

**MARK SCHEME for the October/November 2010 question paper  
for the guidance of teachers**

**0580 MATHEMATICS**

**0580/12**

Paper 1 (Core), maximum raw mark 56

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### Abbreviations

|     |                            |
|-----|----------------------------|
| cao | correct answer only        |
| cso | correct solution only      |
| dep | dependent                  |
| ft  | follow through after error |
| isw | ignore subsequent working  |
| oe  | or equivalent              |
| SC  | Special Case               |
| www | without wrong working      |

| Qu. | Answers  | Mark     | Part Marks   |
|-----|--|----------|--|
| 1   | 134  | 1        |  |
| 2   | 512(.00)   | 1        |  |
| 3   | (a) $-7$<br>(b) $(+ )6$                                  | 1<br>1ft | ft $-1$ – their (a)  |
| 4   | $1.43 \times 10^9$ final answer                          | 2        | <b>B1</b> for answers of $1.43 \times 10^n$ ( $n \neq 0$ )<br>or figs 143 or $1.429(\dots) \times 10^9$<br><b>SC1</b> for answer of $1.42 \times 10^9$<br>or $1.4 \times 10^9$                     |
| 5   | $899.5 \leq w < 900.5$                                   | 2        | <b>B1</b> for 1 correct or<br><b>SC1</b> for correct but reversed.   |
| 6   | 10 www   | 2        | <b>M1</b> for $15 \div 6$ soi<br>or <b>B1</b> for $\frac{6}{4} = \frac{15}{EF}$ oe or better   |
| 7   | 662.794 to 663.304.... final answer                      | 3        | <b>M2</b> for $600 \times 1.034^3$ or<br><b>M1</b> for $(600 + 0.034 \times 600) \times 0.034$<br>or $(600 \times 1.034) \times 0.034$ and<br><b>M1 dep</b> correct method for the remaining time. |
| 8   | (a) $4p(2q + 3r)$<br>(b) $(p =) \frac{s}{4(2q + 3r)}$ oe | 2<br>1ft | <b>B1</b> for $p(8q + 12r)$ or $2p(4q + 6r)$<br>or $4p(aq + br)$ $a, b$ integers or $4(2pq + 3pr)$<br>ft if p is a common factor in (a) or in working in (b)                                       |
| 9   | (a) 245<br>(b) 360                                       | 1<br>2   | <b>M1</b> for $\frac{3}{7} \times 840$ or<br><b>SC1</b> for answer 480   |

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|    |   |     |  |
|----|---|-----|--|
| 10 | (a) $\frac{15}{43}$ cao final answer            | 1   | If zero in (a) and (b) then<br><b>SC1</b> if both (a) and (b) are correct decimals or percentages as answers.<br>(Mark as 0 for (a) and SC1 for (b))   |
|    | (b) $\frac{42}{43}$ cao final answer            | 1   |  |
|    | (c) 0 or $\frac{0}{43}$                         | 1   |  |
| 11 | (a) (x=) 35                                     | 2   | <b>B1</b> for angle $BDC = 90$ soi<br>May be marked on the diagram   |
|    | (b) (y=) 55                                     | 1ft | ft 90 – their x  |
| 12 | (a) (i) (x=) 6                                  | 1   |  |
|    | (ii) (x=) -2                                    | 1   |  |
|    | (b) 3   | 1   |  |
| 13 | (a) Two stage proof                             | 2   | <b>M1</b> for $\frac{1 \times 7 + 2 \times 5}{5 \times 7}$ or $\frac{1 \times 7}{5 \times 7} + \frac{2 \times 5}{5 \times 7}$<br>or alt $\frac{4}{5} - \frac{2}{7}$ or $\frac{5}{7} - \frac{1}{5}$<br><b>M1dep</b> for 1– their $\frac{17}{35}$ or $\frac{18}{35} + \frac{17}{35} = \frac{35}{35}$<br>or alt $\frac{28-10}{35}$ oe or $\frac{25-7}{35}$ oe |
|    | (b) $\frac{6}{35}$ final answer                 | 2   | <b>M1</b> for $\frac{1}{3} \times \frac{18}{35}$ oe<br>If zero <b>SC1</b> for answer of $\frac{12}{35}$  |
| 14 | (a) (i) $\frac{10 \times 8 - 0.5 \times 90}{5}$ | 1   | <b>B1</b> for 80 (from $10 \times 8$ ) or 45 (from $0.5 \times 90$ ) or 5 (denominator) seen   |
|    | (ii) 7(.0) cao                                  | 2   |  |
|    | (b) 5.92 or 5.919(.....)                        | 1   |  |
| 15 | (a) (i) 175                                     | 1   |  |
|    | (ii) 70   | 1   |  |
|    | (b) 2 points plotted correctly ( $\pm 1$ mm).   | 1   |  |
|    | (c) Positive                                    | 1   |  |

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|    |  |             |  |
|----|--|-------------|--|
| 16 | (a) Rotation or enlargement<br>180° (SF) –1<br>(about or centre) origin oe | 1<br>1<br>1 | Two transformations named, zero for (a)<br>Independent<br>Independent        |
|    | (b) Correct translation<br>5 right and 3 down                              | 2           | <b>B1</b> for 5 right or 3 down applied                                      |
| 17 | (a) $\begin{pmatrix} -12 \\ -3 \end{pmatrix}$                              | 2           | <b>B1</b> for 1 component correct.   |
|    | (b) $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$                                | 1           |  |
|    | (c) (i) Vector <b>AB</b> drawn<br>(ii) 134° to 136°                        | 1<br>1      | Diagonal line, ignore working lines  |
| 18 | (a) (i) 12.7 to 12.73  | 2           | <b>M1</b> for $\frac{x}{18} = \sin 45$ or $\frac{x}{18} = \cos 45$ or better |
|    | (ii) 161 to 162.1  | 2ft         | <b>M1</b> for method for squaring their (a)(i).                              |
|    | (b) 254 to 255   | 2           | <b>M1</b> for $\pi \times 9^2$   |