



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

[www.PapaCambridge.com](http://www.PapaCambridge.com)

---

**CAMBRIDGE IGCSE MATHEMATICS (US)**

**0444/02**

Paper 2 (Extended)

**For examination from 2012**

SPECIMEN SCORING GUIDE

---

**MAXIMUM SCORE: 70**

---

This document consists of **4** printed pages.



**Types of score**

**M** scores are given for a correct method.

**A** scores are given for an accurate answer following a correct method.

**B** scores are given for a correct statement or step.

**D** scores are given for a clear and appropriately accurate drawing.

**P** scores are given for accurate plotting of points.

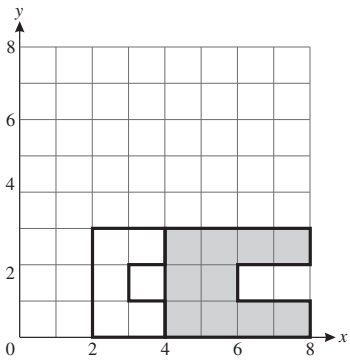
**E** scores are given for correctly explaining or establishing a given result.

**SC** scores are given for special cases that are worthy of some credit.

**Abbreviations**

|     |                           |
|-----|---------------------------|
| cao | correct answer only       |
| cso | correct solution only     |
| ft  | follow through            |
| isw | ignore subsequent working |
| oe  | or equivalent             |
| soi | seen or implied           |
| ww  | without working           |
| www | without wrong working     |

|                  |   |           |   |
|------------------|---|-----------|---|
| <b>1 (a)</b>     | any non-square $\sqrt{\quad}$ or $\pi$ or $e$ | <b>B1</b> | $\sqrt{5}$ but not $\sqrt{9}$ , $\sqrt{2}/3$ is OK, $\sin 20$ etc but not $\sin 30$<br>No fractions, decimals, or negatives |
| <b>(b)</b>       | 61 or 67                                      | <b>B1</b> | allow 61 <b>and</b> 67 but no other pairs<br>[2]  |
| <b>2</b>         | 20  | <b>B2</b> | <b>M1</b> for $2.5 \div 0.125$ oe<br>[2]  |
| <b>3 (a)</b>     | 35 500  | <b>B1</b> | <b>B1</b> for $16 \times 10^{14}$ or 1 600 000 000 000 000 oe<br>[4]  |
| <b>(b)</b>       | $6.9 \times 10^{-3}$                          | <b>B1</b> |   |
| <b>(c)</b>       | $1.6 \times 10^{15}$                          | <b>B2</b> |   |
| <b>4 (a) (i)</b> | 1   | <b>B1</b> | <b>B1</b><br><b>B1</b><br><b>B1</b><br>[3]  |
| <b>(ii)</b>      | 6 (or -6)                                     | <b>B1</b> |   |
| <b>(b)</b>       | 7   | <b>B1</b> |   |
| <b>5 (a)</b>     | $\frac{12}{18}$ oe                            | <b>B1</b> | Accept equivalent fractions, decimals, % but not ratio. isw cancelling/conversion   |
| <b>(b)</b>       | $\frac{3}{12}$                                | <b>B2</b> | <b>B1</b> for any fraction over 12<br>[3]   |
| <b>6 (a)</b>     | 570   | <b>B1</b> | <b>B1</b><br>[2]  |
| <b>(b)</b>       | Neptune                                       | <b>B1</b> |   |

