



MATHEMATICS

0580/33

Paper 3 (Core)

October/November 2017

MARK SCHEME

Maximum Mark: 104

Published

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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	Marks	Partial marks
1(a)(i)	800	1	
1(a)(ii)	48	2	M1 for $\frac{160}{2+5+3} [\times 3]$
1(a)(iii)	60	1	
1(b)(i)	43.5[0]	2	M1 for $3 \times 7.5[0] + 2 \times 10.5[0]$
1(b)(ii)	7.6[0]	2	M1 for $9.5 \left(1 - \frac{20}{100}\right)$ oe
1(c)(i)	102 138	2	M1 for $\frac{85}{300} \times 360$ or $\frac{115}{300} \times 360$ or $\frac{120}{100} \times 85$ or $\frac{120}{100} \times 115$ oe
1(c)(ii)	3 correct sectors	2FT	FT if <i>their</i> angles add to 240° B1FT for one correct sector
1(d)	40	3	M2 for $\frac{31.50 - 22.50}{22.50} \times 100$ or $\left(\frac{31.50}{22.50} - 1\right) \times 100$ oe or M1 for $\frac{31.50 - 22.50}{22.50}$ or $\frac{31.50}{22.50} - 1$ or $\frac{31.50}{22.50} \times 100$ oe
2(a)(i)	9	1	
2(a)(ii)	4	1	
2(b)(i)	1.4	1	
2(b)(ii)	4096	1	
2(c)	[0].043 cao	2	M1 for 0.0426... or $\frac{367}{8610}$

Question	Answer	Marks	Partial marks
2(d)	64.8	2	M1 for $\frac{1}{3} \times 4.5^2 \times 9.6$ or $\frac{324}{5}$
2(e)	$\sqrt{5}$ indicated	1	
2(f)(i)	300	1	
2(f)(ii)	$2^4 \times 5$ or $2 \times 2 \times 2 \times 2 \times 5$	2	M1 for 2, 2, 2, 2, 5 or $2^4, 5$ or $1 \times 2 \times 2 \times 2 \times 2 \times 5$ or $1 \times 2^4 \times 5$
2(f)(iii)	20	2	B1 for 2 or 4 or 5 or 10 as answer or $2^2 \times 5$ as answer
3(a)(i)	Chord	1	
3(a)(ii)	Tangent	1	
3(b)(i)	48	1	
3(b)(ii)	66	2	M1 for $180 - 48$ soi by 132
3(b)(iii)	42	2FT	2FT for $90 - \text{their (b)(i)}$ or B1 for angle $OCQ = 90$ soi
4(a)	Scalene	1	
4(b)	Translation	1	
	$\begin{pmatrix} -5 \\ -4 \end{pmatrix}$	1	
4(c)	Correct rotation Vertices (2, -1), (2, -4), (3, -2)	2	B1 for correct orientation but wrong position or for rotation of 90° anticlockwise about origin
4(d)(i)	1.5 oe	1	
4(d)(ii)	Correct enlargement Vertices (1, 3), (3, 5), (7, 3)	2	B1 for correct size and orientation, incorrect position
4(d)(iii)	4	2	M1 for $\frac{1}{2} \times 6 \times 2$ soi by 6 or correct method to find area of <i>their</i> triangle

Question	Answer	Marks	Partial marks
5(a)(i)	$n + 10$	1	
5(a)(ii)	$2(n + 10)$ oe isw	1FT	
5(a)(iii)	<i>their (ii)</i> = 52	M1	
	16 final answer	B2	M1 for $2n = 52 - 20$ or $n = 26 - 10$ or better
5(a)(iv)	42	1FT	FT $2 \times \textit{their (iii)} + 10$
5(b)(i)	$\frac{1}{4}$ cao	2	B1 for $\frac{13}{52}$ oe soi
5(b)(ii)	Correct arrow at $\frac{3}{4}$	1	
5(c)	2.7[00]	2	B1 for answer figs 27 or for 0.45 seen
5(d)	115 125	2	B1 for one correct or both values correct but reversed
6(a)(i)	4.5	2	M1 for ordered list of at least 6 values or B1 for 4.3 and 4.7 both identified
6(a)(ii)	8	1	
6(a)(iii)	5.18	2	M1 for sum of 10 distances $\div 10$
6(b)(i)	15 50 or 3.50 pm	2	M1 for $9 \div 6$ or 1.5 hours oe seen
6(b)(ii)	100	2	M1 for 6×1000 or $6 \div 60$ soi
6(c)(i)	Positive	1	
6(c)(ii)	Point (4, 68) indicated	1	
7(a)(i)	-3 -6 6 3	2	B1 for 2 or 3 values correct
7(a)(ii)	Correct curve	4	B3FT for 7 or 8 correctly plotted points or B2FT for 5 or 6 correctly plotted points or B1FT for 3 or 4 correctly plotted points
7(a)(iii)	Ruled line $y = -5$	1	
7(a)(iv)	-2.5 to -2.3	1FT	FT intersection of <i>their</i> line with <i>their</i> curve

Question	Answer	Marks	Partial marks
7(b)(i)	-0.5 oe	2	M1 for $\frac{\text{rise}}{\text{run}}$
7(b)(ii)	$y = -0.5x + 2$ oe	1FT	FT <i>their</i> gradient
7(b)(iii)	$y = -0.5x + 3$ oe	2FT	B1FT for $y = -0.5x + k$ oe, $k \neq 2$ or B1 for $y = mx + 3$ oe, $m \neq -0.5$ or 0
8(a)(i)	Correct trapezium	2	M1 for $AB = 8$ cm and $BC = 6$ cm or AB and DC perpendicular to AD
8(a)(ii)	124	1FT	FT <i>their</i> obtuse angle at C (or B)
8(a)(iii)	4.7	1FT	FT <i>their</i> CD
8(a)(iv)	31.25 to 32.25	2	M1 for $0.5 \times 5 \times (8 + \text{their (iii)})$ oe
8(b)(i)	17700 or 17671 to 17674	3	M2 for $\pi \times 15^2 \times 25$ or B1 for 15 seen If zero scored, SC1 for answer 70700 or 70685 to 70695 or 22500π
8(b)(ii)	4800	3	M2 for $2 \times 30 \times 30 + 4 \times 30 \times 25$ oe or better or M1 for 30×30 and 30×25 or B1 for cuboid 30 by 30 by 25 soi
9(a)	$y(y + 8)$ final answer	1	
9(b)	$2x + 17$ final answer	2	B1 for $6x - 3$ or $-4x + 20$ or $2x + j$ or $kx + 17$ as final answer
9(c)	$\frac{k - 5m}{7}$ oe final answer	2	M1 for $7p = k - 5m$ or $\frac{k}{7} = \frac{5m}{7} + p$
9(d)	Correctly equating one set of coefficients	M1	
	Correct method to eliminate one variable	M1	Dependent on the coefficients being the same for one of the variables. Correct consistent use of addition or subtraction using their equations.
	$x = 4$	A1	
	$y = -3$	A1	If zero scored, SC1 if no working shown, but 2 correct answers given or SC1 for 2 values satisfying one of the original equations.