## MARK SCHEME for the May/June 2011 question paper

## for the guidance of teachers

## 0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/32 Paper 3 (Core), maximum raw mark 96

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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Page 2			Mark Scheme: Teache	ers' versio	n Syllabus Paper	r
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1	(a)		3:5	B1		
1	(a) (b)		12	B1 B1		
			9, 21	B1 B1	If B0, M1 for $30 \div 10$ seen ( <b>not</b> implied	1 hy
	(c)		9,21	DIDI	3) Condone 21, 9	гбу
			2	<b>D2</b>		
	(d)		$\overline{y}$	B2	B1 for 2 <b>and</b> <i>x</i> 's cancelled B1 independent for denominator <i>y</i>	
	(e)		210	B1		
	(f)		9	B2	If B0, M1 for 0.15 × 60 oe	
	(g)		50	B2	If B0, M1 for $6 \div 3$ (implied by 2) seen	[11]
2	(a)	(i)	33	B1		
		(ii)	35.5	B1		
		(iii)	6	B1		
		(iv)	37	B1		
		(v)	35.1	B1		
		()				
	<b>(b)</b>		Correct values on shoe axis	B1	i.e. labels not attached to grid lines. Condone absence of 34.	
			Six correct heights (1, 3,, 1, 2, 1, 2)	B2	B1 for five correct heights	
	(c)		Angles of 72°, 36° and 72° ( $\pm$ 2°)	B2 ft	B1 for 1 correct ft their (b)	
	(4)		3 correct labels of shoe sizes ft $0.2 \text{ correct}$	B1 ft	ft their (b)	
	(d)	(i)	0.3 oe ft	B1 <b>ft</b>	ft their (b) or correct	
		(ii)	1 oe	B1	Allow $\frac{10}{10}$ etc	
					10	
	(e)		$66\frac{2}{3}$ or $66.6$ or $66.7$ (or $66.66$ to	B2 ft	Accept 67. If B0, M1 for 6 ÷ 9 soi	
			66.67) ft		ft their (b)	[15]
3	(a)			B3	B2 for 9 correct, B1 for 8 correct	
			5 7			
	<b>(b)</b>	(i)	2, 4, 6 ft	B1 ft		
		(ii)	1, 2, 3, 4, 6, 8, 9, 10 ft	B1 <b>ft</b>		
		(iii)	1, 3, 9 ft	B1 <b>ft</b>		
		(iv)	4 ft	B1 ft		[7]
4	(a)		46.2 (46.23 to 46.24)	B2	If B0, M1 for $\sin = \frac{6.5}{9}$ oe	
	. /				, ,	
	(b)		12.3 (12.31 to 12.32)	B2	If B0, M1 for $\tan 57 = \frac{TW}{8}$ oe or better	[4]
	-				8	

