



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

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/63**

Paper 6 (Extended)

**May/June 2016**

MARK SCHEME

Maximum Mark: 40

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**Published**

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

**Abbreviations**

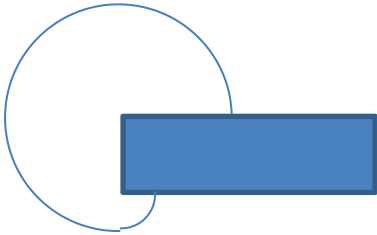
- awrt answers which round to
- cao correct answer only
- dep dependent
- FT follow through after error
- isw ignore subsequent working
- oe or equivalent
- SC Special Case
- nfww not from wrong working
- soi seen or implied

| A INVESTIGATION |         | AREAS AND PERIMETERS |               |  |
|-----------------|---------|----------------------|---------------|--|
| Question        | Answer  | Marks                | Part Marks    |  |
| 1 (a)           | 30 26   | 1                    |               |  |
|                 | (b) (i) | 6                    |               |  |
|                 | (ii)    | 18                   | 1FT           | FT $2 \times (\text{their } 6) + 6$  |
|                 | (c) (i) | $7x$ oe              | 1             |  |
|                 | (ii)    | $14+2x$ oe isw       | 1             |  |
|                 | (iii)   | 2.8 oe               | FT1           | FT their c(i) and c(ii) if same form<br>C opportunity                                |
| 2 (a)           | (i)     | $xy$ oe              | 1             |  |
|                 | (ii)    | $2x + 2y$ oe         | 1             |  |
|                 | (b)     | $xy - 2y = 2x$       | 1             |  |
|                 |         | $y(x - 2) = 2x$      | 1             |  |
| 3 (a)           | 2.4     | 1                    | C opportunity |  |
|                 | (b)     | -2                   | 1             | C opportunity  |
|                 | (c)     | 2 correct curves     | 2             | B1 for each branch<br>SC1 for correct curve but branches joined<br><br>C opportunity |
|                 | (d)     | $[0 \leq ]x \leq 2$  | 1             |  |



|        |                                 |             |          |
|--------|---------------------------------|-------------|----------|
| Page 3 | Mark Scheme                     | Syllabus 10 | Paper 63 |
|        | Cambridge IGCSE – May/June 2016 | 0607        | 63       |

| Question     | Answer   | Marks    | Part Marks           |
|--------------|--|----------|----------------------|
| <b>4 (a)</b> | $xy < 2x + 2y$<br>$xy - 2y < 2x$<br>$y(x - 2) < 2x$      | <b>1</b> |                      |
| <b>(b)</b>   | Point clearly between $x$ -axis, $x = 2$ and curve       | <b>1</b> |                      |
| <b>(c)</b>   | Valid check using co-ordinates where<br>Area < Perimeter | <b>1</b> | Not dependent on (b) |
| <b>5</b>     | [Yes,] showing solution of 6                             | <b>1</b> | C opportunity        |
|              | Communication in 2 from 1(c)(iii), 3(a), 3(b), 3(c) or 5 | <b>1</b> |                      |

| B MODELLING |   | HOW MUCH GRASS CAN THE GOAT EAT? |  |
|-------------|---|----------------------------------|--|
| Question    | Answer  | Marks                            | Part Marks   |
| 1           | 314 or 314.1...   | 1                                |  |
| 2 (a)       | 236 or 235.6...   | 1FT                              | FT $\frac{3}{4}$ (their 314)<br>C opportunity  |
| (b)         | Quarter circle shown on diagram or 5m radius implied                              | 1                                |  |
| 3 (a)       |  | 1                                | A $\frac{3}{4}$ circle and a $\frac{1}{4}$ circle of smaller radius<br>C opportunity                               |
| (b)         | 236 + $\pi$ oe or 238.8 or 238.76 ...   | 2FT                              | FT their 2(a)<br>M1 for $\frac{1}{4} \times \pi \times 2^2$ oe<br>C opportunity                                    |
| 4 (a) (i)   | $0 < x < 8$   | 2                                | B1 for each limit  |
| (ii)        | $\frac{3}{4}\pi x^2$ oe   | 1                                |  |
| (b) (i)     | $8 < x < 15$  | 2                                | B1 for each limit  |
| (ii)        | $\frac{3}{4}\pi x^2 + \frac{1}{4}\pi(x-8)^2$ oe isw                               | 2FT                              | FT their (a)(ii)<br>M1 for $+\frac{1}{4}\pi k^2$   |
| (c) (i)     | (their (b)(ii)) + $\frac{1}{4}\pi(x-15)^2$  | 2FT                              | FT their (b)(ii)<br>M1 for (their (b)(ii)) + $\frac{1}{4}\pi k^2$<br>or $+\frac{1}{4}\pi(x-15)^2$<br>C opportunity |

|        |                                 |             |          |
|--------|---------------------------------|-------------|----------|
| Page 5 | Mark Scheme                     | Syllabus 10 | Paper 63 |
|        | Cambridge IGCSE – May/June 2016 | 0607        | 63       |

| Question  | Answer   | Marks | Part Marks   |
|---|----------|-------|--|
| (ii)  | 16.5 [m] | 1FT   | FT any model including a term in $(x - a)^2$<br>C opportunity                                    |
| (d)   | 14.1 [m] | 2     | M1 for attempt at solving with 500 in any model including a term in $(x - a)^2$<br>C opportunity |
| Communication in 3 of 2(a), 3(a), 3(b), 4(c)(i), 4(c)(ii) or 4(d) |          | 2     | C1 if seen in 2 of these   |