UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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## for the guidance of teachers

## **0580 MATHEMATICS**

0580/33

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 must be read in conjunction with the question papers and the report on the examination.

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UNIVERSITY of CAMBRIDGE International Examinations

	Page 2	Mark Scheme: Teachers' version	Syllabus
		IGCSE – October/November 2010	0580
Abbr cao	eviations correct answe	er only on only	nathsciou
dep	dependent		40.
ft	follow throug	sh after error	-On
isw	ignore subsec	quent working	
oe	or equivalent		
SC	Special Case		
WWW	without wron	g working	
art	anything rour	nding to	
soi	seen or impli	ed	

Qu.	Answers	Mark	Part Marks
1	<b>(a)</b> 10, 9, 5, 5, 1	3	B2 for 4 correct, B1 for 3 correct
	(b) (i) 2 (ii) 2.5	1 2	<b>M1</b> for evidence of finding mid-value of 20 pieces of data
	<b>(iii)</b> 2.6	3	<b>M1</b> for evidence of $\sum fx$ then <b>M1dep</b> for $\div 40$
	(c) (i) 81 or 45	2ft	ft their 9 or their 5 M1 for their 9 or their $5 \div 40 \times 360$
	45 or 81 (ii) Correct angles of 81° and 45°	1ft 1ft	Correct or ft $126$ – their first angle ft only if add up to $126$
2	(a) (i) 18 30 oe (ii) 251 (250.9)	1 3	M1 for distance ÷ time (any units) and M1 for 55 ÷ 60 oe
	<ul> <li>(b) (i) 1400</li> <li>(ii) 20.7(2)</li> <li>(iii) 91</li> </ul>	2 1 2	M1 for 9121 ÷ 6.515 B1 for 90.89 or 90.9 or 90.8 or 610 × 0.149 or B1 (indep) for correct rounding to integer if from a decimal
3	(a) (i) Translation $\begin{pmatrix} -5\\ 3 \end{pmatrix}$	1, 1	
	<ul> <li>(ii) Reflection in line y = 4</li> <li>(iii) Rotation, (2, 2.5), 180° or half-turn</li> </ul>	1, 1 1, 1, 1	Line can be labelled on diagram Centre could be labelled on diagram
	<ul> <li>(b) (i) Correct reflection in <i>y</i>-axis</li> <li>(ii) Correct enlargement, (0, 0), factor 4</li> </ul>	2 2	<b>SC1</b> for reflection in <i>x</i> -axis <b>SC1</b> for any enlargement centre (0, 0) or factor 4

					4	m.	
F	Page 3	Mark Scheme: Teach	Mark Scheme: Teachers' version		Syllabus	·m	24
		IGCSE – Octobel/Nov	/ember	2010	0580	- 75	A CIPATA
4	(a) (i) 214 (213.6) (ii) 20.6 or (20.55 – 20.56)			M1 for $75^2$ + M1 for tan = or cos = 200/	$200^2$ 75/200 or sin = 7 their (i)	5/their (i)	hscloud.c
	(b) (i) (ii) (iii)	(0)44 ((0)44.4) 224 (224.4) 335	1ft 1ft 2	<b>B1</b> 65 – their (a)(ii) if < 65 180 + their (b)(i) <b>B1</b> for 65 below <i>B</i> or 25 above <i>B</i> , may be on diagram			
5	(a) (i) (ii)	Accurate perpendicular bisector of <i>AB</i> with arcs Accurate bisector of angle <i>ADC</i>	2 2	SC1 if accurate without arcs or accurate bisector of wrong side with arcs SC1 if accurate without arcs or accurate bisector of wrong angle with arcs			
	(b) Rule	d line 2 cm from and parallel to <i>BC</i>	2	SC1 if not ruled			
	(c) Corr	ect region shaded cao	1	Dependent on	at least SC1 in (a	)(i), (a)(ii) ar	nd (b)
6	(a) (i) (ii)	60 1200	2 1ft	<b>M1</b> for full n ft their (i) $\times 2$	nethod for area w 20	ith correct va	alues
	(b) (i) (ii)	10.2 23.05	2ft 2ft	SC1 for figs or M1 for (a) ft their (a)(ii ft their (b)(i) M1 for 23.05 or B1ind for answer with	102 (ii) × 8.5 ÷ 1000 ) × 8.5 ÷ 1000 an × 2.26 2 or 23.1 or (b)(i correctly roundin more than 2 dp	d SC in sam ) × 2.26 g to 2 dp an	e way
7	(a) 2 <i>d</i> -	9	2	<b>SC1</b> for 9 – 2	2d		
	<b>(b)</b> 8.4(0	))	2	M1 for their	(a) = 7.8(0)		
	(c) 0.6(0	))	1ft	ft their <b>(b)</b> –	7.80, <b>only</b> if posi	tive	
8	(a) 35.3	art	2	M1 for subst	ituting $r = 7.5$ in	formula	
	(b) $\sqrt{\frac{5A}{\pi}}$	-	3	M1 for correct M1 for correct M1 for correct	ctly multiplying to the ctly dividing by $\pi$ ctly taking a squate	py 5 re root	
	(c) 2.76	art cao	2	M1 for subst backwards fr and reaching	ituting 4.8 in thei om original form $r^2 = 5 \times 4.8 \div \pi$	r <b>(b)</b> or if wo ula, substitut	orking ing

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Page 4		4	Mark Scheme: Teachers' version		ersion Syllabus	3
			IGCSE – October/November 2		r 2010 0580 4m	A A A A A A A A A A A A A A A A A A A
9	(a)	(i) (ii)	8, 3 5 points correctly plotted Smooth curve through their 5 points	1, 1 2ft 1	P1 for 4 correct points ft	this cloud con
	(b)	(ii) (ii)	$3.4 \le x \le 3.6$ 3, 2, 1.5 8 points correctly plotted Smooth branch of rectangular hyperbola through 12 points	111 1, 1, 1 2ft 1	B1 each P1 for 6 or 7 points	.7
	(c)	(1 < (2.6	$x \le 1.2, 10.6 \le y < 11)$ $x \le x < 3, 4.2 \le y \le 4.5)$	1ft 1ft	ft to same accuracy intersections of their tw graphs	VO
10	(a)	360 The	÷ 8 (= 45) n 180 – their 45 (= 135)	1 1dep	Alt method $180 \times (8 - 2)$ Then their $1080 \div 8 (= 135)$	
	(b)	(i) (ii)	45 90	1 1		
	(c)	(i) (ii)	35.99 to 36.(0) 695 to 696.4	2 3ft	M1 for $0.5 \times 8.485 \times 8.485$ M1 for $(12 + 8.485 + 8.485)^2$ M1ind for correct collection of area with o without values indicated	r
11	(a)	(i) (ii)	5 + 8 (= 13) 12, 19 10, 17 7, 9 3, 6 4, 5 3, 2	1 1 1 1 1 1 1 1		
	(b)	(i) (ii) (iii)	$ \begin{array}{r} 11\\ 2n-1\\ 36\\ n^2\\ \frac{1}{6}\\ \frac{1}{n} \end{array} $	$ \begin{array}{c} 1 \\ 2 \\ 1, 1 \\ 1, 1 \end{array} $	<b>B1</b> for $2n \pm k$ or $jn - 1$ ( $j \neq 0$ )	

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