CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0580 MATHEMATICS

0580/33 Paper 3 (Core), maximum raw mark 104

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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Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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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

Qu.	Part	Answers	Mark	Part Marks
1	(a)	2 hours 45 minutes oe	1	
	(b)	26 000	1	
	(c)	20	2	**M1** 5 ÷ 0.25 or 5000 ÷ 250
	(d)	**(i)** fully correct bar chart	3	**B1** correctly scaled frequency axis **B2** correct height of bars ,width and spaces or **B1** correct height of 5 or 6 bars or all bars correct height but unequal widths or gaps
		(ii) 1	1	
		(iii) 1.97 (1.9655….)	3	**M1** attempt to multiply implied by 0, 11, 12, 9, 8, 5, 12 added implied by 57 **M1 dep** ft 57 ÷ *their* 29 or **B2** 1.96 or 2.103
2	(a)	**(i)** stopped	1	
		(ii) 5 hours 30 mins or 5 ½ hours	1	
		(iii) 32.72 – 32.73 or 32.7	2 ft	**M1** 180 ÷ their **(a)(ii)** ft correct to 3 sig figs
		(iv) 10(00) and 12(00)	1	
		(v) Line or curve from 1100,0 to 1530,180	1	
	(b)	**(i)** (0)355 or 3.55 am	2	**B1** 0025 or 2030 seen **SC1** 2055 as answer or 3.55 pm as answer
		(ii) 26° or –26°	1	
	(c)	135.43 cao	2	**M1** 135 or 135.4 or 7854 ÷ 56, implied by 135.(428…)

3	**(a)**	240000	**1**	
	(b)	1200, 450, 750	**3**	**SC2** for all three correct in wrong order seen **SC1** for 2400 ÷ 16 implied by 150
	(c)	224973	**3**	**M2** 224972.8 or 200000×1.04^3 or 224793.0(0) if **M0** **M1** 200000×1.04^2 or 216320 **SC1** for their answer correctly rounded to nearest dollar
	(d)	**(i)** 2250 900 36	**1,1,1**	If first **B0,B0** then **SC1** for adding to 3150
		(ii) 2 correct sectors correct labels	**1** **1**	Must only be 4 sectors in total
4	**(a)**	**(i)** 2.5 or 5/2 or 2 ½	**2**	**M1** $6x - 2x = 8 + 2$ or better
		(ii) 4.5 or 9/2 or 4 ½	**3**	**M1** $8y - 12$ or $2y - 3 = 6$ **M1** $8y = 36$ ft or $2y=9$ ft *their* first step
	(b)	$(x =) 3$, $(y =) -4$	**4**	**M1** coefficient of x or y the same **dep M1** for addition or subtraction **A1** for 1 correct answer (their first answer)
5	**(a)**	Parallelogram	**1**	
	(b)	Rotation, 90° clockwise, about origin	**1,1,1**	
	(c)	**(i)** Correct reflection	**2**	**B1** reflection in the x axis
		(ii) Correct translation	**2**	**B1** for translation $-6,k$ or $k,-4$
		(iii) Correct enlargement	**2**	**B1** Correct size, wrong position
6	**(a)**	**(i)** 3 − 1	**1,1**	If **B0** award **B1** if term 2 − term 1 = − 4
		(ii) subtract 4	**1**	Accept minus 4, take away 4
		(iii) $-4n + 23$ oe final answer	**2**	**M1** $-4n+ k$ or $jn+23$ ($j \neq 0$) as answer
	(b)	8, 10, 12	**2**	**M1** 2 correct terms **SC1** for 6, 8, 10
	(c)	27, $3n+ 3$ oe final answer	**3**	**B1** 27 **B1** $3n + k$ or $jn + 3$ ($j \neq 0$)

7	**(a)**	63 (Angles on a straight) line (add to) 180	**1** **1**	
	(b)	90 (Angle in a) semi circle	**1** **1**	
	(c)	117 Corresponding (angles)	**1** **1**	
	(d)	90 Tangent and radius	**1** **1**	
8	**(a)**	5.4(0)	**2**	**M1** tan 42 = *DF*/6 or better
	(b)	32.4	**2ft**	**M1** $\frac{12 \times \textit{their}\ 5.4}{2}$ ft
	(c)	5.66	**3**	**M2** $\sqrt{6^2 - 2^2}$ or better (accept √32 or 5.65) **or M1** $6^2 - 2^2$ or better (accept 32)
	(d)	64	**2**	**M1** 12 + 18 + 14 + 3 + 2 + 15
	(e)	33.3 cao	**4**	**M1** (12 × 18) + (*their (*2) × 3) oe **and A1** 222 **and M1** *their* 222 ft × 0.15
9	**(a)**	−1, −5, −1, 4	**3**	**B2** 3 correct **B1** 2 correct
	(b)	8 correct points plotted Smooth curve through 8 correct points and correct shape	**3ft** **1**	**B2ft** 6 or 7 points plotted ft **B1ft** 4 or 5 points plotted ft
	(c)	**(i)** $x = -1$ drawn **(ii)** $x = -1$ oe cao	**1** **1**	
	(d)	1.8 to 1.9 and –3.8 to – 3.9	**2 ft**	**B1 B1**

10	**(a)**	**(i)** 14.8 to 15.2	**2**	**M1** 7.4 to 7.6
		(ii) *D* correctly marked 133 –137° and 4.3 −4.7 cm from *A*	**2**	**B1** for correct bearing or distance.
		(iii) 260 to 264°	**1**	
	(b)	**(i)** $3.24\ (1) \times 10^5$	**1**	
		(ii) *C* by 2.477×10^5 or 2.48×10^5	**3**	**SC2** for *C* by figs 2477 or figs 248 **M1** 324100 – 76400 or *their* **(b)** − 7.64×10^4 evaluated