

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

## **MARK SCHEME for the May/June 2015 series**

### **0580 MATHEMATICS**

**0580/32**

Paper 3 (Core), maximum raw mark 104

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### Abbreviations

cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfww	not from wrong working
soi	seen or implied

Qu	Answer	Mark	Part answers
<b>1</b>	<b>(a) (i)</b> 2, 3, 4	<b>1</b>	<b>FT</b> <i>their (b)(i)</i> provided it has at least four figures
	<b>(ii)</b> 2 or 3	<b>1</b>	
	<b>(iii)</b> 7	<b>1</b>	
	<b>(iv)</b> 7	<b>1</b>	
	<b>(v)</b> 3	<b>1</b>	
	<b>(b) (i)</b> 9754	<b>1</b>	
	<b>(ii)</b> Nine thousand seven hundred [and] fifty four	<b>1FT</b>	
	<b>(c) (i)</b> 120	<b>1</b>	
	<b>(ii)</b> 361	<b>1</b>	
<b>2</b>	<b>(a)</b> $11e - 6f$ as final answer	<b>2</b>	<b>B1</b> for either $11e$ or $-6f$ in their final answer
	<b>(b)</b> 67	<b>2</b>	<b>B1</b> for $8 \times 5 - 9 \times -3$ or 40 or +27
	<b>(c)</b> 9	<b>2</b>	<b>M1</b> for algebraic first step correct $4x = 29 + 7$ or $x - \frac{7}{4} = \frac{29}{4}$ or better
	<b>(d)</b> $k^{-7}$ oe	<b>1</b>	
	<b>(e) (i)</b> 220	<b>1</b>	
	<b>(ii)</b> $4p + 10w = 350$	<b>1</b>	
	<b>(iii)</b> [ $p =$ ] 45, [ $w =$ ] 17	<b>3</b>	<b>M1FT</b> for correct elimination of one variable from their equations <b>A1</b> for $p = 45$ <b>A1</b> for $w = 17$ If zero scored, <b>SC1FT</b> for 2 values satisfying one of their original equations

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Qu	Answer	Mark	Part answers	
3	(a) (i)	66.0 or 65.97 to 65.98 ...	2	M1 for $\pi \times 21$
	(ii)	346 or 346.3 to 346.4 ...	2	M1 for $\pi \times (21 \div 2)^2$
	(b) (i)	90	1	
	(ii)	$\sqrt{(21^2 - 9^2)}$	M2	M1 for $21^2 = AB^2 + 9^2$ or $[AB^2] = 21^2 - 9^2$
		18.97(.....)	A1	
	(c) (i)	85.5	2	M1 for $0.5 \times 19 \times 9$
	(ii)	87.5 or 87.65 to 87.823	2FT	M1FT for $0.5 \times \text{their (a)(ii)}$
	(d) (i)	Tangent	1	
	(ii)	Radius	1	
	(iii)	33.3 or 33.27(.....)	2	M1 for $\tan[ ] = \frac{(21 \div 2)}{16}$ or better
4	(a) (i)	10 -2	1, 1	
	(ii)	6 points correctly plotted correct smooth curve	3	B2FT for 5 or 6 points correctly plotted or B1FT for 3 or 4 points correctly plotted
	(iii)	(1.4 to 1.6, 10.1 to 10.4)	1	
	(b) (i)	6 3	1, 1	
	(ii)	5 points correctly plotted correct curve	3	B2FT for 4 or 5 points correctly plotted or B1FT for 2 or 3 correct points
	(c)	1.1 to 1.3 4.1 to 4.3	1FT, 1FT	

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Qu	Answer	Mark	Part answers
5	(a) (i) Kite	1	
	(ii) 1	1	
	(b) 12	1	
	(c) (i) Translation	1	
	$\begin{pmatrix} 7 \\ -9 \end{pmatrix}$	1	
	(ii) Reflection	1	
	$y = -1$ oe	1	
	(iii) Enlargement	1	
	[Scale Factor] $\frac{1}{2}$	1	
	[Centre] $(-6, 0)$	1	
(d) Correct rotation	2	<b>B1</b> for a ‘correct’ rotation of $90^\circ$ anti-clockwise or correct orientation but wrong position	
6	(a) (i) $3\frac{1}{4} \times 60 [= 195]$	1	
	(ii) 22 45	2	<b>B1</b> for [Total time =] 6 [hours] 30 [minutes] or $6\frac{1}{2}$ [hours] or 390 [minutes] or <b>M1</b> for adding to 16 15 <i>their</i> attempt at $3\frac{1}{4} + 2\frac{1}{2} + 45$
	(iii) 13 : 10 : 3	2	<b>B1</b> for $3\frac{1}{4} : 2\frac{1}{2} : \frac{3}{4}$ or 195 : 150 : 45 or better or <b>SC1</b> for 13,10,3 in the wrong order in a ratio
	(b) (i) 78	1	
	(ii) 30	1	
	(iii) 87	1FT	$195 - (\text{their (b)(i)} + \text{their (b)(ii)})$
	(c) 8	3	<b>M2</b> for $\frac{22.5 - 20.7}{22.5} \times 100$ or better or <b>B1</b> for $22.5 - 20.7$

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Qu	Answer	Mark	Part answers
7	(a) (i)	1	
	(ii)	1	
	(iii)	1	
	(iv)	3	<b>M1FT</b> for $63 \times 12 + 64 \times 30 + 65 \times 35 + 66 \times \textit{their} 15 + 67 \times 8$  <b>M1FT</b> dep for <i>their</i> total $\div 100$
	(v)	3	<b>M2</b> for $288^\circ$ or $72^\circ$ or <b>M1</b> for $\frac{80}{100} \times 360$ or $\frac{20}{100} \times 360$
	(b)	1, 1	If zero scored, <b>SC1</b> for correct but wrong way round
8	(a) (i)	2	<b>B1</b> for 5.8 seen
	(ii)	1	
	(b)	2	<b>B1</b> for correct position but no arcs or incorrect arcs or <b>B1</b> for one correct arc
	(c)	3	<b>B1</b> for [bearing] $135^\circ$ <b>B1</b> for [ $AD =$ ] 10 cm
	(d)	3	<b>M2FT</b> for <i>their</i> (a)(i) + 140 + 200 + <i>their</i> $CD \times 20$  <b>M1FT</b> for <i>their</i> $CD$ or <i>their</i> $CD \times 20$

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<b>Qu</b>	<b>Answer</b>	<b>Mark</b>	<b>Part answers</b>
<b>9</b>	<b>(a)</b> 650 225 875	<b>1</b> <b>1</b> <b>1FT</b>	
	<b>(b)</b> 546 or 546.4 or 546.44 or 546.45	<b>2</b>	<b>M1</b> for $10\,000 \div 18.3$
	<b>(c) (i)</b> $1937 \div 2.83[3\dots]$ or $1937 \div 170 \times 60$  683.6 to 684.4.....	<b>M1</b>  <b>A1</b>	  but not 684
	<b>(ii)</b> 14 35	<b>2</b>	<b>B1</b> for 16 05 [time in Mumbai on arrival] or <b>B1</b> for 11 45 [time in Dubai on departure from Mumbai] or <b>M1</b> for 2 hours 50 mins – 1 hour 30 mins + 1315 or <b>SC1</b> for answer 2 35pm