

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.

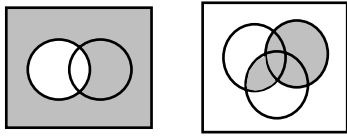
Cambridge will not enter into discussions about these mark schemes.

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 $\frac{600 \times 2 \times 8}{100}$ 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 $\frac{300 \times 12}{20}$ 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 [$\leq j <$] 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 $(\frac{\theta}{360} =) \frac{4r}{2 \times \pi \times 5r}$ M1 for $\frac{4r}{2 \times \pi \times 5r} \times (5r)^2 \pi$
18	122.2	4	M2 for $13 \sin 23/6$ 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) $\frac{1}{3}(c - d)$ oe (b) $\frac{1}{3}c + \frac{2}{3}d$ 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) D ⁻¹ 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 <i>PDB</i>
		70	