

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/31

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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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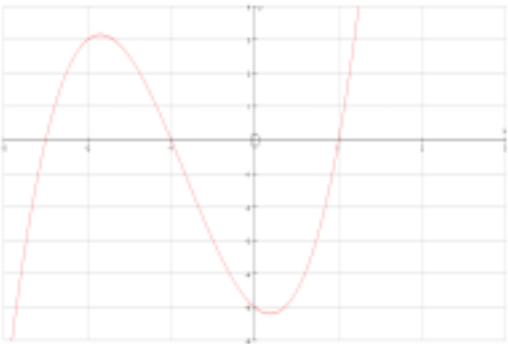
Page 2	Mark Scheme	Syllabus	Paper
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1	(a)	12 or 14 or 21 or 28 or 42 or 84	1	
	(b)	Any multiple of 12	1	
	(c)	23 or 29	1	
	(d)	1	1	
	(e)	4	1	
	(f)	$90 < \text{angle} < 180$	1	
	(g)	2	1	
2	(a)	3600	1	
	(b)	2.64	1	
	(c)	3.09	1	
	(d)	$4a + 2b$	2	M1 for $4a + kb$ or $ka + 2b$ $k \neq 0$
	(e)	-7	2	M1 for -3 or -4 seen
3	(a) (i)	13.5 or 13.52 to 13.53	1	
	(ii)	2.5921	1	
	(iii)	30	1	
	(iv)	$\frac{5}{8}$ oe	1	
	(v)	28.71	2	M1 for 0.45×63.8 oe
	(vi)	0.356 or $0.3\dot{5}$ or $\frac{16}{45}$ or 0.3555 to 0.3556	2	M1 for 10.8
	(b)	24 : 28	2	1 mark each or M1 for dividing by 13 soi by 4
(c)	11	1	M1 for <i>their</i> 11×1.79 where 11 is a whole number If 0 scored, SC1 for 31	
	0.31 oe	2		
4	(a)	120	2	M1 for $\frac{360}{9}$ soi by 40
	(b)	Angles of 120, 80 and 160 Correct labels	3	B1 for 80 or 160 seen or drawn B1 for correct labels in order of size on complete pie chart

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5	(a)	37.8[0]	2	M1 for $600 \times 3 \times 2.1$ SC1 for 637.8[0]	
	(b)	36.72	4	B3 for 636.72 or M2 for $600 \times (1.02)^3$ or M1 for $600 \times (1.02)^k, k > 1$ SC1 if 1.2 used correctly instead of 1.02	
6	(a)	10 : 5 : 4	2	M1 for any correct simplification	
	(b)	(i)	2.2[0]	3	B2 for 3 correct of 60, 35, 80, 45 B1 for 2 correct of 60, 35, 80, 45
		(ii)	0.22	1 FT	FT <i>their</i> (b)(i) $\div 10$
		(iii)	0.28 or 28 cents	1 FT	FT <i>their</i> (b)(ii)
		(iv)	127 or 127.2 to 127.3	2 FT	M1 for $\frac{\text{their } 0.28}{\text{their } 0.22} \times 100$ or M1 for $\frac{0.5}{\text{their } 0.22} \times 100$
7	(a)	Correct line drawn	1		
	(b)	18	2	M1 for evidence of correct method	
	(c)	17.7 or 17.64 to 17.66	4	M2 for $\sqrt{1^2 + 1^2}$ or M1 for $1^2 + 1^2$ B1 for 12 seen	
	(d)	0.177 or 0.1765 to 0.1766	1 FT	FT from <i>their</i> (c) $\div 100$	
8	(a)	Pentagon	1		
	(b)	108	3	M1 for 540 M1 for dividing <i>their</i> 540 by 5 or M1 for $\frac{360}{5}$, M1 for $180 - \text{their } 72$	
9	(a)	-1 -5	1 1		
	(b)	$19 - 4n$	2	B1 for $k - 4n$ or $19 - kn$ SC1 for $4n - 19$	

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10	(a) Points plotted correctly (b) 7.07 or 7.071... (c) -1 (d) $y = -x + 1$	2 3 FT 2 FT 2 FT	1 mark each M2 for $(-5)^2 + 5^2$ or M1 for 5^2 soi SC1 for 1 B1 for $y = kx + 1, k \neq 0$ B1 for $y = -x + k, k \neq 0$
11	(a) 3 points plotted correctly (b) positive (c) (i) 4.21 or 4.214... (ii) 70.1 or 70.14... (iii) Point plotted correctly (iv) Correct line drawn (d) 110	2 1 1 1 1 FT 2 1 FT	B1 for 1 point correctly plotted B1 for line with positive gradient passing through the mean point B1 for line within tolerance FT from <i>their</i> line
12	(a)  (b) 1, -1 and -2.5 (c) (0.18[0], -5.19) (-1.85, 3.15) or (0.1804 to 0.1805, -5.19 to -5.186...) or (-1.85 to -1.847..., 3.15 to 3.149...) (d) (i) 1 (ii) 3	2 2 1 1 1 1	B1 for turning points in approximately correct places B1 for axes intercepts in approximately correct places B1 for 2 correct SC1 for 1 error

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13 (a)	Vertices at (3, 0), (7, 0), (5, 4) and (5, -4) and correct label	2	B1 for reflection in $y = 3$
(b)	Vertices at (3, 0), (1, 4), (5, 4) and (3, 8) and correct label	2 FT	B1 for translation $\begin{pmatrix} k \\ 4 \end{pmatrix}$ or $\begin{pmatrix} -2 \\ k \end{pmatrix}$ $k \neq 0$
(c)	Vertices at (3, 0), (1, -4), (5, -4) and (3, -8) and correct label	2 FT	B1 for a rotation of 180° about another point
(d)	Rhombus	1 FT	