CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

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 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.
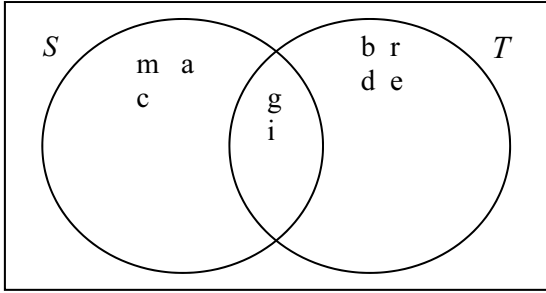
CAMBRIDGE
International Examinations

1	(a)	42.6[0] final answer	1	
	(b)	4.26 final answer	2 FT	**M1** for 10/100. **FT** from *their* (a)
	(c)	46.86 final answer	1 FT	**FT** *their* (b)
	(d)	15.62 final answer	1 FT	**FT** *their* (c)
	(e)	4.38 final answer	1 FT	**FT** *their* (d)
2	(a)	a = 138 b = 77 c = 103	1 1 1 FT	**FT** *their* (b)
	(b) (i)	All 4 lines of symmetry drawn	2	**B1** for 2 lines drawn
	(ii)	4	1	
3	(a)	129.969	2	**M1** for correct answer not to 3 decimal places (129.9692308) at least 3 sf
	(b)	130	1 FT	
	(c)	$1.3[0] \times 10^2$	1 FT	
4	(a)		2	**M1** for diagram with the numbers in the correct place but not in order, allowing one error.

stem	leaf
1	3 7 8 8 8 9 9
2	0 0 1 3 5 5 6
3	1 2 3 4 6 6
4	0 1 3

		Key 1|3 = 13	1	
	(b) (i)	30	1 FT	**FT** *their* ordered stem leaf
	(ii)	25	1	
	(iii)	19	1	**SC1** if (iii) and (iv) reversed
	(iv)	34	1	
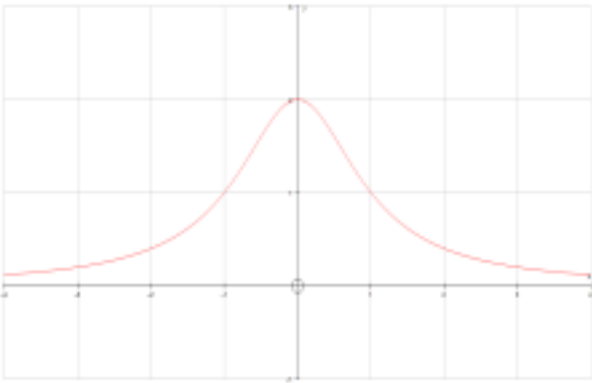
5(a)			**2**	**B1** for 3 correct points plotted.
(b)	Negative		**1**	
(c) (i)	3.32		**1**	
(ii)	60.4		**1**	
(iii)			**1 FT**	
(d)			**2 FT**	Accurate (by eye) ruled line through *their* mean point. **B1** for ruled line through *their* mean point with negative gradient.
(e)	32 – 50		**1**	
6 (a) (i)	Angle *ADE* or *ABC* or *BAC* o.e.		**1**	Accept any other unambiguous indication in parts (i) and (ii).
(ii)	*BDE* o.e.		**1**	
(iii)	*BC* and *AC* or *DE* and *AE* o.e.		**1**	
(b) (i)	90°		**1**	
(ii)	45°		**1**	

