

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/53

Paper 5 (Core), maximum raw mark 24

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.

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1	(a)	8	1	bod for 'can't see' FT 3 × <i>their</i> (a)																																			
	(b)	Response implying some faces hidden within the large cube	1																																				
	(c)	24	1FT																																				
2	(a)	27	1																																				
	(b)	8	1																																				
	(c)	6	1																																				
3	(a)	4 by 4 by 4 cube drawn	2	If 0 scored, B1 for one correct face C opportunity																																			
	(b) (i)	8	1																																				
	(ii)	24	1																																				
4	<table border="1"> <thead> <tr> <th rowspan="2">Size of cube</th> <th rowspan="2">Total number of small cubes</th> <th colspan="4">Number of small cubes with</th> </tr> <tr> <th>0 crosses</th> <th>1 cross</th> <th>2 crosses</th> <th>3 crosses</th> </tr> </thead> <tbody> <tr> <td>2 by 2 by 2</td> <td>8</td> <td>0</td> <td>0</td> <td><u>0</u></td> <td><u>8</u></td> </tr> <tr> <td>3 by 3 by 3</td> <td>27</td> <td>1</td> <td>6</td> <td>12</td> <td>8</td> </tr> <tr> <td>4 by 4 by 4</td> <td>64</td> <td>8</td> <td>24</td> <td>24</td> <td>8</td> </tr> <tr> <td>5 by 5 by 5</td> <td><u>125</u></td> <td>27</td> <td>54</td> <td><u>36</u></td> <td>8</td> </tr> </tbody> </table>				Size of cube	Total number of small cubes	Number of small cubes with				0 crosses	1 cross	2 crosses	3 crosses	2 by 2 by 2	8	0	0	<u>0</u>	<u>8</u>	3 by 3 by 3	27	1	6	12	8	4 by 4 by 4	64	8	24	24	8	5 by 5 by 5	<u>125</u>	27	54	<u>36</u>	8	<p>B1 for 0 in row 1 column 5 B1 for 8 in row 1 column 6 B1 for 125 in row 4 column 2 B1 for 36 in row 4 column 5</p>
Size of cube	Total number of small cubes	Number of small cubes with																																					
		0 crosses	1 cross	2 crosses	3 crosses																																		
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				4																																			

Page 3	Mark Scheme	Syllabus	Paper
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5	(a)	1 small cube with 0 crosses gives 0 crosses 6 small cubes with 1 cross gives 6 crosses 12 small cubes with 2 crosses gives 24 crosses 8 small cubes with 3 crosses gives 24 crosses Total = 54 crosses	2	B1 for either 24
	(b)	9 54	1 1FT	FT <i>their</i> 9×6
	(c)	96	1	C opportunity
6	(a)	$(n - 2)^3$ oe isw	2	B1 for $[kn] - 2$ Or B1 for n^3 soi C opportunity
	(b)	$6(n - 1)^2$ oe isw	1	Accept $6(n - 2)^2$ from cubes C opportunity
	(c)	$12(n - 1)$ oe isw	1	$12(n - 2)$ from cubes C opportunity
		Communication in two of 3(a) , 5(c) , 6(a) , 6(b) or 6(c)	1	