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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/21**

Paper 2 (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.

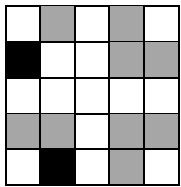
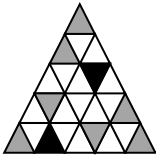
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|        |                                 |          |          |
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### Abbreviations

|      |                            |
|------|----------------------------|
| 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   |
|----------|---|----------|--|
| 1 (a)    | 200   | 1        |  |
| (b)      | $\frac{11}{20}$ oe  | 2        | M1 for $\frac{a}{20} - \frac{b}{20}$ with $a = 16$ or $b = 5$                |
| 2 (a)    |   | 1        |  |
| (b)      |  | 1        |  |
| 3        | $\frac{10 \times 300}{50 + 100}$<br>20  | M1<br>A1 | Accept any 3 from 4  |
| 4 (a)    | $2^6 \times 3^8 \times 5^2$   | 1        |  |
| (b)      | $2^3 \times 3^2$  | 1        |  |
| (c)      | $2^5 \times 3^4 \times 5^{[1]} \times 7^3$  | 2        | B1 for 3 of 4 factors correct  |
| 5 (a)    | 0.13, 0.36, 0.32, 0.19 oe   | 2        | B1 for 2 or 3 correct  |
| (b) (i)  | 1600  | 1        |  |
| (ii)     | Sufficient trials oe  | 1        |  |
| 6        | $x = 14$  | 3        | M2 for $3x - 2x - 2 = 12$<br>or M1 for $\frac{3x - 2(x+1)}{6} = 2$ or better |

| Question | Answer   | Mark   | Part Marks  |
|----------|--|--------|---|
| 7 (a)    |  | 2      | <b>B1</b> for 1 or 2 numbers omitted or misplaced   |
| (b) (i)  | 5, 7, 11, 13, 17   | 1FT    |   |
| (b) (ii) | 8, 10, 14, 16  | 1FT    |   |
| 8        | $x < 1.25$ oe  | 3      | With no wrong working seen<br><b>M1</b> for $2x + 3 > 6x - 2$<br><b>M1FT</b> for $3 + 2 > 6x - 2x$ oe<br><b>M1FT</b> for $x < \frac{b}{a}$ from $ax < b$ oe |
| 9 (a)    | 65   | 1      |   |
| (b)      | 115  | 1FT    | <b>FT</b> 180 – their (a)   |
| 10 (a)   | $3x(4x - 9y)$ final answer   | 2      | <b>B1</b> for $3(4x^2 - 9xy)$ or $x(12x - 27y)$   |
| (b)      | $(a + 2b)(4a - c)$ final answer  | 2      | <b>B1</b> for $4a(a + 2b) - c(a + 2b)$<br>or $a(4a - c) + 2b(4a - c)$   |
| 11       | $\frac{\sqrt{7}}{7}$   | 1      |   |
| 12       | $\mathbf{p} = \mathbf{a} + \mathbf{b}$ oe<br>$\mathbf{q} = 2\mathbf{a} + \mathbf{b}$ oe<br>$\mathbf{r} = -2\mathbf{a} + \mathbf{b}$ oe | 3      | <b>B1</b> for each  |
| 13       | $a = 2$<br>$b = 30$  | 1<br>1 |   |

|        |                                 |          |       |
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| Question | Answer               | Mark | Part Marks  |
|----------|----------------------|------|---|
| 14       | [a =] 3<br>[b =] -12 | 3    | <p>M1 for <math>kx(x - 4)</math><br/> M1 for substituting (8, 96) or <math>b = -4a</math> soi</p> <p>OR</p> <p>M1 for <math>0 = 4^2a + 4b</math> or <math>b = -4a</math> soi<br/> M1 for <math>96 = 8^2a + 8b</math></p> <p>OR</p> <p>M1 for <math>[y =]a((x - 2)^2 - 4)</math><br/> M1 for substituting (8, 96) or <math>b = -4a</math> soi</p> <p>If zero scored, SC1 for <math>a = 3</math>, or <math>b = -12</math></p> |