



**Published**

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	<b>Cambridge IGCSE – October/November 2016</b>	<b>0607</b>	<b>43</b>

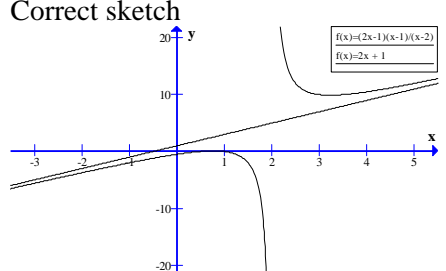
### Abbreviations

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	Mark	Part Marks	
<b>1</b>	<b>(a) (i)</b>	43	<b>1</b>	
	<b>(ii)</b>	14.5 or 14.54 to 14.55	<b>1</b>	
	<b>(b) (i)</b>	$3.16 \times 10^{11}$ or $3.158... \times 10^{11}$	<b>2</b>	<b>B1</b> for figs 316 or 3158... or $k \times 10^{11}$ where $1 \leq k < 10$
	<b>(ii)</b>	$8.23 \times 10^7$ or $8.228... \times 10^7$	<b>2</b>	<b>B1</b> for figs 823 or 8228... or $k \times 10^7$ where $1 \leq k < 10$
<b>2</b>	<b>(a) (i)</b>	$276480 \times 0.25$ oe $0.75 \times 276480 \times 0.055 \times 10$ oe adding with no errors	<b>M1</b> <b>M1</b> <b>M1</b>	
	<b>(ii)</b>	19 nfww	<b>4</b>	
	<b>(b)</b>	256 000	<b>3</b>	
<b>3</b>	<b>(a)</b>	Reflection $x = -2$	<b>1</b> <b>1</b>	
	<b>(b)</b>	Rotation $90^\circ$ [anticlockwise] oe (5, 1)	<b>1</b> <b>1</b> <b>1</b>	
	<b>(c)</b>	Stretch $x$ -axis oe invariant [stretch factor] 3	<b>1</b> <b>1</b> <b>1</b>	

Question	Answer	Mark	Part Marks
4 (a) (i)	96	2	M1 for $\frac{1}{3} \times 6 \times 6 \times 8$
(ii)	8.54 or 8.544...	2	M1 for $8^2 + 3^2$
(b) (i)	84	3FT	M2 for $\frac{7}{8} \times \text{their (a)(i)}$ oe or M1 for $96 \times (\frac{1}{2})^3$ or $\frac{1}{3} \times 3 \times 3 \times 4$ soi by 12
(ii)	122 or 121.8 to 121.9	5	M3 for $4 \times \frac{3}{4} \times \frac{1}{2} \times 6 \times \text{their (a)(ii)}$ oe or $4 \times \frac{1}{2} \times (6 + 3) \times \frac{1}{2} \text{their (a)(ii)}$ oe  or M2 for $\frac{3}{4} \times \frac{1}{2} \times 6 \times \text{their (a)(ii)}$ oe or $\frac{1}{2} \times (6 + 3) \times \frac{1}{2} \text{their (a)(ii)}$ oe  or M1 for $\frac{1}{2} \times 6 \times \text{their (a)(ii)}$ or $\frac{1}{2} \times 3 \times \frac{1}{2} \text{their (a)(ii)}$ and M1 for $36 + 9 + 4 \times \text{their trapezium area}$ oe
5 (a)	Correct sketch 	2	B1 for correct cubic shape with maximum on left of minimum
(b)	-2.67 or -2.669 ... 0.524 or 0.5239 to 0.5240 2.15 or 2.145...	1 1 1	
(c) (i)	Maximum (-1.15, 9.08) Minimum (1.15, 2.92)	3	or (-1.155 to -1.154, 9.079...) or (1.154 to 1.155, 2.920 to 2.921) B2 for either maximum or minimum or B1 for 1 correct value
(ii)	$k < 2.92$ and $k > 9.08$	1FT	or above accuracy.
(d)	Rotational Order 2 (0, 6)	1 1 1	

Question	Answer	Mark	Part Marks	
6 (a)	(4, -1), (-6, -1), (8, 7)	3	<b>B1</b> for each	
(b)	(13, 7)	2	<b>B1</b> for each co-ordinate	
(c)	$y = -\frac{7}{4}x - \frac{11}{4}$ oe	4	isw correct 3 term equation <b>B1</b> for $\frac{4}{7}$ <b>B1FT</b> for $-\frac{7}{4}$ <b>M1</b> for correct method of finding 'c'.	
7 (a) (i)	[6], 18, 40, 77, 97, 114, [120]	1	All marks in (a) dependent on increasing cumulative frequencies <b>B2FT</b> for 6 points correctly plotted <b>B1FT</b> for 4 or 5 points correctly plotted If 0 scored <b>SC1</b> for 'correct' curve translated consistently to left.	
(ii)	Correct curve	3		
(iii)	7100 to 7400	1FT		<b>FT</b> <i>their</i> graph
(iv)	750 to 1150	2		<b>B1</b> for LQ = 6700 to 6900 or UQ = 7650 to 7850
(v)	9 or 10 or 11	1		
(b)	Correct graph	4	<b>B3</b> for 6 correct heights or <b>B2</b> for 4 or 5 correct heights or <b>B1</b> for 2 or 3 correct heights  <b>B1</b> for correct widths If 0 scored <b>B1</b> for correct frequency densities [0.006], 0.024, 0.044, 0.074, 0.04, 0.017, 0.006	
8 (a)	$360 - (155 + 115)$ oe	1	e.g. 25 + 65 with those angles marked on diagram	
(b)	36.9 or 36.86 to 36.87	2	<b>M1</b> $\tan [C] = \frac{60}{80}$ oe	
(c)	100 or 99.93 to 100.04	2	<b>M1</b> for $60^2 + 80^2$ oe	
(d)	94.0 or 94.1 or 94.01 to 94.06	4	<b>B1FT</b> for $ACD = 63.1$ to 63.13 <b>M1</b> for $75^2 + (\textit{their } 100)^2 - 2 \times 75 \times \textit{their } 100 \times \cos \textit{their } 63.1$ <b>A1</b> for 8838 to 8846	