7	(a)	(i)	$\dfrac{1600}{1600+1400+500}\times 87.5$ [= 40] o.e.	**2**	**M1** for $87.5 \div (1600 + 1400 + 500)$ o.e. Reverse method must be complete showing 87.5 If **M1** can accept answer embedded with other two values for full marks
		(ii)	35	**2**	**M1** for $\dfrac{1400}{their\ 3500}\times 87.5$ o.e.
	(b)		15968.75 final answer	**2**	**M1** for $87.5 \times 0.50 \times 365$. Accept any correct rounding up to 3 s.f. to imply **M1**
	(c)		1065	**2 FT**	**FT** *their* (b) ÷ 15 rounded up to integer **M1** for *their* (b) divided by 15, implied by answer in the range 1064 – 1067.
8	(a)	(i)	Row 2 = 6 Row 3 = 9	**1** **1**	
		(ii)	3*n* o.e.	**1**	
		(iii)	30	**1 FT**	**FT** from their part (a)(ii)
	(b)	(i)	7, 9	**1, 1**	
		(ii)	19	**1**	
		(iii)	2*n* – 1 o.e.	**2**	**B1** for $2n \pm k$ Condone *n* = 2*n* – 1
9	(a)		Shape with vertices at (–1, 2), (–2, 2), (–2, 4) and (–4, 1)	**2**	**SC1** for reflection in *x*-axis or 3 correct vertices. Allow freehand
	(b)		Shape with vertices at (2, 4), (4, 4), (8, 2) and (4, 8)	**2**	**SC1** for enlargement scale factor 2, correct orientation, or 3 correct vertices. Allow freehand

10	(a)		g, i	1	
	(b)			2 FT	**B1** for at least 6 entries in correct place.
	(c)	(i)	$\frac{5}{9}$ o.e.	1 FT	
		(ii)	1 o.e.	1 FT	
		(iii)	$\frac{3}{9}$ o.e.	1 FT	
	(d)		$\frac{2}{5}$ o.e.	2 FT	**M1** for $\frac{k}{5}$ where $0 < k < 5$ **FT** their Venn diagram.
11	(a)		15	2	**M1** for distance / time
	(b)		48	2	**M1** for distance / speed
	(c)		20	3	**M1** for total distance ÷ total time **M1** for total time correct (40/60 + *their* 0.8 + 32/60) or (40 + *their* 48 + 32) and correctly changing to hours later.
12	(a)	(i)	correct diagram drawn	1, 1 FT	1 for *FG* and 1**FT** for *GH* (relative to *G*) in approximately the correct direction, condoning absence of labels. **SC1** if no lines are drawn but *G* and *H* shown.
		(ii)	**Dep** on diagram. 50 and 40 marked or 130 and 140 marked or clear diagram, with values, leading to correct result	2	**Dep** on diagram. **B1** for either 50° or 40° or 130° or 140° seen in the correct place or other clear indication.
	(b)	(i)	361 (360.5 – 360.6)	2	**M1** for $200^2 + 300^2$ or better.
		(ii)	56.3°	2	**M1** for tan $BAC = 300/200$ o.e.

13	(a)	(i)	0.503 or 0.5026 – 0.5027…	2	**M1** for $4 \times \pi \times 0.2^2$. Accept 0.16π o.e. as final answer for full marks.
		(ii)	99	2	**M1** for dividing 50 by *their* 0.503
	(b)	(i)	10100 or 10050 or 10053 to 10054.4	2	**M1** for $2 \times \pi \times 8 \times 200$. Accept 3200π as final answer for full marks. **SC1** for figs 101, 1005, 10053 to 100544
		(ii)	40200 or 40210 to 40220	2	**M1** for $\pi \times 8^2 \times 200$. Accept 12800π as final answer for full marks. or **SC1** for figs 402 or 4021 to 4022
14	(a)			2	**B1** for smooth curve and maximum in approximately the correct place, **B1** for curve above the *x*-axis and *x*-axis asymptote at both ends. Condone curve touching *x*-axis not between – 3 and 3.
	(b)		(0, 2)	1	
	(c)		$y = 0$	1	Allow *x*-axis
	(d)		$0 \leqslant y \leqslant 2$ o.e.	3	Allow $0.118 \leqslant y \leqslant 2$ for full marks. Allow as 2 inequalities or in words for full marks **B2** for identifying interval but inequalities not clear e.g. from 0 (or 0.118) to 2, 0 (or 0.118) $< y < 2$ etc. **B1** for one correct inequality or for 0 (or 0.118) and 2 identified