## MARK SCHEME for the October/November 2012 series

## 0580 MATHEMATICS

0580/11
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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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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 |  | 1 |  |
| 2 | [0].03 | 1 |  |
| 3 | (a) 162 <br> (b) obtuse | $\begin{aligned} & 1 \\ & 1 \end{aligned}$ |  |
| 4 | (a) 29000 <br> (b) 60 | $\begin{aligned} & 1 \\ & 1 \end{aligned}$ |  |
| 5 | (a) 7 <br> (b) 4.5 or $4 \frac{1}{2}$ | $\begin{aligned} & 1 \\ & 1 \end{aligned}$ |  |
| 6 | -16 | 2 | M1 for $4 \times 6.5$ |
| 7 | $8 j-3 k-8$ <br> final answer | 2 | B1 for two correct terms in final answer or for correct answer seen then spoilt |
| 8 | 16 | 2 | M1 for $768 \div 48$ |
| 9 | $[0] .852 \text { or } \frac{23}{27}$ | 2 | B1 for 85.56 or $\frac{2139}{25}$ |
| 10 | (a) $2.3 \times 10^{5}$ <br> (b) $[0] .00048$ | $\begin{aligned} & 1 \\ & 1 \end{aligned}$ |  |
| 11 | $\begin{aligned} & \frac{\frac{17}{9}}{\frac{5}{2}} \text { or } \frac{17}{9} \div \frac{5}{2} \\ & \frac{17}{9} \times \frac{2}{5}=\frac{34}{45} \end{aligned}$ | M1 <br> M1 | $\begin{aligned} & \frac{34}{\frac{18}{45}} \text { or } \frac{34}{18} \div \frac{45}{18} \\ & \frac{34}{18} \times \frac{18}{45}=\frac{34}{45} \end{aligned}$ |
| 12 | 112 or 112.3 to 112.33 | 3 | M2 for $\pi \times 6^{2}-\pi \times 0.5^{2}$ or M1 for $\pi \times 6^{2}$ or $\pi \times 0.5^{2}$ seen |
| 13 | (a) $3(3 y+4)$ final answer <br> (b) $a^{3}-7 a$ final answer | $\begin{aligned} & 1 \\ & 2 \end{aligned}$ | B1 for $a^{3}$ or $-7 a$ in final answer or for correct answer seen then spoilt |
| 14 | (a) $\frac{24}{75}$ oe <br> (b) 84 | $\begin{aligned} & 1 \\ & 2 \end{aligned}$ | M1 for $450 \times \frac{14}{75}$ or $6 \times 14$ |


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| 15 | (a) $\frac{20}{45} \times 360[=160]$ <br> (b) 144 <br> (c) Pie chart with at least 2 correct sectors and at least 2 sectors correctly labelled. | $\begin{aligned} & 1 \\ & 1 \\ & 2 \end{aligned}$ | B1 for a sector of $158^{\circ}$ to $162^{\circ}$ or $142^{\circ}$ to $146^{\circ}$ or $54^{\circ}$ to $58^{\circ}$ |
| :---: | :---: | :---: | :---: |
| 16 | (a) $\binom{0}{63}$ <br> (b) $\binom{7}{-8}$ | $\begin{aligned} & 1,1 \\ & 1,1 \end{aligned}$ |  |
| 17 | (a) <br> (b) | 2 <br> 1 <br> 1 | B1 for correct line, on each side of $A B$ (longer than dash at $C$ ) <br> B1 for 2 pairs of intersecting arcs <br> Intention to draw a full correct circle <br> R shaded must be a closed region |
| 18 | (a) 3 <br> (b) $[y=] 3 x-2$ <br> (c) $[y=] 3 x$ | $2$ <br> 1 ft $\mathbf{1 ~ f t}$ | M1 for $\frac{10--2}{4(-0)}$ or better <br> their (a) $x-2$ <br> follow through gradient from their (b) or their (a) |
| 19 | (a) 3.54 <br> (b) 44.3 | 3 $2$ | M2 for $\sqrt{ }\left(7.4^{2}-6.5^{2}\right)$ or M1 for $7.4^{2}=A D^{2}+6.5^{2}$ or better M1 for $\sin [B C D]=\frac{6.5}{9.3}$ or better |
| 20 | (a) 10 <br> (b) 1510 <br> (c) $9[\mathrm{~km} / \mathrm{h}]$ <br> (d) horizontal line from $(1510,12)$ to $(1630,12)$ line from $(1630,12)$ to $(1720,0)$ | 1 1 2 <br> 1 <br> 1 ft | M1 for $6 \div \frac{2}{3}$ or $6 \div 40$ or better 'their 1630 ' +50 minutes |

