –5.2 to –5.6	**1FT** **1FT**	
7	**(a) (i)**	15.5	**2**	**M1** Sum of the 10 items of data ÷ 10
	(ii)	16	**2**	**M1** for ordering at least first or last 6 items or for 14 **and** 18 indicated
	(iii)	26	**1**	
	(b) (i)	6 correct bars	**2**	**B1** for 4 or 5 correct bars or 6 correct heights
	(ii)	Aug[ust]	**1**	
	(iii)	$\frac{4}{12}$ oe	**1**	

8	**(a) (i)**	[0]63 to [0]67	**1**	
	(ii)	8	**2**	**B1** for 6 ± 0.2 [cm] seen in working
	(b)	*QR* on bearing 123° to 127°	**1**	**B1** for bearing of 123° to 127°
		9.3 cm to 9.7 cm continuous ruled line	**2FT**	**M1FT** for 76 ÷ *their* **(a)(ii)** soi by calculation or distance on diagram
	(c) (i)	297 – 270 or 90 – (360 – 297)	**1**	
	(ii)	7.6 **cao nfww**	**3**	**M1** for $\cos 27° = \frac{PW}{8.5}$ or $\sin 63° = \frac{PW}{8.5}$ or better **A1** for 7.57(...) **B1ind** for correctly rounding *their* 7.57(...) to 2 sig figs if *their* 7.57(…) is to 3 sig figs or more
	(d)	Correct continuous perpendicular bisector of *AB* with two pairs of correct arcs	**2**	**B1** for correct continuous bisector without arc or with incorrect arcs
9	**(a) (i)**	338.4[0]	**3**	**M2** for $5 \times 36 + 660 \times 0.24$ or better or **M1** for 5×36 or 660×0.24 or better
	(ii)	389.16	**2FT**	**M1FT** for $1.15 \times$ *their* **(a)(i)** oe
	(b) (i)	60	**1**	
	(ii)	108	**1FT**	$1.8 \times$ *their* **(b)(i)**
	(iii)	497.16	**1FT**	**FT** *their* **(a)(ii)** + *their* **(b)(ii)**
	(c)	31 **nfww**	**2FT**	**M1FT** for $\frac{\textit{their}\textbf{(b)(iii)}}{1600} \times 100$