



MATHEMATICS

0580/32

Paper 3 (Core)

May/June 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	Mark	Part marks
1(a)	14.9[0]	3	M2 for $3 \times 2.8[0] + 2 \times 3.25$ or better or B1 for 8.4[0] or 6.5[0]
1(b)	4	1	
	3.4[0]	2	M1 for $20 - (\text{their } 4 \times 4.15)$
1(c)	8.74	2	M1 for 7.60×1.15 oe
1(d)	72	2	M1 for $96 \div 4 [\times 3]$
1(e)(i)	60	2	B1 for two from 9 or 36, 12.5, 11.5
1(e)(ii)	5 nfww	3	M2 for $(\text{their } 60 \times 3) \div 36$ or better or M1 for $\text{their } 60 \times 3$ or better or $\text{their } 60 \div 36$
1(f)	5568	3	M2 for $6.4[0] \times 72.5 \times 12$ or better or M1 for $6.4[0] \times 72.5$ or $6.4[0] \times 12$
2(a)	10a final answer	1	
2(b)	$16f - 4g$ final answer or $4(4f - g)$ final answer	3	M2 for $2 \times (5f + 2g) + 2 \times (3f - 4g)$ oe or B1 for $10f + 4g$ or $6f - 8g$ or $8f - 2g$ or $16f + kg$ or $kf - 4g$
2(c)(i)	125	2	M1 for $5 \times 7 + 9 \times 10$ or better
2(c)(ii)	85	2	M1 for $4 \times 5^2 - 3 \times 5$ or better
2(d)	7	3	M1 for $15x - 30 [= 75]$ or $3x - 6 = 15$ M1FT for correct second step
2(e)(i)	$x + 4$ $4x$ $4x - 6$	2	B1 for any two correct
2(e)(ii)	$x + x - 5 + x + 4 + 4x + 4x - 6 = 125$	1	

Question	Answer	Mark	Part marks
2(e)(iii)	12	2	M1 for $11x = 125 + 7$ or $x - \frac{7}{11} = \frac{125}{11}$ or better
3(a)(i)	62	1	
3(a)(ii)(a)	$\frac{17}{84}$ oe isw	1	
3(a)(ii)(b)	$\frac{21}{38}$ oe isw	1	
3(a)(ii)(c)	$\frac{164}{210}$ oe isw	1	
3(a)(iii)	43.5 oe	2	M1 for an ordered list giving at least the first 5 or the last 5 numbers in order or 42 and 45 identified
3(b)	3.44	3	M2 for $(1 \times 5 + 2 \times 8 + 3 \times 12 + 4 \times 14 + 5 \times 7 + 6 \times 4) \div 50$ implied by $172 \div 50$ or M1 for $(1 \times 5) + (2 \times 8) + (3 \times 12) + (4 \times 14) + (5 \times 7) + (6 \times 4)$ or 172
3(c)(i)	4 points plotted within tolerance	2	B1 for 2 or 3 points plotted within tolerance
3(c)(ii)	(10, 35) indicated	1	
3(c)(iii)	Positive	1	
3(c)(iv)	Correct ruled line	1	
3(c)(v)	28 to 32	1	If zero scored, FT their line of best fit if positive
4(a)(i)	36	1	
4(a)(ii)	4	1	
4(a)(iii)	11	1	
4(a)(iv)	36 or 4 or both	1	
4(a)(v)	27	1	

Question	Answer	Mark	Part marks
4(b)	160 cao	2	M1 for any common multiple $160n$ or any product that equals 160 or two lists of correct multiples of each number or either number correctly reduced to its prime factors
4(c)(i)	8.3	1	
4(c)(ii)	27	1	
5(a)	Rotation	1	
	(0, 0) oe	1	
	90° [anticlockwise] oe	1	
5(b)	Enlargement	1	
	(0, 2)	1	
	[sf=]2	1	
5(c)(i)	Correct reflection points at (4, -2), (8, -2) and (4, -8)	1	
5(c)(ii)	Correct translation points at (-7, 5), (-4, 5) and (-4, 7)	2	B1 for $\begin{pmatrix} -2 \\ k \end{pmatrix}$ or $\begin{pmatrix} k \\ 3 \end{pmatrix}$
5(c)(iii)	Correct rotation points at (-2, -2), (-4, -2) and (-2, -5)	2	B1 for rotation of 180° about the wrong centre
6(a)	Completely correct ruled triangle with arcs	3	B1 for AC of length 8 cm B1 for BC of length 7 cm or if zero scored, M1 for two correct intersecting arcs If zero scored, SC1 for ruled triangle with arcs with AC of length 7 cm and BC of length 8 cm

Question	Answer	Mark	Part marks
6(b)	Accurate ruled bisector of angle S with two correct pairs of arcs and reaching side QR	B2	B1 for correct ruled bisector of angle S which reaches QR drawn without arcs or with wrong arcs or correct short line with arcs or 2 pairs of correct arcs with no line
	Accurate ruled bisector of side SR with two correct pairs of arcs and reaching side PQ	B2	B1 for correct ruled bisector of SR which reaches PQ drawn without arcs or with wrong arcs or correct short line with arcs or 2 pairs of correct arcs with no line
	correct region shaded	B1dep	Dep. on a ruled line through angle S and a ruled line through side SR
7(a)(i)	270	1	
7(a)(ii)	152	3	M1 for $180 - 118$ soi by 62 M1 for $180 - 90 - \textit{their} 62$ soi by 28 or better and $180 - \textit{their} 28$ or $90 + \textit{their} 62$
7(a)(iii)	108	3	M2 for $\sqrt{117^2 - 45^2}$ or better or M1 for $[\dots]^2 + 45^2 = 117^2$ or better
7(b)	40	3	M1 for $180 - 171$ soi by 9 M1 for $360 \div \textit{their} 9$
8(a)	$-3, -5, -7.5, 7.5, 3.75, 3$	3	B2 for 4 or 5 correct B1 for 2 or 3 correct
8(b)	Correct curve drawn	4	B3FT for 9 or 10 points correctly plotted or B2FT for 7 or 8 points correctly plotted or B1FT for 5 or 6 points correctly plotted
8(c)	$1.8 \leq x < 2$	1	If zero scored, then FT their graph
9(a)(i)	32	1	
	38	1FT	FT <i>their</i> $32 + 6$
9(a)(ii)	-2	1	
	-8	1FT	FT <i>their</i> $-2 - 6$

Question	Answer	Mark	Part marks
9(b)	$11n + 3$ oe final answer	2	B1 for $11n + k$ (k may be 0) or $jn + 3$ ($j \neq 0$) or $11n + 3$ or $14 + 11(n - 1)$ seen but not as final answer
9(c)	-5	1	
9(d)(i)	$n^2 + 1$ oe	1	
9(d)(ii)	$3n^2$ oe	1	