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

0580 MATHEMATICS

0580/32 Paper 3 (Core), maximum raw mark 104

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Abbreviations

cao	correct answer only
cso	correct solution only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
www	without wrong working
soi	seen or implied

Qu.	Answers	Mark	Part Mark
1 (a)	($) 15 000	1	
(b)	($) 500 000	2ft	**M1** for their 15 000 ÷ 3 × 100
(c)	35	2	**M1** for 84 ÷ (3 + 5 + 4) or 84 ÷ 12
(d)	40.32 or 40.3	2	**M1** for 4.5 × 3.2 × 2.8
(e) (i)	($) 372 000	1	
(ii)	($) 200 000	2ft	**M1** for 992 000 – (their (e)(i) + 420 000)
(iii)	42.3 cao	2	**M1** for 420 000 ÷ 992 000 × 100 or better
(f)	($) 4130	3	**M1** for 3500 × 3 × 6 ÷ 100 oe **A1** for 630 soi After **M1A0** then **SCB1** for their 630 + 3500
2 (a) (i)	Reflection $y = -1$	1 1	
(ii)	Rotation 180 or ½ turn (centre) (0, 0) or O or origin	1 1 1	
(iii)	Translation $\begin{pmatrix} 7 \\ -9 \end{pmatrix}$	1 1	
(b)	Enlargement scale factor 0.5 drawn at the correct position.	2	**B1** for 0.5 enlargement at incorrect position.
3 (a) (i)	27	1	
(ii)	16	1	
(iii)	17	1	
(b) (i)	9, 16, 25, 36	2	**B1** for 3 correct or either 3 or 4 correct with other values, or all of 3^2, 4^2, 5^2, 6^2

(ii)	4 from 1, 2, 4, 19, 38, 76	2	**B1** if 3 correct none wrong or 4 correct a wrong or 5 correct and 1 wrong or 6 correct wrong
(iii)	5 or 7	1	
(iv)	24	2	**B1** for any other multiple of 24
(v)	14	2	**B1** for answer of 7 or 2 × 7
4 (a) (i)	–2, –2.5, –10 5, 2.5, 1.25	2	**B1** for 4 or 5 correct
(ii)	10 points correctly plotted	3ft	**B2**ft for 8 or 9 points correctly plotted. **B1**ft for 6 or 7 points correctly plotted
	Smooth curve	1	
(b) (i)	Ruled line through both given points	2	**B1** for not ruled but otherwise correct or through just 1 of the points
(ii)	(–2.5, –4),(2, 5)	2ft	**B1** for 1 correct. ft their line and their curve.
(c) (i)	2 cao	2	**M1** for change in y / change in x for 2 correct points
(ii)	(y =) $2x + 1$	1ft	Ft (y=) their (c)(i) x + intercept of their line in (b)(i)
5 (a)	82.5	2	**M1** for $\frac{1}{2}(9.6 + 12.4) \times 7.5$ or better
(b) (i)	$x^3 - 3xy$ final ans	2	**B1** for x^3 or $-3xy$ seen
(ii)	$13w - 22$ final ans	2	**B1** for $13w$ or -22 or $8w - 12$ or $5w - 10$ seen
(c) (i)	(p =) $3x + 4y$ final ans	2	**B1** for $3x$ or $4y$ seen or $x + 2x + y + 3y$ seen
(ii)	(y =) $\frac{p-3x}{4}$ oe	2ft	**B1**ft for $4y = p - 3x$ or $\frac{p}{4} = \frac{3x}{4} + y$
(d) (i)	$2(n + 5) = 3n + 5$ oe	2	**B1** for $2(n + 5)$ or $2n + 10$ or $3n + 5$ seen or **B1** for any different letter to n in $2(n + 5) = 3n + 5$ oe
(ii)	(n =) 5 cao	3	**M1** for clearing bracket **M1** for $an = b$
6 (a) (i)	2, 3, 6, 5, 4, 3, 1	2	**B1** for 4 correct or a fully correct tally
(ii)	97	1ft	Ft their table
(iii)	98	2ft	**M1** for clear recognition of 12th / 13th value used

	(iv)	104	**3**	**M1** for clear attempt at finding total hou (implied by 2496) **M1** independent for division by 24 but not $\frac{7}{24}$ nor $\frac{835}{24}$ nor $\frac{24}{24}$
	(v)	Median, extreme value	**1**	Any correct statement referring to the size of the 250 value
	(b)	$\frac{13}{24}$ or 0.5416 to 0.542 isw	**2ft**	**M1** for addition of their frequencies of 98 and above
7	**(a)**	153 to 157	**1**	
	(b)	Bisector of AB with two sets of arcs	**2**	**B1** for 'correct' line without full sets of arcs
	(c) (i)	Line at 020°	**1**	
	(ii)	550 to 590	**2ft**	**B1**ft for 5.5 cm to 5.9 cm seen
	(d)	447	**2**	**M1** for 1230 ÷ 2.75 (or 165 or 2.45)
8	**(a)**	Isosceles	**1**	
	(b) (i)	Correct triangle with one set of arcs	**2**	**B1** 'correct' triangle without arcs or a triangle with 1 side correct with arcs
	(ii)	15 cao	**3**	**B1** for their height **M1** for 0.5 × their base × their height
	(iii)	85	**2ft**	**M1** for 4 × their (b)(ii) + 5 × 5
	(iv)	46	**2**	**B1** for 26 or 20 or 4 × 6.5 or 4 × 5 seen
	(c)	Correct net	**3**	**B1** for a rectangle or square surrounded by 4 triangles with bases on the sides of the rectangle or square **B1** for accurate square $ABCD$ **B1**ft (dep on first 2 marks) for accurate isosceles triangles using their height from (b)(i)
9	**(a) (i)**	Diagram 4 drawn	**1**	
	(ii)	8, 10, 12	**2**	**B1** for 2 correct or follow through for Diagrams 4 and 5 as 2 more than the previous entry
	(b)	$2n + 2$ oe	**2**	**B1** for $jn + 2$ $(j \neq 0)$ or $2n + k$
	(c)	98	**1ft**	Only follow through a linear expression in (b)
	(d)	15	**2**	**B1** for a correct diagram or the sequence 1, 3, 6, ... seen or 5 + 4 + 3 + 2 + 1 seen