

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series**0581 MATHEMATICS****0581/31**

Paper 2 – Core, maximum raw mark 104

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Abbreviations

| | |
|------|----------------------------|
| 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 |

| Qu. | Answers | Mark | Part Marks | |
|-------------|---|-----------------------------|---|---|
| 1 | (a) (i) 540 ÷ 9 <i>their</i> 60 × (9 + 7 + 4 + 5) 1500 ÷ 1000 | M1 | Alternative method | |
| | | M1FT | M1 540 ÷ 1000 | |
| | | A1 | M1FT <i>their</i> 0.54 ÷ 9 A1 0.06 × (9 + 7 + 4 + 5) | |
| | | | If 0 scored SC1 for 0.54 + 0.42 + 0.24 + 0.3 | |
| | (ii) | 300 | 2 | M1 for 5 ÷ (9 + 7 + 4 + 5) × 1500 or (540/9) × 5 or 60 × 5 |
| | (iii) | 210 | 2FT | M1 for 70 ÷ 100 × <i>their</i> (a)(ii) oe |
| (b) | (i) | 2.25 | 1 | |
| | (ii) | 52.6[0] | 2 | B1 for 14 or (7/8) × 16 × 3.4[0] |
| | (iii) | 46.1 | 3FT | M2 for (<i>their</i> (b)(ii) – 36) ÷ 36 × 100 or M1 for <i>their</i> (b)(ii) – 36 M2 for <i>their</i> (b)(ii) ÷ 36 × 100 – 100 M1 for <i>their</i> (b)(ii) ÷ 36 [× 100] |
| 2 | (a) (i) | Trapezium | 1 | |
| | | (ii) | 16 cm ² | 2 1 |
| | (b) | Rotation | B1 | Independent marks |
| | | 90°[anti-clockwise] oe | B1 | |
| | | [centre] (–2, –8) | B1 | |
| | (c) | (i) | Correct reflection in y = 0 | 2 |
| (ii) | | Translation 5 left and 7 up | 2 | SC1 for one of 5 left or 7 up |

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| | (iii) | Correct Enlargement | 2 | SC1 for enlargement, SF ½, but incorrectly placed. |
| | (d) | Obtuse angle marked | 1 | |
| 3 | (a) (i) | 4 points correctly plotted. | 2 | B1 for 1 correct |
| | (ii) | Correct continuous ruled line of best fit. | 1 | Dependent on at least 8 points on graph |
| | (iii) | Distance on their line of best fit. | 1FT | FT their single straight line in part (ii) . |
| | (iv) | Negative | 1 | |
| | (v) | Faster the time, the longer the distance oe | 1 | |
| | (b) (i) | 11.7 or 11.69... NFWW | 2 | M1 for Attempt at $\sum f \div 12$ |
| | (ii) | 41.7 or 41.66 to 41.67 | 2 | B1 for $\frac{5}{12}$ seen |
| | (iii) | 2.45 | 1 | |
| 4 | (a) | $x + x + 180 = 480$ $2x = 300$ | M1 M1 | |
| | (b) | 1060 [cm] | 2 | M1 for $2 \times 480 + 2 \times (20 + 30)$ oe |
| | (c) (i) | 16 500 | 2 | M1 for $30 \times 150 + 50 \times 180 + 20 \times 150$ oe |
| | (ii) | 2 805 000 | 1FT | FT their (c)(i) $\times 170$ |
| | (iii) | 44.9 or 44-88 | 2FT | FT their (c)(ii) $\div 100^3 \times 16$ M1 for their (c)(ii) $\times 16$ |

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| 5 | (a) | 6003 076 | 1 | | |
| | (b) | (i) | -0.375 | 1 | |
| | | (ii) | -2.2 | 1 | |
| | (c) | (iii) | > | 1FT | FT their answers to (i) and (ii) |
| | | | 3945, 3955 | 1, 1 | SC1 for both correct but reversed |
| | (d) | 1.667 cao | 2 | B1 for $1\frac{2}{3}$ or better | |
| | (e) | (i) | 1 | 1 | |
| | | (ii) | $\frac{1}{125}$ | 1 | |
| (iii) | | $24x^9$ | 2 | B1 for $24x^k$ or kx^9 | |
| 6 | (a) | (i) | 4, 7, 4 | 2 | B1 for 2 correct |
| | | (ii) | 7 points correctly plotted Correct curve through the points | 3FT 1 | B2 for 5 or 6 correct B1 for 3 or 4 correct |
| | (b) | (iii) | $x = 0$ | 1 | |
| | | (iv) | 2.7 to 2.9, -2.7 to -2.9 | 1, 1 | |
| | (c) | (i) | Points correctly plotted and a ruled line through points and beyond them. | 2 | B1 for 1 correct plot. (even if line is not drawn) |
| | | (ii) | $[y =] -2x + 4$ | 3 | B2 for $-2x + j$ or B1 for $kx + 4$ $k \neq 0$ or [gradient =] $\frac{\text{rise}}{\text{run}}$ correct values |
| | | (iii) | (-1.2 to -1.4, 6.4 to 6.6) | 1 | |
| 7 | (a) | 106 to 110 | 1 | | |
| | (b) | (i) | Correct bisector of AB constructed with 2 pairs of arcs. | 2 | B1 for correct bisector |
| | | (ii) | Correct bisector of angle ABC with arcs | 2 | B1 for correct bisector without arcs |
| | (c) | (iii) | T marked at intersection of their bisectors | 1FT | |

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| (c) | 24.4[km] to 26.0[km] | 2FT | FT <i>their AT</i> B1 for <i>their AT</i> correctly measured. |
| (d) | Circle, radius 7.5(± 0.2)cm centre <i>T</i> . | 2FT | FT <i>their</i> intersection SC1 for circle centre <i>T</i> , incorrect radius. |
| (e) | No It is outside the circle. oe | 1FT | FT <i>their</i> circle. |
| 8 | (a) (i) Correct diagram with scale | 3 | B1 scale correct. B1 for all widths the same B1 for all 6 heights correct |
| | (ii) 10 to 12 cao | 1 | |
| | (iii) $\frac{19}{120}$ or 0.158[3....] or 15.8[3.....]% | 1 | |
| | (b) Probability must be between 0 and 1 oe | 1 | |
| | (c) (i) $\frac{9}{20}$ or 0.45 or 45% | 1 | |
| | (ii) 0 oe | 1 | |
| 9 | (a) (i) 18 23 28 | 1, 1, 1 | Allow one mark for each addition of 5 to the previous answer |
| | (ii) Add 5 oe | 1 | |
| | (iii) $5n - 2$ oe | 2 | B1 for $5n + j$ or $kn - 2$ $k \neq 0$ |
| | (iv) 73 | 1FT | FT <i>their (a)(iii)</i> if linear. |
| | (b) (i) 10 14 | 1, 1 | Allow 1 mark for addition of 4 on their value for 3rd diagram. |
| | (ii) $4n - 2$ oe | 2 | B1 for $4n + j$ or $kn - 2$ $k \neq 0$ |