

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0580 MATHEMATICS

0580/32

Paper 3 (Core), maximum raw mark 104

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|---------------|--|-----------------|--------------|
| Page 2 | Mark Scheme | Syllabus | Paper |
| | Cambridge IGCSE – October/November 2014 | 0580 | 32 |

Abbreviations

| | |
|-----|----------------------------|
| cao | correct answer only |
| dep | dependent |
| FT | follow through after error |
| isw | ignore subsequent working |
| oe | or equivalent |
| SC | Special Case |
| nfw | not from wrong working |
| soi | seen or implied |

| Question. | Answers | Mark | Part Marks |
|----------------|---|------------|---|
| 1 (a) | $4 \times 1000 \times 1000$ or 4×1000^2 | 1 | |
| (b) | $0.95 \times 4\,000\,000$ oe | 1 | |
| (c) (i) | $3 \div 19 \times 3\,800\,000$ | 2 | M1 for $3 \div (11 + 5 + 3)$ or $3\,800\,000 \div (11 + 5 + 3)$ |
| (ii) | 2 200 000 | 1 | |
| (iii) | 15 710 | 2FT | M1FT for <i>their</i> $2\,200\,000 \div 140$ |
| (d) (i) | $1 - \left(\frac{24}{40} + \frac{5}{40} \right)$ | M2 | M1 for $\frac{24}{40}$ or $\frac{5}{40}$ or $\frac{3 \times 8}{5 \times 8}$ or $\frac{1 \times 5}{8 \times 5}$ |
| | $\frac{11}{40}$ or $\frac{11\text{k}}{40\text{k}}$ final answer | A1 | If zero scored, SC3 for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000} =$ $\left[\frac{11}{40} \text{ or } \frac{11\text{k}}{40\text{k}} \right]$ or SC2 for $1 - (0.6 + 0.125) = 0.275 = \frac{275}{1000}$ followed by incorrect fraction SC1 for $\frac{11}{40}$ or $\frac{11\text{k}}{40\text{k}}$ final answer |
| (ii) | 165 000 | 1FT | FT <i>their</i> (d)(i) $\times 600\,000$ |
| (e) | 281 216 cao | 3 | M2 for $250\,000 \times 1.04^3$ oe or M1 for $250\,000 \times 1.04^2$ oe If zero scored, SC1 for 31 216 |

| Page 3 | Mark Scheme | Syllabus | Paper |
|--------|---|----------|-------|
| | Cambridge IGCSE – October/November 2014 | 0580 | 32 |

| | | | | | |
|-----|--------------------------|------------------------------|---|---|---|
| 2 | (a) | Octagon | 1 | | |
| | (b) | 135 | 3 | M2 for $180 - (360 \div 8)$ or M2 for $\frac{(8-2) \times 180}{8}$ or M1 for $(360 \div 8)$ or M1 for $(8-2) \times 180$ | |
| | (c) | (i) | 22 29 36 | 2 | B1 for two terms in correct places or 2 terms with a difference of 7. |
| | | (ii) | $7n + 1$ oe | 2 | B1 for $7n + j$ or $kn + 1$ ($k \neq 0$) |
| | | (iii) | 71 | 1FT | FT for <i>their</i> (c)(ii) if linear |
| | | (iv) | 13 nfww | 2 | M1FT for <i>their</i> (c)(ii) = 92 or M1 for $(92 - 1) \div 7$ or $91 \div 7$ or M1 for $7 \times 13 + 1 = 92$ |
| 3 | (a) | Reflection [in] <i>AB</i> | 1 1 | | |
| | | Rotation 180° oe | 1 1 | | |
| | | Midpoint of <i>AB</i> oe | 1 | | |
| | (b) | (i) | Translation 2 left and 7 up | 2 | SC1 for one of 7 up or 2 left |
| | | (ii) | Correct Enlargement | 2 | SC1 for enlargement scale factor 3 but incorrectly placed |
| (c) | Correct line of symmetry | 1FT | FT is <i>their</i> (b)(ii) | | |
| 4 | (a) | (i) | Line (0700, 0) to (08 40, 310) Horizontal line 2 squares Line <i>their</i> (08 50, 310) to (09 40, 470) | 1 1FT 1FT | Lines need not be ruled and could be curves with positive gradients throughout. |
| | | (ii) | 2[h]40[min] | 1 | |
| | | (iii) | 176.25 | 2 | M1FT for $470 \div$ <i>their</i> (a)(ii) |
| | (b) | (i) | 2[h]21[min] | 2 | M1 for $470 \div 200$ soi |
| | | (ii) | Line from (07 45, 470) to (<i>their</i> 10 06, 0) | 2FT | B1 for (07 45, 470) correctly plotted or B1FT for (<i>their</i> 10 06, 0) correctly plotted |
| | (c) | 290 to 300 | 1FT | (Correct or follow through) FT from intersection on <i>their</i> graph. | |

| Page 4 | Mark Scheme | Syllabus | Paper |
|--------|---|----------|-------|
| | Cambridge IGCSE – October/November 2014 | 0580 | 32 |