Question	Answer	Mark	Part Marks
(e)	123 or 123.4 to 123.5	4	<p><b>M2</b> for <math>\frac{75 \sin(\text{their}63.1)}{\text{their}94.1}</math></p> <p>or for [cos = ] <math>\frac{(\text{their}100)^2 + (\text{their}94.1)^2 - 75^2}{2 \times (\text{their}100) \times (\text{their}94.1)}</math></p> <p>or <b>M1</b> for <math>\frac{\sin CAD}{75} = \frac{\sin(\text{their}63.1)}{\text{their}94.1}</math></p> <p>or for <math>75^2 = (\text{their}100)^2 + (\text{their}94.1)^2 - 2(\text{their}100)(\text{their}94.1)</math></p> <p><b>A1</b> for 45.3 or 45.4 or 45.29 to 45.37</p>
9 (a)	9 hours 52 mins	3	<b>B2</b> for 9.870... or <b>M1</b> for $760 \div 77$
(b) (i)	$\frac{270}{x}$	1	
(ii)	$\frac{270}{x} + \frac{490}{x+4} = 62$ oe $270(x+4) + 490x = 62x(x+4)$ oe Completion with no errors	<b>M1</b> <b>M1</b> <b>A1</b>	Could be over common denominator Must be at least one intermediate step
(iii)	$(31x + 54)(x - 10)$ 10 and $-\frac{54}{31}$ or 10 because $x$ cannot be negative 14 cao	<b>M1</b> <b>B2</b> <b>B1</b>	or correct substitution into formula or reasonable sketch or <b>B1</b> for either 10 without support scores only the <b>B1</b>
10 (a) (i)	$(2x - 1)(x - 1)$	2	<b>SC1</b> for $(2x + a)(x + b)$ where $ab = 1$ and $a + 2b = -3$
(ii)	$\frac{(2x+1)(x-2)+3}{x-2}$ oe $\frac{2x^2 - 4x + x - 2 + 3}{x-2}$ $\frac{2x^2 - 3x + 1}{x-2}$	<b>M1</b> <b>A1</b> <b>A1</b>	Allow $-3x$ for $-4x + x$
(b) (i)	Correct sketch 	2	With no undue overlap at $x = 2$ or serious curving back <b>B1</b> for either branch correct

Question	Answer	Mark	Part Marks																
(ii)	Correct line	2	Not intersecting either branch <b>B1</b> for line with positive gradient and positive y intercept																
(iii)	$y = 2x + 1$ $x = 2$	1 1																	
(iv)	0.5 1	1 1																	
<b>11 (a)</b>	<table border="1"> <thead> <tr> <th></th> <th>Walking</th> <th>Cycling</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th>Male</th> <td>[16]</td> <td>13</td> <td>[29]</td> </tr> <tr> <th>Female</th> <td>12</td> <td>9</td> <td>21</td> </tr> <tr> <th>Total</th> <td>28</td> <td>[22]</td> <td>[50]</td> </tr> </tbody> </table>		Walking	Cycling	Total	Male	[16]	13	[29]	Female	12	9	21	Total	28	[22]	[50]	2	<b>B1</b> for 3 or 4 correct
	Walking	Cycling	Total																
Male	[16]	13	[29]																
Female	12	9	21																
Total	28	[22]	[50]																
(b)	$\frac{462}{2450}$ oe	2	<b>M1</b> for $\frac{22}{50} \times \frac{21}{49}$ oe																
(c)	$\frac{384}{756}$ oe	3	<b>M2</b> for $\frac{16}{\text{their } 28} \times \frac{\text{their } 12}{\text{their } 28 - 1} + \frac{\text{their } 12}{\text{their } 28} \times \frac{16}{\text{their } 28 - 1}$ oe or <b>M1</b> for one of above products																
<b>12 (a)</b>	$y = \frac{10}{\sqrt{x}}$	2	<b>M1</b> for $y = \frac{k}{\sqrt{x}}$																
(b)	$\frac{100}{9}$ oe	<b>2FT</b>	<b>M1</b> for $3\sqrt{x} = \text{their } k$																
(c)	$a = 4000, n = -\frac{3}{2}$	3	<b>B2</b> for either or <b>M1</b> for $z = c \left( \frac{\text{their } k}{\sqrt{x}} \right)^3$ oe																