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MATHEMATICS

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MARK SCHEME

Maximum Mark: 56

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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	101	1	
2	9944	1	
3	2	1	
4	88	2	M1 for $\frac{68+81+74+89+x}{5} = 80$ oe or B1 for 400
5(a)	18.8 cao	1	
5(b)	19 cao	1	
6	1.5 oe	2	B1 for 2.25 oe
7	$3x(4x + 5y - 3)$ final answer	2	B1 for $3(4x^2 + 5xy - 3x)$ or $x(12x + 15y - 9)$ allow in working or correct answer spoiled If zero scored, SC1 for $3x(4x + 5y - 3)$ with only 2 correct elements in the brackets, allow in working
8	14.25 14.35	2	B1 for each correct or both correct but reversed
9	63.6 or 63.61 to 63.63	2	M1 for $\pi \times 4.5^2$
10(a)	(-2, 3)	1	
10(b)	Correct rhombus with 4th point at (2,2)	1	
11(a)	$\frac{5}{9}$ cao	1	
11(b)	[0].09 then 9 [%]	2	B1 for each

Question	Answer		Marks	Partial marks
12	$\frac{5}{3}$	$\frac{2}{3} + \frac{4}{15}$	B1	Allow $\frac{5k}{3k}$
	$\frac{25}{15}$ [and $\frac{11}{15}$]	$\frac{10}{15}$ [and $\frac{4}{15}$]	M1	Correct method to find common denominator e.g. $\frac{75}{45}$ and $\frac{33}{45}$ Follow through <i>their</i> $\frac{5}{3}$ for the M1 mark
	$\frac{14}{15}$ cao	$\frac{14}{15}$ cao	A1	
13(a)	343		1	
13(b)	-11		1	
13(c)	343		1	
14(a)	$\begin{pmatrix} 2 \\ 7 \end{pmatrix}$		1	
14(b)	$\begin{pmatrix} 2 \\ 5 \end{pmatrix}$		1	
14(c)	$\begin{pmatrix} 8 \\ 20 \end{pmatrix}$		1	
15	54		3	M2 for $\frac{180 \times (5-2)}{5}$ or $180 - \frac{360}{5}$ or M1 for $180 \times (5-2)$ or $\frac{360}{5}$
16	16.1 or 16.12 to 16.13		3	M2 for $\sqrt{(18^2 - 8^2)}$ or better or M1 for $18^2 = [\dots]^2 + 8^2$ or better
17(a)	m^{10} final answer		1	
17(b)	$20x^5y^2$ final answer		2	B1 for 2 out of 3 elements correct in final answer or correct answer spoiled

Question	Answer	Marks	Partial marks
18	Correct method to eliminate one variable	M1	
	$[x =] -2$	A1	
	$[y =] 3$	A1	If zero scored, SC1 for both correct but no or wrong working or SC1 for 2 values satisfying one of the original equations
19(a)(i)	99° 63° 36°	3	B1 for each or M1 for $162 \div 18$ or $360 \div 40$ or better If zero scored, SC1 for 3 angles that add to 198
19(a)(ii)	Correct labelled pie chart	1FT	FT <i>their</i> table if <i>their</i> angles add to 198
19(b)	$\frac{252}{360}$ or better fraction isw	1	
20(a)	71.48	2	M1 for 12.8×10.4 or 9.2×6.7 or for an area of a suitable rectangle from shaded area
20(b)	132	3	M2 for $2 \times (8 \times 2 + 2 \times 5 + 8 \times 5)$ oe or M1 for at least two of 8×2 , 8×5 and 2×5
21(a)(i)	Correct ruled bisector with two pairs of correct arcs	2	B1 for correct ruled bisector missing/wrong arcs or 2 pairs of correct arcs
21(a)(ii)	Correct ruled perpendicular bisector with two pairs of correct arcs	2	B1 for correct ruled bisector missing/wrong arcs or 2 pairs of correct arcs
21(b)	Correct region shaded	1	Dep. on at least B1 in (a)(i) and B1 in (a)(ii)