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## **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

0580/11

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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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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		87.5	1	
2	(a)	Equilateral	1	
	<b>(b)</b>	3	1	
3		532	2	<b>M1</b> for 5(h)33(min) + 3(h)19(min)
4		495.36	2	<b>M1</b> for 700 ÷ 1.4131
5		21	2	M1 for $2 \times 3 - 5 \times (-3)$ or better
				<b>or B1</b> for 6 <b>and</b> –15 i.e. both terms evaluated
6		0.85b + 7.5n	2	<b>B1</b> for 0.85 <i>b</i> <b>OR</b> 7.5 <i>n</i> seen
		<b>OR</b> $\frac{85n + 750n}{100}$ final answer		
7	(a)	Rhombus	1	
	<b>(b)</b>	131°	1	
8		2.25 oe	2	<b>M1</b> $4x = 7 + 2$ <b>OR</b> $x - \frac{2}{4} = \frac{7}{4}$ or better
9	(a)	30	1	
	<b>(b)</b>	18.5	1	
10		23.2	2	M1 for sin $53.2 = \frac{x}{29}$ implicit form or better
11	(a)	1, 3, 5, 15	1	
	(b)	3p(5p + 8t) final answer	2	<b>B1</b> for answer of $3(5p^2 + 8pt)$ or $p(15p + 24t)$ or <b>SC1</b> for correct answer seen in working

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12		Triangle drawn correctly with ruler and arcs	3	M1 for one side drawn to correct length
				and M1 for clear method of crossing arcs even if wrong scale or inaccurate
13		843.75	3	<b>M2</b> for $\frac{750 \times 5 \times 2.5}{100} + 750$ oe
				<b>or M1</b> for $\frac{750 \times 5 \times 2.5}{100}$ oe
				or SC2 for answer 93.75
14		$\frac{55}{30} + \frac{27}{30}$ oe or $(1)\frac{25}{30} + \frac{27}{30}$ oe	M1	for denominator of 30k
		$\frac{82}{30}$ oe <b>or</b> $(1)\frac{52}{30}$ oe	M1	for denominator of $30k$ dependent on previous <b>M1</b>
		$2\frac{11}{15}$ <b>M2</b> must be scored	A1	If <b>M0</b> scored then <b>SC1</b> for common denominator of 30k seen
15	(a)	51°	1	
	<b>(b)</b>	90°	1	
	(c)	66°	1	
16		$ \begin{aligned} x &= -7 \\ y &= 9 \end{aligned} $	3	M1 for consistent multiplication and addition/ subtraction as appropriate. Allow computational errors
				<b>A1</b> for $x = -7$ or $y = 9$
17	(a)	(-1, 2)	1	
	(b)	$\begin{pmatrix} 4 \\ -5 \end{pmatrix}$	1	
	(c)	(1, 5)	1	
18	(a)	330	1	
	<b>(b)</b>	$1000 \text{ or } 1 \times 10^3$	2	<b>B1</b> for $10000000$ or $1 \times 10^6$ or $10^6$ seen
	(c)	46.3	1	

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19	(a)		9p - 4q final answer	2	SC1 for answer of $9p \pm jq$ OR $\pm kp - 4q$ $j$ , $k$ are integers or for continued work after correct answer
	(b)		$x = \frac{g - y}{2}  \text{oe}$	2	M1 for correct first step i.e. either $g - y = 2x$ oe OR $\frac{g}{2} = x + \frac{y}{2}$ or SC1 for answer $x = \frac{y - g}{2}$
20	(a)		Perpendicular bisector drawn with 2 pairs of arcs and ruled	2	SC1 for a ruled perpendicular without arcs or only one pair or 2 pairs of correct arcs with no line drawn
	(b)		Circle drawn radius 4cm	1	
	(c)		Correct region shaded	1	<b>Dependent</b> on <b>SC1</b> in <b>(a)</b> and an arc, radius 4cm in <b>(b)</b> to enclose correct area
21	(a)	(i)	18	1	
		(ii)	17	2	M1 for clear attempt to find the middle number
	(b)		21	1	