

MARK SCHEME for the October/November 2014 series

0581 MATHEMATICS

0581/31

Paper 2 – 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)	M1 M1FT A1	Alternative method M1 $540 \div 1000$ M1FT <i>their</i> $0.54 \div 9$ A1 $0.06 \times (9 + 7 + 4 + 5)$
			If 0 scored SC1 for $0.54 + 0.42 + 0.24 + 0.3$
			M1 for $5 \div (9 + 7 + 4 + 5) \times 1500$ or $(540/9) \times 5$ or 60×5
	(ii)	2	M1 for $5 \div (9 + 7 + 4 + 5) \times 1500$ or $(540/9) \times 5$ or 60×5
	(iii)	2FT	M1 for $70 \div 100 \times$ <i>their</i> (a)(ii) oe
	(b) (i)	1	1 2 3FT
M2 for <i>(their (b)(ii) - 36) \div 36 \times 100</i> or M1 for <i>their (b)(ii) - 36</i>			
M2 for <i>their (b)(ii) \div 36 \times 100 - 100</i> M1 for <i>their (b)(ii) \div 36</i> [$\times 100$]			
2	(a) (i)	1 2 1	M1 for $\frac{1}{2}(2 + 6) \times 4$ oe
	(b)	B1 B1 B1	Independent marks
			B1
			B1
	(c) (i)	2	2 2
SC1 for one of 5 left or 7 up			
(ii)	2	SC1 for one of 5 left or 7 up	

	(iii)	Correct Enlargement	2	SC1 for enlargement, SF ½, but incorrectly placed.
	(d)	Obtuse angle marked	1	
3	(a) (i)	4 points correctly plotted.	2	B1 for 1 correct Dependent on at least 8 points on graph FT their single straight line in part (ii). M1 for Attempt at $\sum f \div 12$ B1 for $\frac{5}{12}$ seen
	(ii)	Correct continuous ruled line of best fit.	1	
	(iii)	Distance on their line of best fit.	1FT	
	(iv)	Negative	1	
	(v)	Faster the time, the longer the distance oe	1	
	(b) (i)	11.7 or 11.69... NFWW	2	
	(ii)	41.7 or 41.66 to 41.67	2	
	(iii)	2.45	1	
4	(a)	$x + x + 180 = 480$ $2x = 300$	M1 M1	M1 for $2 \times 480 + 2 \times (20 + 30)$ oe M1 for $30 \times 150 + 50 \times 180 + 20 \times 150$ oe FT their (c)(i) $\times 170$ FT their (c)(ii) $\div 100^3 \times 16$ M1 for their (c)(ii) $\times 16$
	(b)	1060 [cm]	2	
	(c) (i)	16 500	2	
	(ii)	2 805 000	1FT	
	(iii)	44.9 or 44-88	2FT	

5	(a)	6003 076	1		
	(b)	(i)	-0.375	1	
		(ii)	-2.2	1	
		(iii)	>	1FT	FT their answers to (i) and (ii)
	(c)	3945, 3955	1, 1	SC1 for both correct but reversed	
	(d)	1.667 cao	2	B1 for $1\frac{2}{3}$ or better	
	(e)	(i)	1	1	
		(ii)	$\frac{1}{125}$	1	
		(iii)	$24x^9$	2	B1 for $24x^k$ or kx^9
6	(a)	(i)	4, 7, 4	2	B1 for 2 correct
		(ii)	7 points correctly plotted Correct curve through the points	3FT 1	B2 for 5 or 6 correct B1 for 3 or 4 correct
	(b)	(i)	$x = 0$	1	
	(ii)	2.7 to 2.9, -2.7 to -2.9	1, 1		
	(i)	Points correctly plotted and a ruled line through points and beyond them.	2	B1 for 1 correct plot. (even if line is not drawn)	
	(ii)	$[y =] -2x + 4$	3	B2 for $-2x + j$ or B1 for $kx + 4$ $k \neq 0$ or [gradient =] $\frac{\text{rise}}{\text{run}}$ correct values	
	(iii)	(-1.2 to -1.4, 6.4 to 6.6)	1		
7	(a)	106 to 110	1		
	(b)	(i)	Correct bisector of AB constructed with 2 pairs of arcs.	2	B1 for correct bisector
		(ii)	Correct bisector of angle ABC with arcs	2	B1 for correct bisector without arcs
	(c)	T marked at intersection of their bisectors	1FT		

	(c)	24.4[km] to 26.0[km]	2FT	FT <i>their AT</i> B1 for <i>their AT</i> correctly meas
	(d)	Circle, radius 7.5(± 0.2)cm centre <i>T</i> .	2FT	FT <i>their</i> intersection SC1 for circle centre <i>T</i> , incorrect radius.
	(e)	No It is outside the circle. oe	1FT	FT <i>their</i> circle.
8	(a) (i)	Correct diagram with scale	3	B1 scale correct. B1 for all widths the same B1 for all 6 heights correct
	(ii)	10 to 12 cao	1	
	(iii)	$\frac{19}{120}$ or 0.158[3....] or 15.8[3.....]%	1	
	(b)	Probability must be between 0 and 1 oe	1	
	(c) (i)	$\frac{9}{20}$ or 0.45 or 45%	1	
	(ii)	0 oe	1	
9	(a) (i)	18 23 28	1, 1, 1	Allow one mark for each addition of 5 to the previous answer
	(ii)	Add 5 oe	1	
	(iii)	$5n - 2$ oe	2	B1 for $5n + j$ or $kn - 2$ $k \neq 0$
	(iv)	73	1FT	FT <i>their</i> (a)(iii) if linear.
	(b) (i)	10 14	1, 1	Allow 1 mark for addition of 4 on their value for 3rd diagram.
	(ii)	$4n - 2$ oe	2	B1 for $4n + j$ or $kn - 2$ $k \neq 0$