CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0580 MATHEMATICS

0580/23 Paper 2 (Extended), maximum raw mark 70

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.

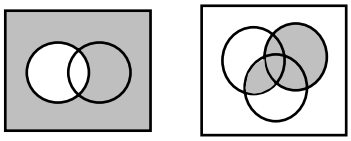
Cambridge will not enter into discussions about these mark schemes.

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

1	96	**2**	**M1** for $\frac{600\times2\times8}{100}$ oe If zero **SC1** 696
2	$\frac{1}{100}+\frac{4}{25}$ or $0.1^2 + 0.4^2$ oe $\frac{1}{100}+\frac{16}{100} = 0.17$ or $0.01 + 0.16 = 0.17$	**M1** **M1**	 Independent
3	180	**2**	**M1** for $\frac{300\times12}{20}$ oe
4	$3y - y^4$ final answer	**2**	**B1** for $3y$ or $-y^4$ as part of two term expression
5	88.2(0)	**2**	**M1** for 84 × 1.05 oe
6	Accurate perpendicular bisector of RT with arcs.	**2**	**B1** for 2 pairs of correct arcs **B1** for correct line
7	8.471 cao	**2**	**B1** for 8.47 or 8.4705 to 8.4706 or $\frac{144}{17}$ or $8\frac{8}{17}$
8	249.5 [$\leqslant j <$] 250.5 cao	**2**	**B1** for either, or both correct but reversed
9		**2**	**B1** for one correct
10	Correct working seen	**2**	**M1** for correct step **M1** for correct step
11	$4w^{64}$	**2**	**B1** for $4w^n$ or kw^{64}
12	40 6	**2**	**B1** for one correct
13	$\frac{23-2x}{12}$	**3**	**M1** for two correct algebraic fractions with a common denominator of 12 **M1** for correctly collecting their terms **M1** for dealing correctly with the 1
14	3, –3 or ±3	**3**	**M1** for $y = k/\sqrt{x}$ oe **A1** for 18

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15	30 000	**3**	**M2** for $7500 \times 200^2/100^2$oe or **M1** for 200^2 seen
16	$\sqrt{\frac{\pi x^2 - A}{\pi}}$ oe	**3**	**M1** for one correct move **M1** for second correct move **M1** for third correct move
17	$10r^2$ cao www	**3**	**B1** for $(\frac{\theta}{360} =)\frac{4r}{2\times\pi\times5r}$ **M1** for $\frac{4r}{2\times\pi\times5r}\times(5r)^2\pi$
18	122.2	**4**	**M2** for 13sin23/6 **A1** 57.8 or **M1** for $\frac{\sin 23}{6} = \frac{\sin A}{13}$
19	**(a)** 0.625 or 5/8 **(b)** 62	**1** **3**	 **M1** for area under graph implied **M1** for correct, complete, area statement
20	**(a)** ⅓(**c** – **d**) oe **(b)** ⅓**c** + ⅔**d** oe	**2** **2ft**	**M1** for **DC** = **c** – **d** oe or correct route Their **(a)** + **d** simplified **M1** for any correct route from O to E stated
21	$\frac{h+4}{h+5}$	**4**	**B2** for $(h – 5)(h + 4)$ seen **B1** for $(h – 5)(h + 5)$ If **B2** not scored then **SC1** for $(h + a)(h + b)$ where $a + b = –1$ or $ab = –20$
22	**(a)** $\frac{1}{5}\begin{pmatrix}1 & -2\\ 1 & 3\end{pmatrix}$ **(b)(i)** **D** cao **(ii)** $\mathbf{D}^{-1}\mathbf{E}$ cao	**2** **1** **1**	**B1** for $\frac{1}{5}\begin{pmatrix}a & b\\ c & d\end{pmatrix}$ or $k\begin{pmatrix}1 & -2\\ 1 & 3\end{pmatrix}$ seen
23	**(a)** 43 **(b)** $12x + 2$ **(c)** 38	**2** **2** **1**	**M1** for g(11) or $4[4(3) – 1] –1$ **M1** for $3(4x – 1) + 5$
24	**(a)** 12.7 **(b)** 28.2	**3** **3**	**M2** for $10^2 + 5^2 + 6^2$ or **M1** for one of $10^2 + 5^2$ or $6^2 + 5^2$ or $10^2 + 6^2$ **M2** for sin x = 6/**(a)** or **M1** for identifying angle *PDB*
		70	

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