



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/51**

Paper 5 (Core)

**May/June 2016**

MARK SCHEME

Maximum Mark: 24

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**Published**

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### 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 (a)</b>     | 3  | <b>1</b> |                          |
| <b>(b)</b>       | 2  | <b>1</b> |                          |
| <b>(c)</b>       | 40   | <b>1</b> |                          |
| <b>(d)</b>       | 15   | <b>1</b> | C opportunity            |
| <b>2 (a)</b>     | $\frac{9}{3}$ [= 3] and $\frac{3}{1}$ [= 3] oe seen      | <b>1</b> |                          |
| <b>(b)</b>       | $\frac{3}{2}$ or 1.5 and $\frac{2}{1}$ or 2 oe and No oe | <b>1</b> |                          |
| <b>(c) (i)</b>   | 147  | <b>1</b> | C opportunity            |
| <b>(ii)</b>      | 21 by 150 or 150 by 21                                   | <b>1</b> | FT <i>their(i)</i>       |
| <b>(d) (i)</b>   | 15   | <b>1</b> | C opportunity            |
| <b>(ii)</b>      | 15 by 78 or 78 by 15                                     | <b>1</b> | FT <i>their(i)</i>       |
| <b>3 (a) (i)</b> | 12   | <b>1</b> | C opportunity            |
| <b>(ii)</b>      | 72   | <b>1</b> | C opportunity            |
| <b>(iii)</b>     | 36   | <b>1</b> | FT $\frac{their(ii)}{2}$ |
| <b>(iv)</b>      | $n^2$ oe   | <b>1</b> |                          |
| <b>(b) (i)</b>   | 3  | <b>1</b> | C opportunity            |
| <b>(ii)</b>      | 6 by 20 or 20 by 6                                       | <b>1</b> | C opportunity            |

|        |                                 |          |       |
|--------|---------------------------------|----------|-------|
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| Question   | Answer   | Mark            | Part Marks                                 |                        |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
|--|--|-----------------|--|------------------------|-----|------------|---|---|---|---|---------|---|---|-----------------|-----------------|-------------------|----------------|---|----------------|----|------------------------|---|---|-----------|------------|--------------------|----------|---|---|----|---------|----------|---|-----------|----|------------------|---|--|
| (c)  | <table border="1"> <thead> <tr> <th><math>n</math></th> <th><math>x</math></th> <th><math>y</math></th> <th><math>z</math></th> <th>Dimensions</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>2</td> <td>4</td> <td>8</td> <td>4 by 10</td> </tr> <tr> <td>6</td> <td>2</td> <td><i>their</i> 12</td> <td><i>their</i> 72</td> <td><b>12* by 74*</b></td> </tr> <tr> <td><i>their</i> 3</td> <td>2</td> <td><i>their</i> 6</td> <td>18</td> <td><i>their</i> <math>y</math> by 20</td> </tr> <tr> <td>5</td> <td>7</td> <td><b>35</b></td> <td><b>175</b></td> <td><b>35* by 182*</b></td> </tr> <tr> <td><b>4</b></td> <td>1</td> <td>4</td> <td>16</td> <td>4 by 17</td> </tr> <tr> <td><b>2</b></td> <td>5</td> <td><b>10</b></td> <td>20</td> <td><b>10* by 25</b></td> </tr> </tbody> </table> | $n$             | $x$  | $y$                    | $z$ | Dimensions | 2 | 2 | 4 | 8 | 4 by 10 | 6 | 2 | <i>their</i> 12 | <i>their</i> 72 | <b>12* by 74*</b> | <i>their</i> 3 | 2 | <i>their</i> 6 | 18 | <i>their</i> $y$ by 20 | 5 | 7 | <b>35</b> | <b>175</b> | <b>35* by 182*</b> | <b>4</b> | 1 | 4 | 16 | 4 by 17 | <b>2</b> | 5 | <b>10</b> | 20 | <b>10* by 25</b> | 3 | <p>3 for all 8 cells</p> <p><b>*FT</b> <i>their</i> <math>y</math> by (<i>their</i> <math>z + 2</math>)</p> <p><b>*FT</b> <i>their</i> <math>y</math> by (<i>their</i> <math>z + 7</math>)</p> <p><b>*FT</b> <i>their</i> <math>y</math> by 25</p> <p><b>B2</b> for 6 or 7 cells correct<br/>or<br/><b>B1</b> for 4 or 5 cells correct</p> |
| $n$  | $x$  | $y$             | $z$  | Dimensions             |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| 2  | 2  | 4               | 8  | 4 by 10                |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| 6  | 2  | <i>their</i> 12 | <i>their</i> 72                            | <b>12* by 74*</b>      |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| <i>their</i> 3   | 2  | <i>their</i> 6  | 18   | <i>their</i> $y$ by 20 |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| 5  | 7  | <b>35</b>       | <b>175</b>                                 | <b>35* by 182*</b>     |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| <b>4</b>   | 1  | 4               | 16   | 4 by 17                |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| <b>2</b>   | 5  | <b>10</b>       | 20   | <b>10* by 25</b>       |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| 4 (a)  | $nx$ [by] $n^2x + x$ oe  | 2               | <b>B1</b> for each<br><b>C</b> opportunity |                        |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| (b)  | $nx : (n^2 + 1)x$ oe seen  | 1               |  |                        |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |
| Communication seen in at least 3 of 1(d), 2(c)(i), 2(d)(i), 3(a)(i), 3(a)(ii), 3(b)(i), 3(b)(ii) or 4(a) |  | 2               | <b>C1</b> if seen in 2 of these            |                        |     |            |   |   |   |   |         |   |   |                 |                 |                   |                |   |                |    |                        |   |   |           |            |                    |          |   |   |    |         |          |   |           |    |                  |   |  |