



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

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/33**

Paper 3 (Core)

**October/November 2016**

MARK SCHEME

Maximum Mark: 96

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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                                           | Marks                                        | Part Marks                                                                                                                                       |
|------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 (a)</b>     | trapezium<br>triangle<br>square<br>parallelogram | <b>1</b><br><b>1</b><br><b>1</b><br><b>1</b> |                                                                                                                                                  |
| <b>(b) (i)</b>   | 2                                                | <b>1</b>                                     |                                                                                                                                                  |
| <b>(ii)</b>      | 2 correct lines                                  | <b>2</b>                                     | <b>B1</b> for 1 correct line and no incorrect<br>or for 2 correct lines but $\geq 1$ incorrect                                                   |
| <b>2 (a) (i)</b> | 38                                               | <b>1</b>                                     |                                                                                                                                                  |
| <b>(ii)</b>      | 6                                                | <b>1</b>                                     |                                                                                                                                                  |
| <b>(iii)</b>     | 67                                               | <b>2</b>                                     | <b>B1</b> for 35 and 32 soi                                                                                                                      |
| <b>(b)</b>       | 4400                                             | <b>2</b>                                     | <b>B1</b> for 4375                                                                                                                               |
| <b>(c)</b>       | 5                                                | <b>3</b>                                     | <b>B2</b> for answer 4 or 4.25<br>or <b>M1</b> for $(175 + 12) \div 44$ soi                                                                      |
| <b>3 (a) (i)</b> | 130                                              | <b>1</b>                                     |                                                                                                                                                  |
| <b>(ii)</b>      | Obtuse                                           | <b>1</b>                                     |                                                                                                                                                  |
| <b>(b)</b>       | 147<br>57<br>33                                  | <b>1</b><br><b>1</b><br><b>1</b>             |                                                                                                                                                  |
| <b>4 (a)</b>     | Correct pattern                                  | <b>1</b>                                     |                                                                                                                                                  |
| <b>(b)</b>       | 13, 16                                           | <b>1</b>                                     |                                                                                                                                                  |
| <b>(c)</b>       | +3 oe                                            | <b>1</b>                                     |                                                                                                                                                  |
| <b>(d)</b>       | Sarah, with correct justification                | <b>3</b>                                     | <b>M2</b> for substituting one value bigger than<br>or equal to 2 into both formulae<br>or <b>M1</b> for any substituting into either<br>formula |

