UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0580 and 0581 MATHEMATICS

0580/03 and 0581/03   Paper 3 (Core), maximum raw mark 104

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UNIVERSITY of CAMBRIDGE
International Examinations

1	(a)		0.68 x 450	M1	
			= 306	A1	
			2 x 450 + 306 (= 1206)	M1	dep allow 900 or 450 + 450
					SCM3 for 2.68 x 450 (= 1206)
	(b)		2814	B3	M1 for 1206 ÷ 6 (implied by 201) or 450 ÷ 6 or 306 ÷ 6
					M1 dep for x (6 + 5 + 3) implied by 14
					SCM2 for 1206 + 1005 + 603
	(c)		4955	B2	M1 for 500 x 9.91 implied by figs 4955
	(d)		2320 or 11 20 pm	B2	SC1 for 1720 or 1120 seen
					SC1 for any arrival time + 6 soi
					[10]

2	(a)		translation	B1	
			col.vector 2 -4	B1 B1	SC1 for col.vectors 4 -8 or -4 2 or for (2, -4)
	(b)		reflection	B1	
			(in) $x = 0$ or y axis	B1	
	(c)		rotation	B1	
			90º (anticlockwise) oe	B1	i.e. 1/4, 270 clockwise, - 270
			(about) origin oe	B1	accept (0,0), O
	(d)		enlargement	B1	
			(scale factor) -2	B1	SC1 for enlargement, SF=2, about origin (oe) and
			(centre) origin oe	B1	rotation of 180 about the origin (oe)
					[11]

3	(a)	(i)	6,17,8,9,11,9	B2	B1 for 4 or 5 correct or for all tallies correct
		(ii)	correct bar chart	B1ft	ft from their frequency table or tallies
		(iii)	2	B1ft	from their table or chart
		(iv)	3	B1ft	from their table or chart
		(v)	3.48	B3cao	M1 for clear indication of 1x6 + 2x17 + 3x8 + 4x9 + 5x11 + 6x9 ft imp by 209
					M1 dep for ÷ 60
	(b)		66º	B2ft	M1 for "11" ÷ 60 x 360 or "11" x 6
					[10]

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4	(a)	(i)	$3x = 14 + 4$ oe	M1	
			$(x =)$ 6	A1cao	SC2 for 6 www
		(ii)	$y + 1 = 2 \times 5$ oe	M1	
			$(y =)$ 9	A1cao	SC2 for 9 www
		(iii)	$6z - 21 - 2z + 6 (= -9)$	B1	
			$4z = 6$	B1ft	ft their expansion but must be 4 terms
			$z = 1.5$	B1cao	
	(b)	(i)	$p + q = 12$	B1	
		(ii)	$25p + 40q = 375$	B1	
		(iii)	correct method	M1	multiply and subtract, substitution
			$p = 7$	A1	
			$q = 5$	A1	SC3 for p=7 and q=5 www
					[12]

5	(a)	(i)	43.0 art or 43	B2	M1 for $\pi \times 3.7^2$
		(ii)	10.0 art or 10	B2ft	M1 for 430 ÷ their **(a)(i)** ft
	(b)	(i)	(length) = 22.2	B1	accept length and width interchanged
			(width) = 14.8	B1	
			(height) = 20	B1ft	ft is 2 x their **(a)(ii)**
		(ii)	6570 art	B2 ft	ft is their L x W x H from **(b)(i)** M1 for L x W x H ft (substituted)
		(iii)	78.5 (%) art	B3 ft	ft is 5160 ÷ their **(b)(ii)** x 100 but only if answer < 100 B1 for 12 x 430 or 5160 M1 for 5160 ÷ their **(b)(ii)** x 100
					[12]

6	(a)	(i)	63	B1	
		(ii)	54	B2 cao	M1 for 180 - 2 x their **(a)(i)** soi (may be implied by answer)
		(iii)	134	B2 cao	M1 for 360 - (100 + 63 + their **(a)(i)**) or 197 - their **(a)(i)** soi (may be implied by answer)
	(b)	(i)	360 ÷ 8 or 6 x 180	MA1	
			180 - 45 or 1080 ÷ 8	MA1	dependent SC2 for convincing argument

	(ii)	octagon drawn	M1	closed and not re-entrant	
		accurate	A1	angles at A and B equal to 135 +/- 2 degrees and lines BC and AH equal to 4 +/- 0.1 cms	
	(iii)	4.7 to 5.0	B1		
	(iv)	9.6	B2ft	ft is 2 x their **(b)(iii)** M1 for 0.5 x 4 x their **(b)(iii)**	
	(v)	76.8	B1 ft	ft is 8 x their **(b)(iv)**	[13]
7 (a)	**(i)**	tan (QPR) = 10.3 ÷ 7.2 55 (.0)	M1 E1	M1 for complete long method	
	(ii)	125	B1	cao	
(b)	**(i)**	125 - 98 or 180 - (98 + 55)	E1	accept 55 + 98 + 27 = 180 do not accept 180 - 153	
	(ii)	6.13 art	B2cao	M1 for 13.5 x sin27 oe (allow full correct long methods) SCM1 for PR (pythag, sin or cos) RS (pythag) then A1 for 4.9 art or SCM1 for PR (pythag, sin or cos) RS(tan) then A1 for 6.4 art.	
	(iii)	37.1 or 37.13 art	B1 ft	ft is 31 + their **(b)(ii)**	
(c)		8.24 to 8.25(1….)	B2 ft	M1 for their **(b)(iii)** ÷ 4.5	[9]
8 (a)	**(i)**	$x + 3$	B1		
	(ii)	$x(x+3)$ or $x^2 + 3x$	B1	ft from their **(a)(i)**	
	(iii)	$x^2 + 3x = 7$ $x^2 + 3x - 7 = 0$	E1	both lines seen	
(b)	**(i)**	-3, -9, -3	B3	B1, B1, B1	
	(ii)	8 points correctly plotted	P3 ft	P2ft or 6 or 7, P1ft for 4 or 5 (+/- 1/2 small square)	
		smooth curve	C1	(must go below $y = -9$)	

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(c)	**(i)**	1.5 to 1.6 -4.5 to -4.6	B1 ft B1 ft	ft is their intersections with the *x*-axis	
	(ii)	4.5 to 4.6	B1 ft	ft is their positive **(c)(i)** + 3	
(d)	**(i)**	correct line	L1	long enough to cross *y* axis (+/- 1/2 small square)	
	(ii)	(*y* =) 2*x* - 3	B1,B1ft	B1 for 2 (as coefficient of *x*) B1 ft for their intersection with the *y*-axis	[16]
9 (a)		Pentagon	B1		
(b)	**(i)**	61 to 63	B1		
	(ii)	AE = 6.3 to 6.5 cm and DE = 5.7 to 5.9 cm	B1		
		correct arcs seen	B1	accept concave polygon SC1 if lengths reversed and with arcs	
(c)	**(i)**	perpen.bisector of BC correct arcs seen	B1 B1	+/- 1mm and +/- 1 degree accuracy	
	(ii)	bisector of angle ABC correct arcs seen	B1 B1	+/- 1 degree accuracy	
(d)		"M" correctly marked	B1	dep. on at least first B1 in each part of **(c)**	
(e)		2 marks 0.8 (+/-0.1) apart 1.85 (+/-0.1) from A and B	B1 B1		[11]