

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**0580 MATHEMATICS**

**0580/13**

Paper 1 (Core), maximum raw mark 56

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.

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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                                                                                                                                                                |
|-----------|----------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b>  | 25                                                       | <b>1</b>               |                                                                                                                                                                           |
| <b>2</b>  | (a) 105 002<br>(b) 110 000                               | <b>1</b><br><b>1ft</b> |                                                                                                                                                                           |
| <b>3</b>  | $8x + 5y$ cao                                            | <b>2</b>               | <b>B1</b> $8x$ or $5y$ in final answer                                                                                                                                    |
| <b>4</b>  | (a) $7 \times (6 - 3) + 5$<br>(b) $8 - 6 \times (4 - 1)$ | <b>1</b><br><b>1</b>   |                                                                                                                                                                           |
| <b>5</b>  | $\frac{11}{21}$ , 52.4%, 0.525, $\frac{111}{211}$        | <b>2</b>               | <b>M1</b> for conversion to decimals or %, allow 1 error<br>0.5238..., 0.524, 0.525, 0.526<br>or <b>B1</b> for 3 in correct order<br><b>SC1</b> correct but reverse order |
| <b>6</b>  | 8                                                        | <b>2</b>               | <b>M1</b> for 240 or 0.3 seen or figs $24 \div$ figs 3                                                                                                                    |
| <b>7</b>  | 112                                                      | <b>2</b>               | <b>M1</b> for $240 \div (7 + 8) \times 7$                                                                                                                                 |
| <b>8</b>  | (a) 211 cao<br>(b) 216 cao                               | <b>1</b><br><b>1</b>   |                                                                                                                                                                           |
| <b>9</b>  | (\$)138                                                  | <b>2</b>               | <b>M1</b> for $120 \times 1.15$ oe<br><b>SC1</b> answer 18                                                                                                                |
| <b>10</b> | $(x =) -3$ $(y =) 5$                                     | <b>2</b>               | <b>M1</b> for correctly eliminating one variable                                                                                                                          |
| <b>11</b> | $(x =) 3.5$                                              | <b>2</b>               | <b>M1</b> for $2x - 3 = 2 \times 2$ or better<br>$\frac{2x}{2} = 2 + \frac{3}{2}$                                                                                         |
| <b>12</b> | (a) $1.28 \times 10^5$<br>(b) 128 500                    | <b>1</b><br><b>1</b>   |                                                                                                                                                                           |
| <b>13</b> | 882                                                      | <b>2</b>               | <b>M1</b> $800 \times 1.05 \times 1.05$                                                                                                                                   |
| <b>14</b> | $5h(g^2 + 2j)$                                           | <b>2</b>               | <b>B1</b> for $5(g^2h + 2hj)$ or for $h(5g^2 + 10j)$                                                                                                                      |
| <b>15</b> | 298.79 cao                                               | <b>2</b>               | <b>M1</b> for $500 \div 1.6734$                                                                                                                                           |
| <b>16</b> | $20x^9$ cao                                              | <b>2</b>               | <b>B1</b> for $kx^9$ or $20x^k$                                                                                                                                           |
| <b>17</b> | 130                                                      | <b>2</b>               | <b>M1</b> for $26 \times 500\,000$ or 1 cm represents 5 km oe                                                                                                             |

|               |                                       |                 |              |
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|           |                                                                                                                       |                                              |                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>18</b> | $\frac{1}{9}, \frac{1}{4}$<br>$\left(\frac{1}{9} + \frac{1}{4} = \right) \frac{4}{36} + \frac{9}{36} = \frac{13}{36}$ | <b>M1</b><br><br><b>E1</b>                   | Both fractions seen<br><br>Both fractions over a common denominator and added to give $\frac{13}{36}$                         |
| <b>19</b> | <b>(a)</b> 5 or –5<br><b>(b)</b> –0.714 (–0.7143 to –0.7142) or $-\frac{5}{7}$                                        | <b>1</b><br><br><b>2</b>                     | <br><br><b>M1</b> for $-2 + 2 + 1 - 3 - 1 - 2$ and $\div 7$                                                                   |
| <b>20</b> | 44.4 (44.36 to 44.38)                                                                                                 | <b>3</b><br><b>www</b>                       | <b>M2</b> for $8 \times 8 - \pi \times 2.5^2$ or<br><b>M1</b> for $\pi \times 2.5^2$                                          |
| <b>21</b> | <b>(a) (i)</b> 70<br><b>(ii)</b> 64<br><b>(b)</b> Kite                                                                | <b>1</b><br><b>1</b><br><b>1</b>             |                                                                                                                               |
| <b>22</b> | <b>(a)</b> 0.0299 or 0.02992...<br><b>(b)</b> $6.4 \times 10^{13}$                                                    | <b>1</b><br><b>2</b>                         | <br><b>B1</b> for $64 \times 10^{12}$ or 64 000 000 000 000                                                                   |
| <b>23</b> | <b>(a) (i)</b> B at (5, –2)<br><b>(ii)</b> $\begin{pmatrix} 10 \\ -4 \end{pmatrix}$<br><b>(b)</b> (–1, –4)            | <b>1</b><br><br><b>1ft</b><br><br><b>2ft</b> | <br><br><b>B1, B1</b> follow through their B plotted                                                                          |
| <b>24</b> | <b>(a)</b> (DB =) 9.75 or 9.746 to 9.747<br><br><b>(b)</b> (Angle CAD =) 32.6 or 32.57 to 32.58                       | <b>3</b><br><br><b>2</b>                     | <b>M2</b> for $\sqrt{(12^2 - 7^2)}$ or<br><b>M1</b> for $12^2 = 7^2 + x^2$ or better<br><br><b>M1</b> for $\sin \frac{7}{13}$ |