

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
International General Certificate of Secondary Education

**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

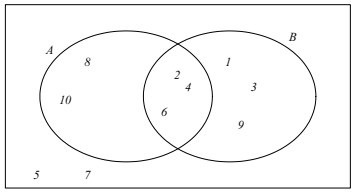
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Page 2	Mark Scheme: Teachers' version	Syllabus
	IGCSE – May/June 2011	0607

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

Page 3	Mark Scheme: Teachers' version	Syllabus	
	IGCSE – May/June 2011	0607	
5	(a) (i) 18 (ii) 28.3 (28.26 to 28.28) (iii) 10.3 (10.26 to 10.28) ft (b) (i) 8.49 (8.485....) (ii) 17.9 (17.90 to 17.92) ft	B2 B2 B1 ft B2 B3 ft	If B0, M1 for $0.5 \times 6 \times 6$ soi If B0, M1 for $0.25 \times \pi \times r^2$ soi ft their (ii) – their (i) If B0, M1 for $6^2 + 6^2$ ft 9.42 to 9.43 + their (i) If B0, M1 for $0.25 \times \pi \times 2r$ then M1 (dependent) for adding (i) [10]
6	(a) (i) 80 (ii) Alternate or Z or diagram showing Z (b) (i) 100 (ii) 50 (iii) 50	B1 B1 B1 B1 B1	[5]
7	(a) (3, -4) (b) $\begin{pmatrix} -3 \\ 5 \end{pmatrix}$ (c) (i) $\frac{2}{3}$ (ii) $y = \frac{2}{3}x + 1$ oe ft	B1 B1 B2 B2 ft	If B0, M1 for evidence of $\frac{\text{rise}}{\text{run}}$ <b>Must be full equation</b> ft their (c) If $y = mx + c$ then B1 for $\frac{2}{3}x$ and B1 (indep) for + 1 If $ax + by = c$ oe, B2 for $a, b, c$ B1 for 2 of them correct SC1 for $\frac{2}{3}x + 1$ [6]
8	(a) Reasonable rectangular hyperbola shape Not touching $x$ -axis $x = 3$ approximately looking an asymptote (b) (i) Vertical asymptote drawn for their curve (ii) $x = 3$ cao (c) (i) U-shaped parabola, vertex at origin (ii) 4.16 (or 4.157...)	C1 B1 B1 B1 B1 B1	Condone <b>slight</b> curving inwards from asymptotes Independent Independent and fairly generous Must look an asymptote but can be freehand [7]  If graph is $\frac{10}{x} - 3$ ft as follows (a) C1, B0, B0 (b)(i) $y$ -axis with some extra indication it is an asymptote B1 (ii) $x = 0$ B1 (c) (i) B1 (ii) 2 B1

Page 4	Mark Scheme: Teachers' version	Syllabus
	IGCSE – May/June 2011	0607

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 ft	
	(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)	$-2 \leq x < 1$ or $x \geq -2$ and $x < 1$	B1 B1	SC1 for $-2 < x \leq 1$
	(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) <b>ww or other GDC applications both correct SC2 (one correct 0)</b>
	(c) (i)	$r(\pi + 2)$	B1	
	(ii)	$\frac{P}{\pi + 2}$ cao	B1	[7]
<p><b>Throughout question 11, do not allow ratios or words.</b>  <b>If decimals or percentages used, usual accuracy applies except penalise two sf by – 1 only once</b></p>				
11	(a)	12	B1	
	(b) (i)	$\frac{4}{7}, \frac{4}{7}, \frac{3}{7}, \frac{4}{7}$ against relevant branches	B2	B1 for 2 or 3 correct
	(ii)	$\frac{9}{49}$ oe	B2	(0.184 or 0.1836 to 0.1837) If B0, M1 for $\frac{3}{7} \times \frac{3}{7}$
	(iii)	$\frac{24}{49}$ oe	B3	(0.49(0) or 0.4897 to 0.4898) 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]	