

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2012 question paper  
for the guidance of teachers**

**0607 CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/33**

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.

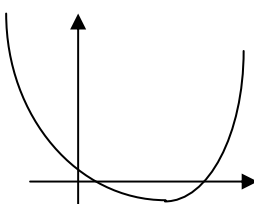
- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

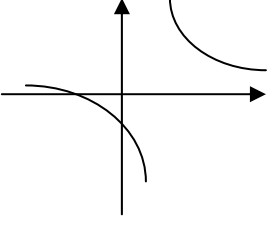
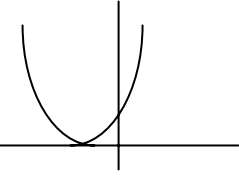
Page 2	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2012	0607	33

<b>1</b>	<b>(a)</b>	11 15	<b>2</b>	<b>B1</b> for 11:50 or 3hrs 5 mins seen	
	<b>(b)</b>	17 50	<b>2</b>	<b>B1</b> for 21:50 or 10:20 seen	
	<b>(c)</b>	8192	<b>3</b>	<b>M2</b> for $(4 \times 1600) \times 1.28$ oe or <b>M1</b> for $1600 \times 1.28$ oe <b>A1</b> for 2048	
	<b>(d)</b>	545.45	<b>2</b>	<b>M1</b> for $3000 \div 5.50$ , implied by 545 or 545.5 or 545.45.... <b>[9]</b>	
<b>2</b>	<b>(a)</b>	<b>(i)</b>	0.2 oe	<b>1</b>	
		<b>(ii)</b>	0.64 oe	<b>2</b>	<b>M1</b> for $0.8 \times 0.8$ oe
	<b>(b)</b>	<b>(i)</b>	56	<b>1</b>	
		<b>(ii)</b>	57	<b>1</b>	
		<b>(iii)</b>	58	<b>1</b>	
	<b>(iv)</b>	5147	<b>1</b>		
<b>(c)</b>	57.8 or 57.77 to 57.78	<b>2</b>	<b>M1</b> for evidence of using midpoints <b>[9]</b>		
<b>3</b>	<b>(a)</b>	150	<b>4</b>	<b>M1</b> for $9 \times 5$ , <b>M1</b> for $\frac{1}{2} \times 15 \times 8$ , <b>M1</b> for $\frac{1}{2} \times 10 \times 9$	
	<b>(b)</b>	<b>(i)</b>	13.5 (13.45...)	<b>2</b>	<b>M1</b> for $10^2 + 9^2$
		<b>(ii)</b>	72.5 (72.45...) ft	<b>2ft</b>	ft 59 + their <b>(b)(i)</b> <b>M1</b> for $17 + 10 +$ their $13.5 + 10 + 5 + 9 + 8$ <b>[8]</b>
<b>4</b>	<b>(a)</b>	Reflection (only) $x = -1$	<b>B1</b> <b>B1</b>	Any indication of second transformation gets 0	
	<b>(b)</b>	Rotation (only) $90^\circ$ clockwise oe (3, 1)	<b>B1</b> <b>B1</b> <b>B1</b>	Any indication of second transformation gets 0	
	<b>(c)</b>	$\Delta$ at (3, -4), (-1, -4), (-1, 2)	<b>2</b>	<b>B1</b> for any enlargement scale factor 2 with correct orientation or any enlargement centre (3, 6) <b>[7]</b>	

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2012	0607	33

5	(a)	9.26 (9.263 to 9.264)	2	M1 for $400 \div 43.18$	
	(b) (i)	338 or 339 (338.4 to 338.6)	2	M1 for $2 \times 75 + 2 \times \pi \times 30$	
	(ii)	$r = \frac{D - 2s}{2\pi}$ oe	2	M1 for correct re-arrangement M1 for correct division by $2\pi$	
	(iii)	$\frac{400 - 2 \times 85}{2 \times \pi}$	1	answer given	[7]
6	(a)		2	Good curve with minimum point. -1 for poor curve e.g. $y$ intercept $\neq 0$ either $x$ intercepts $\neq 0$ (or both) too symmetrical	
	(b)	(1.38, -2.35) (1.379..., 2.345 to 2.346)	1, 1	SC1 for (1.4, -2.3)	
	(c)	$y = 4x - 5$ drawn and ruled	D2	B1 for positive gradient and $y$ intercept $< 0$ B1 cuts curve twice	
	(d)	0.833 (0.8330...) 2.69 (2.690...)	1 1	SC1 for 0.83 and 2.7	[8]
7	(a) (i)	9.22 (9.219 to 9.220)	3	M2 for $\sqrt{11^2 - 6^2}$ or M1 for $h^2 + 6^2 = 11^2$ oe	
	(ii)	348 or 347 (347.3 to 347.7...)	2ft	M1 for $\frac{1}{3} \times \pi \times 6^2 \times$ their (a)(i)	
	(b) (i)	207 (207.2 to 207.4)	2	M1 for $\pi \times 6 \times 11$	
	(ii)	433 or 434 (433.0 to 433.7)	3ft	M2 for $2 \times \pi \times 6^2 +$ their 207 or M1 for $4(\text{or } 2) \times \pi \times 6^2$	[10]

Page 4	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2012	0607	33

<p>8 (a) (i)</p>  <p>(ii) <math>(-3, 0)</math></p> <p>(iii) <math>(0, -1.5)</math></p> <p>(iv) <math>x = 2</math> <math>y = 1</math></p> <p>(b) (i)</p>  <p>(ii) Translation (only) <math>\begin{pmatrix} -3 \\ 0 \end{pmatrix}</math></p>	<p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p><b>B1</b> Good curve with two branches. <b>B1</b> top branch not crossing <math>x</math>-axis and bottom branch crossing both axes penalty of 1 if branches joined</p> <p>If 0 scored, <b>SC1</b> for <math>y = 2</math> and <math>x = 1</math></p> <p>Parabola with min point approx <math>(-3, 0)</math></p> <p>Any indication of second transformation gets 0</p> <p>[9]</p>
<p>9 (a) (i)</p> <p>(ii)</p> <p>(b) (i)</p> <p>(ii)</p>	<p>7.52 (7.517 to 7.518)</p> <p>2.74 (2.736...)</p> <p>12.52 (12.51 to 12.52), 8.74 (8.736...)</p> <p>(0)55.1 (55.06 to 55.1) or (0)55 <b>but not without working</b></p>	<p>2</p> <p>2</p> <p>1ft</p> <p>3</p> <p><b>M1</b> for <math>8 \cos 20</math> oe</p> <p><b>M1</b> for <math>8 \sin 20</math> oe If 0 scored <b>SC2</b> for reversed answers</p> <p>ft their (a) + 5, their (b) + 6</p> <p><b>M2</b> for <math>\tan \theta =</math> their <math>\frac{12.52}{8.74}</math> or <b>M1</b> for <math>\tan \theta =</math> their <math>\frac{8.74}{12.52}</math> + <b>M1</b> for <math>90 - \theta</math></p> <p>[8]</p>

