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

0580/12 Paper 1 (Core), maximum raw mark 56

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.

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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 Marks
1	16	**1**	
2	$82\% < \frac{23}{28} < 0.83 < \frac{5}{6}$	**2**	**M1** for correct conversion of both fractions to decimals or percentages. Minimum 3 sf. **or B1** for correct but reverse order
3	Wednesday 22 15 or 10 15pm	**2**	**B1** **B1**
4 (a)	I cao	**1**	
(b)	I N cao	**1**	
5 (a)	1.9	**1**	
(b)	30.4	**1**	
6	$\begin{pmatrix} 13 \\ -2 \end{pmatrix}$	**2**	**B1** for one correct component
7	25 (correct working essential)	**2**	**M1** for 18 + 4 + 3 with denominator 12 must be soi (oe is possible)
8	64 000 or 6.4×10^4	**2**	**SC1** for 63800 or 6.38×10^4 **or** figs 64 or 6.4×10^k in answer space.
9 (a)	a^5	**1**	
(b)	0.04 or $\frac{1}{25}$	**1**	
10	12 550 $\varnothing$ n < 12 650	**2**	**B1** for one correct or both correct but reversed.
11 (a)	109 681 final answer	**1**	
(b)	1.09681×10^5	**1ft**	Their part **(a)** in standard form
12	4.46 or 4.456 to 4.459 cao	**3**	**B1** for 28 seen **M1**ft for $\frac{their 28}{2\pi}$ oe or better.

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13	**(a)**	$y(x - y)$ or $y(-y + x)$	**1**	
	(b)	$[x =]$ 4.75 oe	**2**	**M1** for $4x = 12 + 7$ **or** $x - \frac{7}{4} = \frac{12}{4}$ or better
14	**(a)**	Positive	**1**	
	(b)	Zero oe	**1**	
	(c)	Negative	**1**	
15	**(a)**	Kite	**1**	
	(b)	14 cm^2	**1, 1**	Independent marks
16	**(a)**	126	**2**	**M1** for $7 \div (8 + 3 + 7 + 2) \times 360$ **or** for $54 \div 3 \times 7$ **or** $144 \div 8 \times 7$
	(b)	Line dividing sector into 126° and 36°	**1ft**	Ft their angle for blue sector.
17		$[x =]$ 2 $[y =]$ 5	**3**	**M1** for consistent multiply and add/subtract as appropriate. Allow computational errors. Other methods allowed. **A1** for correct x or y.
18	**(a)**	15	**2**	**M1** for $\frac{9 - 3}{0.4}$ oe
	(b)	11.7(0)	**2**	**M1** for 9×1.3 oe
19	**(a)**	$[x =]$ 32	**2**	**M1** for angle $OCD = 90°$ soi (or angle $OCB = 90°$)
	(b)	$[y =]$ 58	**2ft**	**M1** for angle $AEC = 90°$ soi Follow through 90 – their (a)
20	**(a)**	Pythagoras method $30^2 + 16^2$ [$= 34^2$] **or** 900 + 256 [= 1156]	**M1**	
		$34^2 = 1156$ **or** $\sqrt{1156} = 34$	**E1dep**	
		Trig method Tan $A = \frac{30}{16}$ and Sin $C = \frac{16}{34}$ oe	**M1**	The two trig ratios used must involve all 3 sides of the triangle.
		Angles 61.9 and 28.1 and statement to show that angle $B = 90°$	**E1dep**	
	(b)	61.9 or 61.92 to 61.93	**2**	**M1** for tan $[CAB =] \frac{30}{16}$ or sin $[CAB =] \frac{30}{34}$ or cos $[CAB =] \frac{16}{34}$ (or better)

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21 (a)	Exterior angle method [Ext angle =] 360 ÷ 5 5 × (180 – 72) = 540	**M1** **E1dep**	
	Formula method $(n-2)\times 180$ or $\frac{(n-2)\times 180}{n}$ (5 – 2) × 180 = 540 **or** $\frac{(5-2)\times 180}{5} = 108$ **and** 5 × 108 = 540	**M1** **E1dep**	
	Triangle methods Explanation or sketch to split pentagon into 3 or 5 triangles. 3 × 180 = 540 or 5 × 180 – 360 = 540	**M1** **E1dep**	
(b)	[x =] 104 [y =] 135	**3ft**	B1 [x =] 104 M1 for 540 – (90 + 76 + their x)

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