

MARK SCHEME for the May/June 2013 series

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

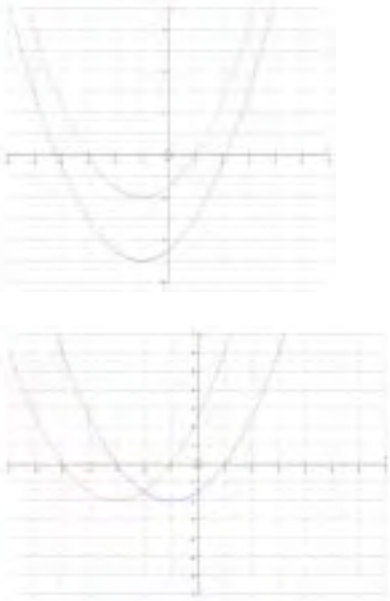
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

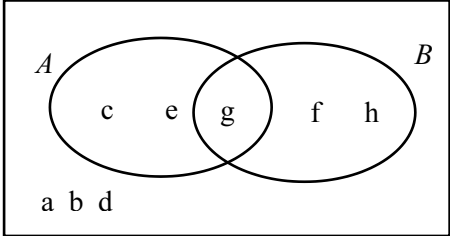
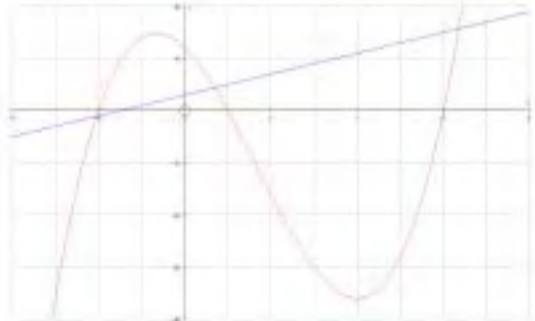
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1 (a)	30	1	<p>isw any cancelling or converting. No ratios or words. Condone 0.33 and 0.555.</p> <p>M1 for $\frac{15}{45}$ seen or <i>their</i> $\frac{270}{45}$ o.e.</p>
(b)	270	1	
(c) (i)	90/(<i>their</i> 270) o.e. 1/3, 0.333, 0.3333....	1 FT	
(ii)	<i>their</i> 150/(<i>their</i> 270) o.e. 5/9, 0.556 or 0.5555 to 0.5556	1 FT	
(iii)	0	1	
(d)	90	2	
2 (a)	(21, 58), (22, 61), (25, 70), (30, 82) plotted correctly.	2	B1 for 2 points correctly plotted.
(b)	Positive cao	1	No alternatives accepted
(c) (i)	14.6	1	<p>Line within template ($y = 2.9x$ and $y = 2.9x - 5.8$) almost full domain (2.5 to 30)</p> <p>B1 for ruled line through (<i>their</i> 14.6, <i>their</i> 39.4) almost full domain (2.5 to 30)</p>
(ii)	39.4	1	
(iii)	Mean point plotted on diagram	1 FT	
(d)		2	
(e)	18 – 23 seconds	1	
3 (a)	$12c + 5j = 10$ o.e. $6c + 10j = 11$ o.e.	1 1	<p>M1 FT for eliminating one variable (allowing one numerical error) or sketch of both lines. Trial and improvement both correct 3.</p> <p>B1 for 0.5 and B1 for 0.8</p> <p>No working, maximum 2 marks</p>
(b)	$c = 0.5[0]$ o.e. $p = 0.8[0]$ o.e.	M1 B1 B1	

