

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

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MARK SCHEME for the October/November 2014 series

0581 MATHEMATICS

0581/32

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

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 <i>their</i> $2\,200\,000 \div 140$
(d) (i)	$1 - \left(\frac{24}{40} + \frac{5}{40} \right)$	M2	M1 for $\frac{24}{40}$ or $\frac{5}{40}$ or $\frac{3 \times 8}{5 \times 8}$ or $\frac{1 \times 5}{8 \times 5}$
	$\frac{11}{40}$ or $\frac{11\text{k}}{40\text{k}}$ final answer	A1	If zero scored, SC3 for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000} =$ $\left[\frac{11}{40} \text{ or } \frac{11\text{k}}{40\text{k}} \right]$ or SC2 for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000}$ followed by incorrect fraction SC1 for $\frac{11}{40}$ or $\frac{11\text{k}}{40\text{k}}$ final answer
(ii)	165 000	1FT	FT <i>their</i> (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 <i>their</i> (c)(ii) if linear
		(iv)	13 nfww	2	M1FT for <i>their</i> (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] <i>AB</i>	1		
		Rotation 180° oe	1		
		Midpoint of <i>AB</i> oe	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 <i>their</i> (b)(ii)		
4	(a)	(i)	Line (0700, 0) to (08 40, 310) Horizontal line 2 squares Line <i>their</i> (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 $470 \div \textit{their} (a)(ii)$
	(b)	(i)	2[h]21[min]	2	M1 for $470 \div 200$ soi
		(ii)	Line from (07 45, 470) to (<i>their</i> 10 06, 0)	2FT	B1 for (07 45, 470) correctly plotted or B1FT for (<i>their</i> 10 06, 0) correctly plotted
	(c)	290 to 300	1FT	(Correct or follow through) FT from intersection on <i>their</i> 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 $0.5 \times \textit{their AE} \times 9$
(e)	948	1FT	FT <i>their (b)(ii) – (their (c)(ii) + their (d))</i>	
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 $\div 10$
	(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)	<i>QR</i> on bearing 123° to 127° 9.3 cm to 9.7 cm continuous ruled line	1 2FT	B1 for bearing of 123° to 127° M1FT for $76 \div$ <i>their</i> (a)(ii) soi by calculation or distance on diagram
	(c) (i)	297 – 270 or 90 – (360 – 297)	1	
	(ii)	7.6 cao nfw	3	M1 for $\cos 27^\circ = \frac{PW}{8.5}$ or $\sin 63^\circ = \frac{PW}{8.5}$ or better A1 for 7.57(...) B1ind for correctly rounding <i>their</i> 7.57(...) to 2 sig figs if <i>their</i> 7.57(...) is to 3 sig figs or more
	(d)	Correct continuous perpendicular bisector of <i>AB</i> 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 $1.15 \times$ <i>their</i> (a)(i) oe
	(b) (i)	60	1	
	(ii)	108	1FT	$1.8 \times$ <i>their</i> (b)(i)
	(iii)	497.16	1FT	FT <i>their</i> (a)(ii) + <i>their</i> (b)(ii)
	(c)	31 nfw	2FT	M1FT for $\frac{\textit{their}(\text{b})(\text{iii})}{1600} \times 100$