

**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

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