CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

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

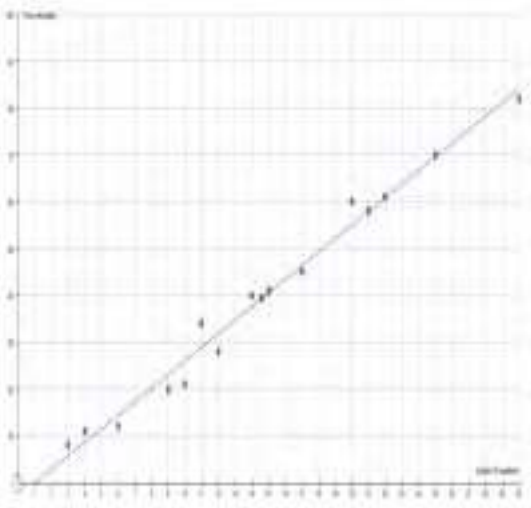
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

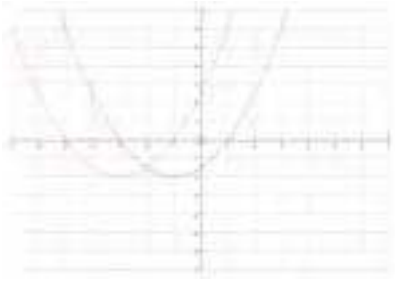
Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

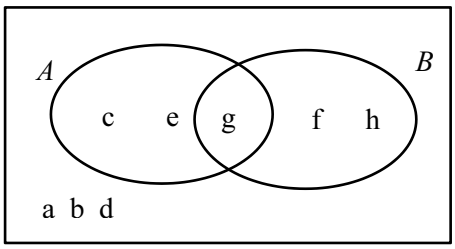
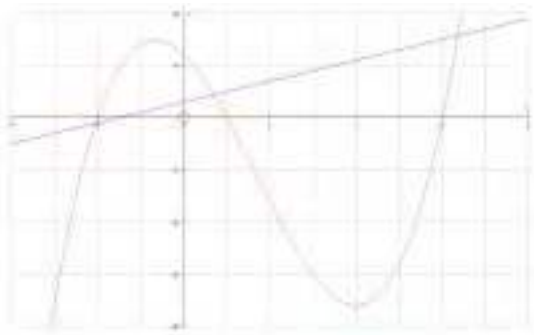
Cambridge will not enter into discussions about these mark schemes.

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.

CAMBRIDGE
International Examinations

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

4 **(a)**	7 and 9	**1, 1**	
(b)	$2n - 1$ o.e.	**2**	**B1** for $2n$ seen.
(c)	42	**2 ft**	**M1** for $their\ 2n - 1 = 83$. **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 $(their - 2)x + k$ or $y = mx + 11$ **FT** their gradient

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**	
(ii)	{a, b, c, d, e}	**1FT**	Ignore absence of brackets in parts (i) to (iv).
(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 *their* 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

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