



MATHEMATICS

0580/32

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
nfw	not from wrong working
soi	seen or implied

Question	Answer	Marks	Partial Marks
1(a)(i)	45	1	
1(a)(ii)	10 10	1	
1(a)(iii)	[0].55	2	M1 for $(1.66 \times 5) - 7.75$ oe
1(b)(i)	50	1	
1(b)(ii)	2, 7, 4, 5, 6, 6	2	B1 for 4 correct in frequency column or B1 for correct tallies if frequency column blank or B1 if 2, 7, 4, 5, 6, 6 seen in tally column with frequency column blank or incorrect
1(b)(iii)	Correctly scaled frequency axis	1	
	all heights correct	1FT	FT <i>their</i> table
	consistent width of bars	1	
1(b)(iv)	10 [to] 19	1	FT <i>their</i> bar chart if 5 or 6 bars or <i>their</i> table if no bar chart
2(a)	Eight thousand [and] forty-five	1	
2(b)(i)	64	1	
2(b)(ii)	61 or 67	1	
2(b)(iii)	68	1	
2(c)(i)	2×7^2 or $2 \times 7 \times 7$	2	M1 for 2, 7, 7 or $2, 7^2$ or $1 \times 2 \times 7 \times 7$ or $1 \times 2 \times 7^2$
2(c)(ii)	14	2	M1 for $(182 =) 2 \times 7 \times 13$ or 2, 7, 13 or B1 for 2 or 7 or 2×7 as final answer

Question	Answer	Marks	Partial Marks
2(d)(i)	1296	1	
2(d)(ii)	29	1	
2(d)(iii)	14	1	
2(d)(iv)	0.008 or $\frac{1}{125}$	1	
3(a)	2, 6	2	B1 mark for each
3(b)(i)	Triangle at $(-3, 1)$ $(-5, 3)$ $(-3, 3)$	2	B1 for reflection in $x = k$ or $y = -1$
3(b)(ii)	Triangle at $(2, 2)$ $(2, 6)$ $(6, 6)$	2	B1 for correct size and orientation, incorrect centre
3(b)(iii)	Translation	1	
	$\begin{pmatrix} -5 \\ 3 \end{pmatrix}$	1	
4(a)(i)	6 pens and 1.3[0]	3	M1 for $\frac{10}{1.45}$ M1 for $k \times 1.45$ where k is an integer
4(a)(ii)	4.76	2	M1 for $5.60 \times (1 - \frac{15}{100})$ oe
4(b)	22	2	M1 for ordered list of first 6 or last 6 or B1 for 19 and 25 both identified
4(c)	3000 1500 2500	3	M2 for $\frac{7000}{6+3+5} \times k$ or better, where k is 6 or 3 or 5 or M1 for $\frac{7000}{6+3+5}$ or better implied by 500 If no working M2 implied by one correct answer in correct place If zero scored, M1 for all correct answers in wrong order
4(d)	909.09 or 909.1[0] or 909.0 or 909	2	M1 for $\frac{1400}{1.54}$
4(e)	2160.09 or 2160.1[0] or 2160.0 or 2160	3	M2 for $2000 (1 + \frac{2.6}{100})^3$ oe or M1 for $2000 (1 + \frac{2.6}{100})^2$ soi by 2105.35

Question	Answer	Marks	Partial Marks
5(a)	$\frac{90}{360} \times 900 [= 225]$	1	
5(b)	45	2	M1 for $\frac{18}{360} \times 900$ oe
5(c)	Correct pie chart	2	B1 for 56° or 50° soi
5(d)(i)	0	1	
5(d)(ii)	$\frac{1}{20}$ cao	2	M1 for $\frac{18}{360}$ or $\frac{their(b)}{900}$ oe
5(e)	350	2	M1 for $\frac{125}{900} \times 2520$ or $\frac{50}{360} \times 2520$ oe
6(a)(i)	95	2	B1 for 9.5
6(a)(ii)	135	1	
6(b)(i)	Correct length and bearing	2	B1 for 7.8 cm from A B1 for 103° from A
6(b)(ii)	104	2	M1 for $\frac{78}{45} \times 60$ oe or for $\frac{78}{time}$
6(c)	Correct region shaded with correct arcs	5	B2 for correct bisector with correct arcs or B1 for short bisector with correct/incorrect/no arcs or for correct arcs but no line B2 for arc 7 cm centre A or B1 for short arc 7 cm from centre A
7(a)(i)	Pentagon	1	
7(a)(ii)	Parallelogram	1	
7(a)(iii)	Obtuse	1	
7(b)(i)	2400	2	M1 for $25 \times 12 \times 8$
7(b)(ii)	[0] .0024	1FT	

Question	Answer	Marks	Partial Marks
7(c)(i)	Radius	1	
7(c)(ii)	Angle [in a] semicircle, [90°]	1	
7(c)(iii)	50.3 or 50.26 to 50.27.....	2	M1 for $2 \times 8 \times \pi$ or $16 \times \pi$
7(c)(iv)	11.5 or 11.48 to 11.49	3	M2 for $\sqrt{14^2 - 8^2}$ soi or better or M1 for $14^2 = 8^2 + CD^2$ or better
8(a)(i)	$12p - 7r$ final answer	2	B1 for $12p + jr$ or $kp - 7r$ j, k can be 0 or $12p + -7r$
8(a)(ii)	$24x^5$ final answer	1	
8(b)	$90x + 75y$ final answer	2	B1 for $90x + jy$ or $kx + 75y$ j, k can be 0 or $0.9x + 0.75y$
8(c)	$4p(3p - 2)$ final answer	2	B1 for $4(3p^2 - 2p)$ or $p(12p - 8)$ or $2(6p^2 - 4p)$ or $2p(6p - 4)$
8(d)	5	3	M1 for first correct step M1FT for second correct step
8(e)	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.
	$[x =] 2.5$	A1	
	$[y =] 11$	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
9(a)(i)	-6, 6, 14	3	B1 for each
9(a)(ii)	Correct curve	4	B3FT for 6 or 7 points correctly plotted or B2FT for 4 or 5 points correctly plotted or B1FT for 2 or 3 points correctly plotted
9(b)(i)	Correct ruled line	1	
9(b)(ii)	$1.8 \leq x < 2.0, 5$	1FT	FT intersection of <i>their</i> curve with the line $y = 5$