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4 (a)	7 and 9	1, 1	
(b)	$2n - 1$ o.e.	2	B1 for $2n$ seen.
(c)	42	2 ft	M1 for <i>their</i> $2n - 1 = 83$. FT a linear formula, if answer is an integer.
5 (a)	-3 and 1	1, 1	Accept (-3, 0) and (1, 0)
(b)		1	Approx. 3 units down, vertex approx. (-1, -5)
		1	Approx. 2 units to left , vertex approx. (-3, -2)
6	$a = 40$	1	
	$b = 50$	1	
	$c = 89$	1	
	$d = 90$	1	
	$e = 90$	1	
	$f = 140$	1	
7 (a)	(1, 9) and (7, -3) correctly plotted	1, 1	
(b)	$\begin{pmatrix} 6 \\ -12 \end{pmatrix}$	1	
(c)	(4, 3)	1	
(d)	13.4 (13.41 – 13.42)	2 FT	Accept $6\sqrt{5}$ M1 for $6^2 + 12^2$. FT from part (b)
(e)	-2	2	M1 for rise/run e.g. 12/2, 2 etc.
(f)	$-2x + 11$	2 FT	B1 for <i>(their - 2)x + k</i> or $y = mx + 11$ FT their gradient

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8 (a)	102	1	
(b)	14	2	M1 for $\frac{84}{360} \times 60$ o.e.
(c)	$\frac{54}{360}$ o.e. 3/20 0.15	1	isw cancelling etc. (as in question 1)
9 (a)		2	B1 for 5 correct.
(b) (i)	{c, e, f, g, h}	1FT	Ignore absence of brackets in parts (i) to (iv).
(ii)	{a, b, c, d, e}	1FT	
(iii)	{g}	1FT	
(iv)	{a, b, c, d, e, g}	1FT	
(c)	5	1FT	FT (b)(i)
10 (a)	541 (540.8.....)	3	M2 for $(500 - 50)^2 + 300^2$ M1 for $500 - 50$
(b)	33.7 (33.67 – 33.72)	2FT	M1 for $\tan D = 300/their (500 - k), k \neq 0$ o.e.
(c)	108 (108.1 – 108.2)	3FT	M1 for distance/time, M1 for converting <i>their</i> 541 to m and 3 seconds to minutes.
11 (a)(c)		2	B1 for smooth curve with maximum and minimum in approximately the correct place, B1 for cutting axes in approximately correct place.
(b)	(-2/3 or -0.667 or -0.6667 to -0.6666, 14.8 or 14.81.....) and (4, -36)	1, 1	Condone -0.666 and accept in either order
(c)	Line drawn as in diagram above	1	Accept freehand
(d)	-2.04 (-2.044....), 0.693 (0.6931.....), 6.35 (6.351.....)	1, 1, 1	isw y-coordinates

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<p>12 (a) (i) 4240 (4240 to 4242)</p> <p>(ii) 21200 – 21210</p> <p>(b) (i) 14100 (14130 – 14140)</p> <p>(ii) 33.3 – 33.52....</p>	<p>3 Accept 1350π M1 for $[2] \times \pi \times 15^2$ and M1 for $2 \times \pi \times 15 \times 30$</p> <p>2 Accept 6750π M1 for $\pi \times 15^2 \times 30$</p> <p>2 Accept 4500π M1 for $\frac{4}{3} \times \pi \times 15^3$.</p> <p>3 FT M2 for $(\textit{their} 21206 - \textit{their} 14137) / \textit{their} 21206 [\times 100]$</p> <p>M1 for $(\textit{their} 21206 - \textit{their} 14137)$ or $\frac{\textit{their} 14137}{\textit{their} 21206}$</p>
<p>13 (a) $2x^2 - x - 6$</p> <p>(b) $5x(2x - 3)$</p> <p>(c) (i) $4xy$</p> <p>(ii) $6s$</p> <p>(iii) $\frac{p}{12}$</p> <p>(iv) $8y^6$</p>	<p>2 B1 for 3 correct terms from $2x^2 - 4x + 3x - 6$. $-x$ implies 2 terms correct.</p> <p>2 B1 for $5(2x^2 - 3x)$ or $x(10x - 15)$</p> <p>2 B1 for $4xy^k$ or kxy.</p> <p>2 M1 for multiplying by $10t/3$ o.e.</p> <p>2 M1 for finding common denominator.</p> <p>2 B1 for ky^6 or $8y^k$</p>