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| 5 | (a) (i) | Trapezium | 1 | |
| | (ii) | Pentagon | 1 | |
| | (b) (i) | $[BC =] \sqrt{52^2 - 20^2} [= 48]$ | B2 | B1 for $52^2 = BC^2 + (70 - 50)^2$ or $52^2 = BC^2 + 20^2$ or $BC^2 = 52^2 - 20^2$ |
| | (ii) | 3936 or 3940 | 2 | M1 for $(70 + 12) \times 48$ oe |
| | (c) (i) | 220 | 1 | |
| | (ii) | 2880 | 2 | M1 for $0.5(50 + 70) \times 48$ oe |
| | (d) | 108 | 3 | B1 for $[AE =] 24$ M1 for $0.5 \times \textit{their AE} \times 9$ |
| | (e) | 948 | 1FT | FT <i>their (b)(ii) – (their (c)(ii) + their (d))</i> |
| 6 | (a) (i) | -5 -8 5 2.5 | 2 | B1 for 3 correct |
| | (ii) | 8 points correctly plotted Correct curve | B3FT 1 | B2FT for 6 or 7 correct points B1FT for 4 or 5 correct points |
| | (iii) | Ruled line $y = 6$ drawn 3.1 to 3.6 | 1 1 | Independent marks |
| | (b) (i) | -5 -1 3 | 2 | B1 for 2 correct |
| | (ii) | Ruled correct line | 1 | |
| | (iii) | $\frac{1}{2}$ oe | 1 | |
| | (c) | 7.2 to 7.6 -5.2 to -5.6 | 1FT 1FT | |
| 7 | (a) (i) | 15.5 | 2 | M1 Sum of the 10 items of data $\div 10$ |
| | (ii) | 16 | 2 | M1 for ordering at least first or last 6 items or for 14 and 18 indicated |
| | (iii) | 26 | 1 | |
| | (b) (i) | 6 correct bars | 2 | B1 for 4 or 5 correct bars or 6 correct heights |
| | (ii) | Aug[ust] | 1 | |
| | (iii) | $\frac{4}{12}$ oe | 1 | |

| Page 5 | Mark Scheme | Syllabus | Paper |
|--------|---|----------|-------|
| | Cambridge IGCSE – October/November 2014 | 0580 | 32 |

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| 8 | (a) (i) | [0]63 to [0]67 | 1 | |
| | (ii) | 8 | 2 | B1 for 6 ± 0.2 [cm] seen in working |
| | (b) | <i>QR</i> on bearing 123° to 127° 9.3 cm to 9.7 cm continuous ruled line | 1 2FT | B1 for bearing of 123° to 127° M1FT for $76 \div$ <i>their (a)(ii)</i> soi by calculation or distance on diagram |
| | (c) (i) | 297 – 270 or 90 – (360 – 297) | 1 | |
| | (ii) | 7.6 cao nfw | 3 | M1 for $\cos 27^\circ = \frac{PW}{8.5}$ or $\sin 63^\circ = \frac{PW}{8.5}$ or better A1 for 7.57(...) B1ind for correctly rounding <i>their</i> 7.57(...) to 2 sig figs if <i>their</i> 7.57(...) is to 3 sig figs or more |
| | (d) | Correct continuous perpendicular bisector of <i>AB</i> with two pairs of correct arcs | 2 | B1 for correct continuous bisector without arc or with incorrect arcs |
| 9 | (a) (i) | 338.4[0] | 3 | M2 for $5 \times 36 + 660 \times 0.24$ or better or M1 for 5×36 or 660×0.24 or better |
| | (ii) | 389.16 | 2FT | M1FT for $1.15 \times$ <i>their (a)(i)</i> oe |
| | (b) (i) | 60 | 1 | |
| | (ii) | 108 | 1FT | $1.8 \times$ <i>their (b)(i)</i> |
| | (iii) | 497.16 | 1FT | FT <i>their (a)(ii) + their (b)(ii)</i> |
| (c) | 31 nfw | 2FT | M1FT for $\frac{\textit{their (b)(iii)}}{1600} \times 100$ | |