|        |   |                                     |   |
|--------|---|-------------------------------------|---|
| 7 (a)  | $4x^2 - 7x - 7x + 49$ or better   | <b>B2</b>                           | <b>B1</b> for any 3 of these terms seen in work   |
| (b)    | $3y(x + 2y)(x - 2y)$  | <b>B2</b>                           | <b>B1</b> for $3y(x^2 - 4y^2)$ or $(x - 2y)(3xy + 6y^2)$ or $(x + 2y)(3xy - 6y^2)$ or better seen<br>[4]  |
| 8 (a)  | 36  | <b>B2</b>                           | <b>M1</b> for $2 \times 2 \times 3 \times 3$ oe   |
| (b)    | 126   | <b>B2</b>                           | <b>M1</b> for $2 \times 3 \times 3 \times 7$ oe<br>[4]  |
| 9 (a)  | $x < 3.5$ oe  | <b>B2</b>                           | <b>M1</b> for 3.5 oe seen or $4x < 14$ seen   |
| (b)    | ft their <b>inequality</b> from (a)   | <b>B1 ft</b>                        | [3]   |
| 10 (a) | Plots (65, 20), (80, 15) and (60, 25) correctly                                     | <b>P2</b>                           | <b>P1</b> for 2 plots correct   |
| (b)    | Negative  | <b>B1</b>                           |   |
| (c)    | ft their reading at 50 hot drinks from a ruled line of best fit                     | <b>B2 ft</b>                        | <b>B1</b> for attempt to read at 50 without line of best fit<br>[5]   |
| 11 (a) | Rotation (only)<br>$90^\circ$ counterclockwise oe<br>about the origin (0, 0) oe     | <b>B1</b><br><b>B1</b><br><b>B1</b> |   |
| (b)    |  | <b>P2</b>                           | If <b>P0</b> , <b>P1</b> for stretch y-axis invariant line scale factor $k > 0$ ( $k \neq 1$ ), or for stretch x-axis invariant line scale factor 2, or for any horizontal translation of the correct solution<br>[5] |
| 12     | $a = 4, b = 2$  | <b>B1 B1</b>                        | [2]   |
| 13 (a) | $\begin{pmatrix} 12 \\ 1 \end{pmatrix}$   | <b>B2</b>                           | <b>B1</b> for either correct  |
| (b)    | $\sqrt{20}$ oe  | <b>B2</b>                           | If <b>B0</b> award <b>M1</b> for $(\pm 4)^2 + 2^2$ or better seen<br>[4]  |

|                   |  |  |   |
|-------------------|--|--|---|
| <b>14 (a)</b>     | $y = -2x + 4$ oe   | <b>B2</b>  | After <b>B0</b> , <b>B1</b> for $y = mx + 4$ ( $m \neq 0$ )<br>or for $y = -2x + c$                               |
| <b>(b)</b>        | slope of perp = $\frac{1}{2}$<br>midpoint = (1, 2)<br>$2 = \frac{1}{2} \times 1 + c$<br>$y = \frac{1}{2}x + \frac{3}{2}$ or any correct equivalent | <b>B1</b><br><b>B1</b><br><b>M1</b><br><b>A1</b> | For substituting correctly into the equation of a line formula. <b>M1</b> can imply <b>B1 B1</b> if correct       |
|                   |  |  | [6]   |
| <b>15 (a) (i)</b> | Sketches $x + y = 5$   | <b>B1</b>  | Line with negative slope with intercepts in positive $x$ and $y$  |
| <b>(ii)</b>       | Sketches $y = 1$   | <b>B1</b>  | Horizontal line with $y = 1$ indicated  |
| <b>(iii)</b>      | Sketches $y = 2x$  | <b>B1</b>  | Positive slope passing through 0  |
| <b>(b)</b>        | Writes $R$ in correct region   | <b>B1</b>  |   |
|                   |  |  | [4]   |
| <b>16 (a)</b>     | $\sqrt{3}$   | <b>B1</b>  | not $\frac{\sqrt{3}}{1}$  |
| <b>(b)</b>        | $14\sqrt{3}$   | <b>B2</b>  | <b>B1</b> for $10\sqrt{3}$ or $4\sqrt{3}$ seen  |
| <b>(c)</b>        | $8 + 2\sqrt{15}$ or $2(4 + \sqrt{15})$   | <b>B2</b>  | <b>M1</b> for $5 + \sqrt{15} + \sqrt{15} + 3$<br>or $\sqrt{25} + \sqrt{15} + \sqrt{15} + \sqrt{9}$                |
|                   |  |  | [5]   |
| <b>17 (a)</b>     | $c = 19, d = 3$  | <b>B3</b>  | <b>B1</b> for $d = 3$<br>or <b>M1</b> for $(x + 3)^2 - 9 + c = (x + d)^2 + 10$                                    |
| <b>(b)</b>        | 10   | <b>B1</b>  |   |
|                   |  |  | [4]   |
| <b>18 (a)</b>     | $wf = 300\,000$ oe   | <b>B2</b>  | <b>M1</b> $wf = k$ and <b>A1</b> $k = 300\,000$   |
| <b>(b)</b>        | 500  | <b>B1</b>  |   |
|                   |  |  | [3]   |
| <b>19 (a)</b>     | $24\pi$ www  | <b>B2</b>  | Condone $24 \times \pi$<br><b>M1</b> for $\frac{\pi \times 9 \times 8}{3}$ or $\frac{\pi \times 3^2 \times 8}{3}$ |
|                   | $\text{cm}^3$  | <b>B1</b>  | Independent units mark  |
| <b>(b)</b>        | 436  | <b>B2</b>  | <b>M1</b> for 4 or $2^2$ seen as scale factor   |
|                   |  |  | [5]   |