	Page 3		Mark Scheme: Teache		n	Syllabus	Paper
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5	(a)	(i)	18	B2	If B0, M	1 for $0.5 \times 6 \times 6$ so	i
		(ii)	28.3 (28.26 to 28.28)	B2	If B0, M	1 for $0.25 \times \pi \times r^2$	soi
		(iii)	10.3 (10.26 to 10.28) ft	B1 <b>ft</b>	ft their (i	i) – their (i)	
	(b)	(i)	8.49 (8.485)	B2	If B0, M	1 for $6^2 + 6^2$	
		(ii)	17.9 (17.90 to 17.92) ft	B3 ft		9.43 + their (i)	
						1 for $0.25 \times \pi \times 2r$ ent) for adding (i)	then M1 [10]
6	(a)	(i)	80	B1	(depende		[10]
U	(a)	(i) (ii)	Alternate or Z or diagram showing Z	B1 B1			
	(b)	(i)	100	B1 B1			
	(0)	(i) (ii)	50	B1			
		(iii)	50	B1			[5]
7	(a)	( )	(3, -4)	B1			
				D1			
	(b)		$\begin{pmatrix} -3\\5 \end{pmatrix}$	B1			
			2			1 c · 1 c r	ise
	(c)	(i)	$\frac{2}{3}$	B2	If B0, M	1 for evidence of $\frac{r}{r}$	un
		(ii)	$y = \frac{2}{3}x + 1$ oe ft	B2 ft	Must be	full equation ft	heir (c)
			3			+ c then B1 for $\frac{2}{3}$	
					for $+1$	3	
						v = c oe, B2 for $a$	, <i>b</i> , <i>c</i> B1 for 2 of
					them cor	2	
					SC1 for	$\frac{2}{3}x+1$	[6]
8	(a)		Reasonable rectangular hyperbola	C1	Condone	slight curving inw	ards from
			shape Not touching a guis	B1	asymptot		
			Not touching <i>x</i> -axis $x = 3$ approximately looking an	B1	Independ Independ	lent and fairly gene	rous
			asymptote				
	(b)	(i)	Vertical asymptote drawn for their curve	B1	Must loo	k an asymptote but	can be freehand
		(ii)	x = 3 cao	B1			
	(c)	(i)	U-shaped parabola, vertex at origin	B1			
		(ii)	4.16 (or 4.157)	B1			[7]
					If graph	is $\frac{10}{x} - 3$ ft as foll	ows
					(a) C1, H	30, B0 (b)(i) y-axi lication it is an asy	s with some ymptote B1

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			Γ				
9 (a)	(i)	1808 to 1810	B2	If B0, M1 for $\pi \times 6^2 \times 16$			
	(ii)	1.808 to 1.81 ft	B1 <b>ft</b>				
(b)	(i)	13.3 (13.26 – 13.27)	B2	If B0, M1 for $\pi \times 6^2 \times h = 1500$ o.e.			
	(ii)	6	B2	If B0, SC1 for figs 6 [7]			
10 (a)		$-2 \le x \le 1$ or $x \ge -2$ and $x \le 1$	B1 B1	SC1 for $-2 < x \le 1$			
(b)		x = 1.5, y = -2	M1 A2	M1 for eliminating one variable to equation kx = l or $ky = l$ or for sketch of both lines, one positive			
				gradient, one negative gradient and intersection in bottom right quadrant (can be freehand) trial and improvement both correct 3 (one correct 0)			
				ww or other GDC applications both correct SC2 (one correct 0)			
(c)	(i)	$r(\pi + 2)$	B1				
	(ii)	$\frac{P}{\pi+2}$ cao	B1	[7]			
Throughout question 11, do not allow ratios or words. If decimals or percentages used, usual accuracy applies except penalise two sf by – 1 only once							
11 (a)		12	B1				
(b)	(i)	$\frac{4}{7}, \frac{4}{7}, \frac{3}{7}, \frac{4}{7}$ against relevant branches	В2	B1 for 2 or 3 correct			
	(ii)	$\frac{9}{49}$ oe	B2	(0.184 or 0.1836 to 0.1837)			
		<b>ر</b> ۲		If B0, M1 for $\frac{3}{7} \times \frac{3}{7}$			
	(iii)	$\frac{24}{49}$ oe	В3	(0.49(0) or 0.4897 to 0.4898)			
		<b>ر</b> ۲		If B0, M2 for $\frac{3}{7} \times \frac{4}{7} + \frac{4}{7} \times \frac{3}{7}$ o.e			
				M1 for one of the products (0.24489)			
	(iv)	It does not rain (on either day) oe	B1	[9]			
12 (a)		50.8	B2	If B0, M1 for at least 3 correct mid-values seen, not all from middle four			
(b)	(i)	45, 80	B1 B1				
	(ii)	(50, 45) and (60, 80) ft plotted Curve completed through 2 plotted points ft	P1 ft C1 ft	ft their table Only ft if correct shape maintained			
	(iii)	14 to 16 ft	B2 ft	B1 for one correct quartile seen (42 to 44 or 57 to 59) ft their curve but only if curve increasing [8]			