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Paper 3 (Core) **May/June 2016**

MARK SCHEME

Maximum Mark: 96

Published

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Abbreviations

awrt answers which round to
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	Part Marks
1 (a) (i)	Nine thousand four hundred and twenty seven	1	
(ii)	9430	1	
(b) (i)	2 + 7 = 9 or 9 + 7 = 16	1	
(ii)	4 + 2 = 6 or 7 + 9 = 16	1	
(iii)	4 + 9 = 13 or 9 + 2 = 11 or 4 + 7 = 11	1	
2 (a) (i)	24	1	
(ii)	All heights correct and approximately equal width	2	**B1** for 3 heights correct
(b) (i)	2	1	
(ii)	More than 2 [children in a house] oe	1	
(iii)	54	1	Within tolerance
(iv)	60	2	**B1** for $\frac{1}{4}$ soi
3 (a)	36	1	
(b)	80	2	**M1** for 10×8
	m^2	1	
(c)	15	3	**M2** for $\frac{12}{their(b)} \times 100$ soi or **M1** for $\frac{12}{their(b)}$ soi
(d)	16 25	1 1	

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Question	Answer	Marks	Part Marks
4 (a)	1380	**2**	**B1** for 62×15 soi by 930
(b)	Disco : 36.6… rounded or truncated	**2**	**M1** for $\frac{1000-450}{15}$ soi
	Ballroom : 38.6… rounded or truncated	**2**	**M1** for $\frac{1000-575}{11}$ soi
	38	**1**	Final answer. Dependent on 4 scored.
5 (a)	(3, 1)	**1**	
(b)	(0, 4)	**1**	
(c)	(–3, –2) correctly plotted	**1**	
(d)	(1.5, 2.5) oe	**1**	
(e)	Correct reflection in y-axis line joining (0, 4) and (–3, 1)	**1**	
(f)	Translation	**1**	
	$\begin{pmatrix} 3 \\ -1 \end{pmatrix}$	**1**	Accept 3 right, 1 down oe
6 (a) (i)	Correct 2 by 4 pattern	**1**	
(ii)	30	**1**	
(b) (i)	1	**1**	
	–3	**1**	
(ii)	$-4n + 25$ oe	**2**	**B1** for $-4n$ soi or $25 - kn$ $k \geqslant 1$
7 (a)	Obtuse	**1**	
(b) (i)	70	**1**	
(ii)	$ABC = 55$ soi	**1**	
	10	**1**	Dep. on $ABC = 55$
	[because triangle ABC is] isosceles	**1**	

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Question	Answer	Marks	Part Marks
8 (a)	$6a$ final answer	**1**	
(b)	$3x^3 - 5x$ final answer	**2**	**B1** for $3x^3$ or $-5x$ seen
(c)	9	**2**	**M1** for $x - 5 = 4$ or for $2x = 8 + 10$
(d) (i)	t^7 final answer	**1**	
(ii)	$5t^3$ final answer	**2**	**B1** for $\frac{20t^3}{4}$ or $\frac{5t^5}{t^2}$ seen
9 (a)	5 : 2	**2**	**B1** for 60 : 24 oe
(b)	2.5 hours or $2\frac{1}{2}$ hours or 2 hours 30 minutes or 150 minutes	**2**	**M1** for $\frac{5}{12}$ or $\frac{6}{12}$ soi
(c) (i)	$6\frac{1}{2}$ or 6.5 or 6 hours 30 minutes	**1**	
(ii)	$5\frac{1}{2}$ or 5.5 or 5 hours 30 minutes	**1**	
10 (a)	3 points correctly plotted	**2**	**B1** for 2 correctly plotted points
(b)	Positive	**1**	
(c)	Line of best fit	**1**	Within tolerance
(d)	3.4 to 4	**1**	
11 (a)	$63 \times \pi$ 197.9…	**M1** **A1**	
(b)	28.4 or 28.36 to 28.38	**4**	**M3** for $\frac{172 \times 198}{100 \times 12}$ oe soi or **M2** for $\frac{172 \times 198}{12}$ or $\frac{198}{100 \times 12}$ oe soi or **M1** for 172×198 or $\frac{198}{12}$ oe soi

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Question	Answer	Marks	Part Marks
12 (a)	13 500	**3**	**M2** for $5850 + 0.05 \times 153000$ oe or **M1** for 0.05×153000 oe
(b)	12.4 or 12.41 to 12.42	**3**	**M2** for $\frac{172000 - 153000}{153000}[\times 100]$ oe or **M1** for $\frac{172000}{153000}[\times 100]$ oe
13 (a)	29	**1**	
(b) (i)	17	**1**	
(ii)	26	**1**	
(c) (i)	$\frac{11}{29}$ isw oe	**1FT**	Accept $\frac{11}{their(a)}$
(ii)	$\frac{3}{29}$ isw oe	**1FT**	Accept $\frac{3}{their(a)}$
(iii)	$\frac{14}{29}$ isw oe	**1FT**	Accept $\frac{14}{their(a)}$
14 (a)	56.6 or 56.56 to 56.57	**3**	**M2** for $90^2 - 70^2$ oe soi or **M1** for $90^2 = x^2 + 70^2$
(b)	51.1 or 51.05 to 51.06	**2**	**M1** for [sin …=] $\frac{70}{90}$ oe
15 (a)	Correct graph	**2**	**B1** for correct shape **B1** for correct position
(b)	(2, 3)	**1**	
(c)	Correct line	**2**	**B1** for approximately correct gradient **B1** for approximately correct y-intercept
(d)	5.24 0.764	**1** **1**	

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