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

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<table>
<tr><td>1</td><td>(a)</td><td>8</td><td>1</td><td></td></tr>
<tr><td></td><td>(b)</td><td>Response implying some faces hidden within the large cube</td><td>1</td><td>bod for ‘can’t see’</td></tr>
<tr><td></td><td>(c)</td><td>24</td><td>1FT</td><td>FT 3 × their (a)</td></tr>
<tr><td>2</td><td>(a)</td><td>27</td><td>1</td><td></td></tr>
<tr><td></td><td>(b)</td><td>8</td><td>1</td><td></td></tr>
<tr><td></td><td>(c)</td><td>6</td><td>1</td><td></td></tr>
<tr><td>3</td><td>(a)</td><td>4 by 4 by 4 cube drawn</td><td>2</td><td>If 0 scored,
B1 for one correct face
C opportunity</td></tr>
<tr><td></td><td>(b) (i)</td><td>8</td><td>1</td><td></td></tr>
<tr><td></td><td>(ii)</td><td>24</td><td>1</td><td></td></tr>
<tr><td>4</td><td colspan="2"><table>
<tr><td rowspan="2">Size of cube</td><td rowspan="2">Total number of small cubes</td><td colspan="4">Number of small cubes with</td></tr>
<tr><td>0 crosses</td><td>1 cross</td><td>2 crosses</td><td>3 crosses</td></tr>
<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>
</table></td><td>4</td><td>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</td></tr>
</table>

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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** *their* 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**	

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