

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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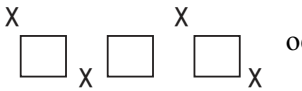
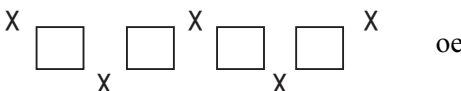
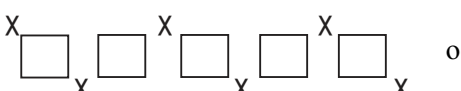
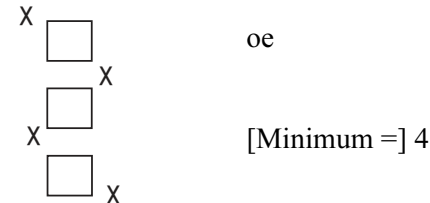
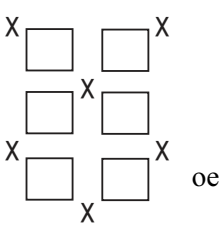
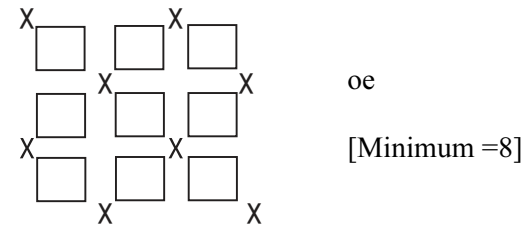
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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0607	63

Abbreviations

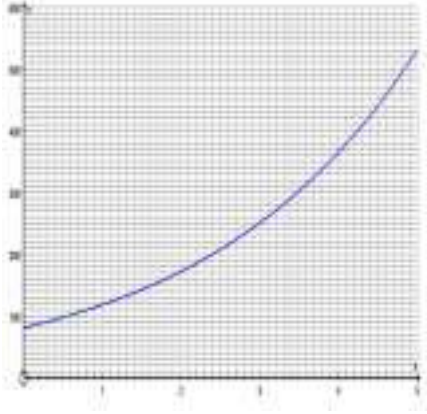
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfw	not from wrong working
soi	seen or implied

A INVESTIGATION SECURITY CAMERAS			
Question	Answer	Mark	Part Marks
1 (a) (i)		1	
	(ii) 	1	
	(iii) 	1	
	(b) $n + 1$	1	
2 (a) (i)		1	B1 for diagram and 4
	(ii) 	1	
	(iii) 	1	
	(b) $2n + 2$ oe	1	C opportunity

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0607	63

A INVESTIGATION		SECURITY CAMERAS																																											
Question	Answer	Mark	Part Marks																																										
3	9 12	1 1	C opportunity																																										
4 (a)	<table><tr><td></td><td colspan="6">Number of squares in each row</td></tr><tr><td></td><td>1 square</td><td>2 squares</td><td>3 squares</td><td>4 squares</td><td>5 squares</td><td>n squares</td></tr><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></table> oe		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
	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	$4n + 4$																																							
(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																																										
6 (a)	<table><tr><td></td><td colspan="5">Number of squares in each row</td></tr><tr><td></td><td>2 squares</td><td>4 squares</td><td>6 squares</td><td>8 squares</td><td>n squares</td></tr><tr><td>Two rows</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Four rows</td><td></td><td></td><td>17</td><td>22</td><td></td></tr><tr><td>Six rows</td><td></td><td>17</td><td></td><td>31</td><td></td></tr><tr><td>Eight rows</td><td></td><td>22</td><td>31</td><td></td><td>$\frac{9n}{2} + 4$</td></tr></table>		Number of squares in each row						2 squares	4 squares	6 squares	8 squares	n squares	Two rows						Four rows			17	22		Six rows		17		31		Eight rows		22	31		$\frac{9n}{2} + 4$	2	B1 for 4, 5 or 6 number cells correct B1 for $\frac{9n}{2} + 4$ oe						
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(b)	$\frac{1}{2}(r + 1)n + \frac{1}{2}r$ oe	1																																											
Communication seen in two of 2(b), 3, 4(c), 5(a), 5(b)		1																																											

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0607	63

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)

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2015	0607	63

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	