

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0580 MATHEMATICS

0580/33

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

Question	Answer	Mark	Part marks
1 (a)	9 hours 5 minutes	2	B1 for 17 hrs 5 mins or using 1030 or 1135
(b) (i)	12034	3	M2 for $290 \times 37 + 163 \times 8$ or M1 for either 290×37 or 163×8
(ii)	84.9	2	M1 for $(37 + 8) \div 53$ or better
(iii)	9628	1	
(c)	100.5 101.5	1 1	SC1 for correct but reversed
(d) (i)	Copenhagen 3 Helsinki 5 St Petersburg 10 Stockholm 4 Tallinn 8	2	B1 for 3 or 4 correct or fully correct tallies if frequency column blank or correct frequencies in tally column
(ii)	Correct bar chart	3FT	B3 All bars correct height same width and same gaps between bars and linear scale B2 for all bars correct height same width and same gaps between bars B1 for linear scale on y-axis B1 FT 3 or 4 correct heights
2 (a)	4800 7200 9600	3	M2 for 1 correct value in correct place M1 for $21600 \div (2 + 3 + 4)$ or better If zero scored SC1 for all correct values in incorrect order
(b) (i)	4200	2	M1 for 0.3×14000 oe
(ii)	$\frac{4}{7}$ cao	2	B1 for correct fraction other than $\frac{8000}{14000}$
(iii)	1200	2 FT	M1FT for $(14000 - \text{their (b)(i)} - 8000 - 600)$

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Question	Answer	Mark	Part marks
(c)	20	3	M2 for $(1 - 17280 \div 21600) \times 100$ oe or M1 for $(17280 \div 21600) \times 100$ oe Alternative method M2 for $\frac{21600 - 17280}{21600} \times 100$ or B1 for $21600 - 17280$ soi 4320
(d)	422.9[0] or 422.89	3	M2 for $5500 \times 1.025^3 [- 5500]$ oe M1 for 5500×1.025^2 oe
3	(a) (i) 4 points correctly plotted (ii) Correct ruled line of best fit (iii) Negative (b) (i) 73 (ii) 50 to 56	2 1 1 1 1FT	B1 for 3 points correctly plotted FT <i>their</i> straight line of best fit if negative and <i>their</i> (b)(i)
4	(a) (i) 11 (ii) 17 (b) $48x^5$ (c) (i) 9 (ii) 343 (iii) 1 (d) (i) 6800 (ii) $\frac{1}{4}$ (iii) 6 (iv) 6.87×10^8	1 3 2 1 1 1 1 1 1	M1 for $8y + 28 = 164$ or $2y + 7 = 41$ M1 FT for a correct further step M1 for $48x^k$ or jx^5 Accept ± 9 Accept equivalent fraction
5	(a) (i) Radius (ii) Chord	1 1	

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Question	Answer	Mark	Part marks	
(b) (i)	90	1		
	Angle [in a] semi-circle	1		
	(ii)	25	1	
		Angles [in a] triangle [add to] 180°	1	
	(iii)	65	1FT	
		Angle [between] radius and tangent is 90° oe	1	
(iv)	65	1FT		
	Alternate angles	1		
6 (a) (i)	Blue	1		
	(ii)	$\frac{2}{16}$ oe	1	
		(b) (i)	4.52 or 4.523 to 4.524...	3
	(ii)	9.42 or 9.43 or 9.424 to 9.426	2	M1 for $2 \times 1.5\pi$ or better
	(iii)	2.6[0]	2	M1 for $20 - (12 \times 1.45)$
7 (a) (i)	8	1		
	(ii)	6	2FT	M1 for $\frac{their 8 \times 15}{20}$ or $\frac{2}{5} \times 15$ oe
		(b) (i)	30 or 29.6 to 30.4	1
	(ii)	Arc 7 cm from B	1	Arcs must be continuous lines and fit for purpose (intersect twice)
		Arc 6 cm from C	1	If 0, 0 scored then SC1 for two correct arcs that intersect once
		Correct area shaded	1 dep	Dependent on an attempt at 2 arcs
	(iii)	6500	1	

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8	(a)	$5x + 3$	3	B2 for $5x + c$ or $kx + 3$ k not equal 0 or M1 for attempt at $\frac{\text{Rise}}{\text{Run}}$	
	(b)	(i)	10, 3, -5	3	B1 for each correct
		(ii)	Correct curve	4	B3FT for 7 or 8 points correctly plotted B2FT for 5 or 6 points correctly plotted B1FT for 3 or 4 points correctly plotted
	(iii)	-0.5 to -0.4 and 4.4 to 4.5	2FT	B1FT for each correct	
9	(a)	(i)	Correct rotation	2	B1 for correct rotation with incorrect centre used
		(ii)	Correct reflection	2	B1 for reflection in $x = k$ or $y = -1$
		(iii)	Enlargement [Scale factor] 0.5 oe [Centre] (7, 4)	1 1 1	
	(b)	(i)	(5, -2)	1	
		(ii)	$\begin{pmatrix} -3 \\ -5 \end{pmatrix}$	1	
		(iii)	Z plotted at (3,4)	1	
10	(a)	15 20	2	B1 for 1 correct row or column	
		16 21			
	(b)	(i)	$5n$ oe final answer	1	
		(ii)	$5n + 1$ oe final answer	1 FT	FT algebraic expression
	(c)	100	1		
	101	1			