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|           |                |                          |                      |                                                                                                                                                                                                        |
|-----------|----------------|--------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5</b>  | <b>(a)</b>     | 62.5 oe                  | <b>2</b>             | <b>M1</b> for $6\frac{1}{4} \times 10$ oe                                                                                                                                                              |
|           | <b>(b)</b>     | 12 min 30 sec            | <b>4</b>             | <b>B3</b> for 12.5 minutes seen<br>or <b>M2</b> for $6.25 \div 30 \times 60$ oe<br>or <b>M1</b> for $6.25 \div 30$ oe                                                                                  |
| <b>6</b>  | <b>(a)</b>     | 57                       | <b>2</b>             | <b>B1</b> for 12 or 45 seen<br>or <b>M1</b> for $6 \times 2 + 9 \times 5$ seen                                                                                                                         |
|           | <b>(b)</b>     | $5x + 13$                | <b>2</b>             | <b>B1</b> for $5x$ or $[\+]13$ seen                                                                                                                                                                    |
|           | <b>(c)</b>     | $3(2x + 3y)$             | <b>1</b>             |                                                                                                                                                                                                        |
| <b>7</b>  | <b>(a)</b>     | 24                       | <b>2</b>             | <b>M1</b> for $6 \times 8 \div 2$ soi                                                                                                                                                                  |
|           | <b>(b)</b>     | 336                      | <b>3FT</b>           | <b>FT</b> $288 + 2 \times \text{their (a)}$<br><b>M2</b> for $12 \times 8$ , $12 \times 10$ and $12 \times 6$ soi<br>or <b>M1</b> for any two of $12 \times 8$ , $12 \times 10$ ,<br>$12 \times 6$ soi |
|           | <b>(c)</b>     | 288                      | <b>1FT</b>           | <b>FT</b> $12 \times \text{their (a)}$                                                                                                                                                                 |
| <b>8</b>  | <b>(a)</b>     | 16.11                    | <b>3</b>             | <b>M2</b> for $8.95 \div 5 \times 9$<br>or <b>M1</b> for $8.95 \div 5$                                                                                                                                 |
|           | <b>(b)</b>     | 1.38                     | <b>3</b>             | <b>M2</b> for $1.20 \times 1.15$ oe<br>or <b>M1</b> for $1.20 \times 0.15$ oe                                                                                                                          |
|           | <b>(c)</b>     | 12                       | <b>3</b>             | <b>M2</b> for $(5.50 - 4.84) \div 5.50$ oe<br>or <b>M1</b> for $4.84 \div 5.50$ oe                                                                                                                     |
| <b>9</b>  | <b>(a)</b>     | 10                       | <b>1</b>             |                                                                                                                                                                                                        |
|           | <b>(b)</b>     | 2                        | <b>3</b>             | <b>M1</b> for $6x - 3 = 9$ or for $2x - 1 = 3$<br><b>M1</b> for $6x = 12$ or for $2x = 4$                                                                                                              |
|           | <b>(c)</b>     | $4\frac{1}{2}$ oe        | <b>3</b>             | <b>M2</b> for $7x - 3x$ seen and $20 - 2$ seen<br>or <b>M1</b> for $7x - 3x$ seen or $20 - 2$ seen                                                                                                     |
| <b>10</b> | <b>(a)</b>     | [0.75, 1.5] 3, 6, 12, 24 | <b>1</b>             |                                                                                                                                                                                                        |
|           | <b>(b)</b>     | Correct curve            | <b>1</b><br><b>1</b> | <b>B1</b> for correct shape<br><b>B1</b> for crosses y-axis at approximately 3                                                                                                                         |
|           | <b>(c) (i)</b> | Correct line             | <b>1</b>             | Above where curve crosses y-axis                                                                                                                                                                       |
|           | <b>(ii)</b>    | 1.415 to 1.42            | <b>1</b>             |                                                                                                                                                                                                        |

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|    |     |                                                                               |        |                                                                                                                                                 |
|----|-----|-------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | (a) | Steve<br>Median = 27<br>IQR = 13                                              | 1<br>2 | B1 for 30 or 17 seen                                                                                                                            |
|    | (b) | Tam<br>Median = 23<br>IQR = 11 or 11.5                                        | 1<br>2 | M1 for 28 or 28.5 or 17 seen                                                                                                                    |
|    | (c) | Steve's plants are taller oe<br>Tam's plants have a more consistent height oe | 1<br>1 |                                                                                                                                                 |
| 12 | (a) | [0.455] 0.21, 0.335                                                           | 2      | M1 for $n \div 200$ soi                                                                                                                         |
|    | (b) | Large amount of trials oe                                                     | 1      |                                                                                                                                                 |
|    | (c) | 1675                                                                          | 2      | M1 for <i>their</i> $\frac{67}{200} \times 5000$                                                                                                |
|    | (d) | 0.665                                                                         | 2      | M1 for $0.455 + \text{their}(0.21)$                                                                                                             |
| 13 | (a) | $1.17 \times 10^{13}$                                                         | 2      | B1 for $9 \times 10^{16}$ seen                                                                                                                  |
|    | (b) | [0].00013                                                                     | 1      |                                                                                                                                                 |
|    | (c) | $\sqrt{\frac{E}{m}}$ oe                                                       | 2      | M1 for $c^2 = \frac{E}{m}$<br>or SC1 for answer $\frac{\sqrt{E}}{m}$                                                                            |
| 14 |     | 826 or 825.6 to 825.7                                                         | 6      | M1 for $3 \times 100$<br>M1 for $4 \times 80$<br>M1 for $2 \times 40$<br>M2 for $\frac{1}{2} \times \pi \times 80$<br>or M1 for $\pi \times 80$ |
| 15 | (a) | 8.13 or 8.127...                                                              | 2      | M1 for $4.6^2 + 6.7^2$ seen                                                                                                                     |
|    | (b) | 27.6 or 27.64...                                                              | 3      | M2 for $10.8 \div \sin 23$<br>or M1 for $\sin 23 = \frac{10.8}{y}$                                                                              |