# MARK SCHEME for the May/June 2011 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 | 64 | 1cao |  |
| 2 | 52 | 1 |  |
| 3 | (a) $\frac{3}{10}$ or 0.3 or $30 \%$ <br> (b) 0 or $\frac{0}{10}$ or $0 \%$ | 1 <br> 1 |  |
| 4 | $58.25 \leqslant d<58.35$ | 1,1 | SC1 for both correct values but reversed |
| 5 | Working must be shown. | 2 | M1 $\frac{14}{9}$ and $\frac{16}{9} \quad$ M1 $\frac{14}{16}=\frac{7}{8}$ oe or visible cancelling |
| 6 | $0.8^{2}$ | 2 | M1 conversion of $\frac{16}{27}(=0.5(9 .)$.$) and$ $0.8^{2}(=0.64)$ to decimals seen |
| 7 | $5.51 \times 10^{3}$ | 2 | B1 for $5.508 \times 10^{3}$ or figs 551 or $5.5 \times 10^{3}$ |
| 8 | euros (with correct working) or (6)€ | 2 | M1 one of $6 \times 1.9037$ or $11.5 \div 1.9037$ or $11.5 \div 6$ seen |
| 9 | $4 x^{-24}$ or $\frac{4}{x^{24}}$ | 2 | B1 $4 x^{n}$ B1 $\frac{k}{x^{24}}$ or $k x^{-24}$ for any numerical $k, n$ |
| 10 | 14.4(.....) | 3 | M2 for $\sqrt{\left(17^{2}-9^{2}\right)}$ or <br> M1 for $17^{2}=x^{2}+9^{2}$ or better seen |
| 11 | (a) (0) 700 or 7 am <br> (b) 1700 or 5 pm |  | M1 100 - $(5 \times \operatorname{their}(22-6)+\operatorname{their}(13-8))$ or better soi |


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| 12 | (a) $\binom{-2}{3}$ <br> (b) $\binom{2}{-3}$ | 1,1 <br> 1ft | B1 for 1 correct component. SC1 for both correct but written as coordinates as the answer. <br> ft their (a) with signs reversed. <br> Not a strict follow through. |
| :---: | :---: | :---: | :---: |
| 13 | (a) $\frac{80}{20-4 \times 4}$ <br> (b) 20 <br> (c) 14.0 | 1 <br> 1 <br> 2 | Condone either 78 for 80 or 22 for 20 but not both. <br> SC1 for answer 13 if clearly from $78 \div(22-4 \times 4)$ or $78 \div(22-16)$. <br> B1 for $13.9(9 \ldots \ldots \ldots .$.$) or 14$ in working or in the answer. |
| 14 | (a) $(1,2) 3,6,9,,(18)$ <br> (b) 2,3 <br> (c) $54,72,90$ | $\begin{gathered} 2 \\ 1 \\ \text { 1cao } \end{gathered}$ | B1 for 2 correct. |
| 15 | (a) $2 x-11 y$ final answer <br> (b) $3 x(2 x-3 y)$ final answer | $2$ <br> 2 | M1 for $6 x-15 y$ or $-4 x+4 y$ or better seen or B1 for $2 x \pm j y$ or $k x-11 y$. <br> B1 for $3\left(2 x^{2}-3 x y\right)$ or $x(6 x-9 y)$ or $3 x(2 x-b y) \text { or } 3 x(a x-3 y)(a, b \neq 0)$ |
| 16 | (a) $17.5(\ldots \ldots \ldots)$ <br> (b) 20.38 to 20.44 | 2 <br> 2 ft | M1 for $\sin 38=\frac{x}{28.5}$ or better <br> M1 for $\tan (B C D=)$ their $\mathbf{( a )} \div 47.1$ |
| 17 | (a) Diameter <br> (b) 27 | $\begin{aligned} & 1 \\ & 3 \end{aligned}$ | M1 for $(180-54) \div 2$ <br> M1 ind for 90 - their angle $O B D$. |
| 18 | (a) (i) <br> (ii) <br> (b) | 2 <br> 2 <br> 1 | B1 correct line <br> B1 2 sets of correct arcs <br> B1 correct line B1 two sets of correct arcs <br> correct region, shaded or shown by the letter R |


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| 19 | (a) (i) 8 (min) <br> (ii) $7.8(\mathrm{~km})$ <br> (b) (i) Ruled line from $(0720,0)$ to $(0816,9.4)$ <br> (ii) (0)738 to (0)740 <br> (iii) $5.8(\mathrm{~km})$ to $6.4(\mathrm{~km})$ <br> (iv) 17 to 19 (min) | 1 1 <br> 1 <br> 1ft <br> 1 ft <br> 1 ft | Ignore line continued above school. <br> Follow through their graph <br> Follow through their graph. <br> Follow through their graph |
| :---: | :---: | :---: | :---: |

