

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2015 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/63

Paper 6 (Extended), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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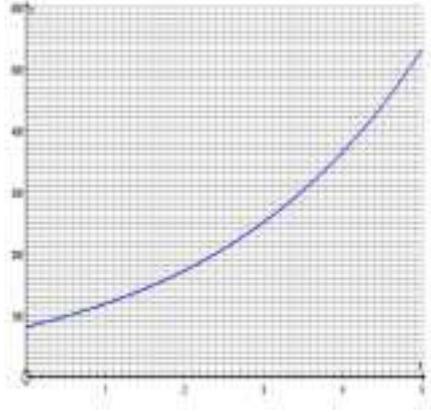
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Abbreviations

cao correct answer only
 dep dependent
 FT follow through after error
 isw ignore subsequent working
 oe or equivalent
 SC Special Case
 nfwf not from wrong working
 soi seen or implied

A INVESTIGATION		SECURITY CAMERAS	
Question	Answer	Mark	Part Marks
1 (a) (i) (ii) (iii) (b)	$\begin{array}{ccc} X & & X \\ \square & X & \square \\ & & \square \end{array} \quad \text{oe}$	1	
	$\begin{array}{ccccc} X & & X & & X \\ \square & & \square & & \square \\ & X & & X & \\ & & \square & & \square \end{array} \quad \text{oe}$	1	
	$\begin{array}{ccccc} X & & X & & X \\ \square & & \square & & \square \\ & X & & X & \\ & & \square & & \square \\ & & & X & \\ & & & & \square \end{array} \quad \text{oe}$	1	
	$n + 1$	1	
2 (a) (i) (ii) (iii) (b)	$\begin{array}{ccc} X & & \\ \square & & \\ & X & \\ X & & \\ \square & & \\ & X & \end{array} \quad \text{oe}$ <p>[Minimum =] 4</p>	1	B1 for diagram and 4
	$\begin{array}{ccc} X & & X \\ \square & & \square \\ & X & \\ X & & X \\ \square & & \square \\ & X & \end{array} \quad \text{oe}$	1	
	$\begin{array}{ccccc} X & & X & & X \\ \square & & \square & & \square \\ & X & & X & \\ X & & X & & X \\ \square & & \square & & \square \\ & X & & X & \\ & & \square & & \square \end{array} \quad \text{oe}$ <p>[Minimum =8]</p>	1	
	$2n + 2$ oe	1	

A INVESTIGATION		SECURITY CAMERAS																																										
Question	Answer	Mark	Part Marks																																									
3	9 12	1 1	C opportunity																																									
4 (a)	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="6">Number of squares in each row</th> </tr> <tr> <th>1 square</th> <th>2 squares</th> <th>3 squares</th> <th>4 squares</th> <th>5 squares</th> <th>n squares</th> </tr> </thead> <tbody> <tr> <td>One row</td> <td></td> <td></td> <td></td> <td></td> <td>6</td> <td></td> </tr> <tr> <td>Three rows</td> <td></td> <td></td> <td>8</td> <td>10</td> <td>12</td> <td></td> </tr> <tr> <td>Five rows</td> <td></td> <td></td> <td></td> <td>15</td> <td>18</td> <td></td> </tr> <tr> <td>Seven rows</td> <td></td> <td>12</td> <td>16</td> <td>20</td> <td>24</td> <td>$4n + 4$</td> </tr> </tbody> </table> <p style="text-align: right;">oe</p>		Number of squares in each row						1 square	2 squares	3 squares	4 squares	5 squares	n squares	One row					6		Three rows			8	10	12		Five rows				15	18		Seven rows		12	16	20	24	$4n + 4$	2	B1 for 8, 9 or 10 number cells correct B1 for $4n + 4$ oe
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(b)	$\frac{1}{2}(r+1)n + \frac{1}{2}(r+1)$ oe	1																																										
(c)	1, 3, 7, 15	1	C opportunity																																									
5 (a)	10 13	1	C opportunity																																									
(b)	$\frac{3n}{2} + 1$	1	C opportunity																																									
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Communication seen in two of 2(b), 3, 4(c), 5(a), 5(b)		1																																										

B MODELLING		BACTERIA	
Question	Answer	Mark	Part Marks
1 (a)	Correct curve between $x = 1$ and $x = 5$ 	2	B1 for 5 points correctly plotted (within 1 mm) B1 for curve through plotted points (within 1 mm)
(b)	Answer in range 80 to 100	1	
2 (a)	$[n =] pq^x$	1	
(b)	$[q =] 1.48$	1FT	FT $n = px^2 + q$ in <i>their</i> (a) C opportunity
(c)	$[p =] 77.1[...]$	1FT	FT <i>their</i> q in $n = pq^x$ Or <i>their</i> q in $n = px^2 + q$ C opportunity
(d) (i)	Answer in range 1099 to 1200	1FT	FT <i>their</i> p and <i>their</i> q in non-linear models C opportunity
(ii)	77[.1...]	1FT	
(iii)	Correct statement about similarity of answers	1FT	FT <i>their</i> 1(b) and <i>their</i> 2(d)(ii)

B MODELLING		BACTERIA	
Question	Answer	Mark	Part Marks
3 (a)	2.23 2.4[0] 2.57 2.72	2	B1 for accuracy to 3 s.f. and B1 for all correct if rounded
(b)	3[.0] 2.4[...]	1	Correct to 1d.p.
(c)		2FT	B1FT for 5 correctly plotted points B1FT for correct ruled line between $x = 1$ and $x = 5$ through (3, <i>their</i> 2.4)
(d) (i)	1.9 to 1.95	1	FT <i>their</i> correct line of best fit if outside range
(ii)	0.15 to 0.17	1	C opportunity
(e)	890 to 1390	1	C opportunity
(f)	79 to 90	1	
4	Correct statement comparing the <u>models</u>	1FT	FT <i>their</i> 3(e) and <i>their</i> 2(d)(i)
Communication seen in two of 2(b), 2(c), 2(d)(i), 3(d)(ii), 3(e)		1	