

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers

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 must be read in conjunction with the question papers and the report on the examination.

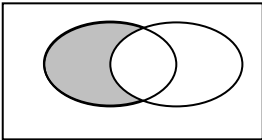
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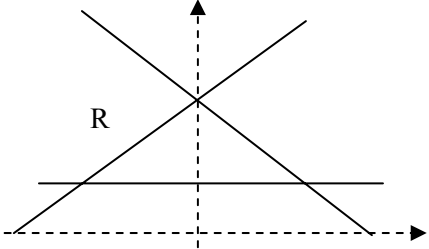
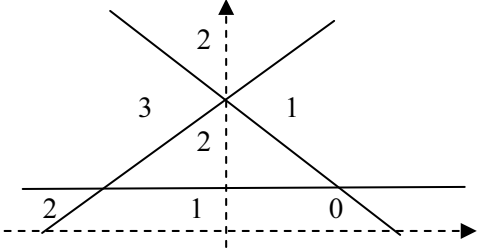
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Abbreviations

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 Mark
1	$2y(x - 2z)$	2	B1 for $y(2x - 4z)$ or $2(xy - 2yz)$
2	$(x =) 3(y - 5)$ oe final answer	2	M1 for correct first move $y - 5 = \frac{x}{3}$ or $3y = x + 15$ M1 for their correct second move
3 (a)		1	
(b)	14	1	
4	816 cao	2	M1 197.5 and 210.5 seen
5	a any negative integer n any even (positive) integer	2	B1 for one correct
6 (a)	1.646×10^7	1	
(b)	3.32×10^{-2}	2	B1 for 0.0332 seen or 3.3×10^{-2} as answer or B1 for 3.32×10^k
7 (a)	36	1	
(b)	correct working	2	M1 for $\frac{7}{6}$ oe improper fraction M1 for $\frac{12}{21} = \frac{4}{7}$ oe or visible cancelling
8	$(x =) 5$ $(y =) -1$	3	M1 for consistent multiplication and add/subtract as appropriate A1 for 1 correct answer
9	127.31 cao	3	M1 for 120×1.03^2 A1 for 127.308 If M0 award SC2 for 7.31 or 247.31
10	120	3	M1 $7t + 11(t + 5) = 2215$ A1 $18t + 55 = 2215$
11	500	3	M1 $V = kL^3$ any letters may be used for V , k and L A1 $k = 4$

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12	$\frac{840-x}{d}$ or $\frac{840}{d} - \frac{x}{d}$	3	M1 400×2.1 M1 $"400 \times 2.1" - x$
13		3	Give the mark for R shown in region below 
14	$y = 4x + 1$	3	B1 correct numerical $y = mx + c$ B1 $c = 1$ B1 $m = 4$
15	4.94	3	M1 $\pi r^2 \times 12 = 920$ M1 $(r^2) = \frac{920}{\text{their } (\pi \times 12)}$
16	$\frac{5x-2}{(x-2)(x+2)}$	3	M1 $2(x+2) + 3(x-2)$ seen B1 $(x-2)(x+2)$ common denom. seen
17 (a)	4.5(0)	1	
(b)	200	2	M1 0.5^3 or 2^3 seen
18 (a)	$27x^9$	2	B1 kx^9 or $27x^n$
(b)	$25x^4$	2	B1 kx^4 or $25x^n$
19 (a)	32	2	B1 figs 32 or 1 cm to 2.5 km or 8 000 000 seen
(b)	37.5	2	B1 (figs 25) ² seen or figs 375 in answer
20 (a)	35	1	
(b)	55	1ft	90 – (a) but $b > 0$
(c)	55	1ft	= (b)
(d)	125	1ft	180 – (c)
21	96 www	5	M1 $3^2 + 4^2$ A1 5 M1 $\frac{1}{2} \times 6 \times "5" (= 15)$ M1 $4 \times \text{their triangle area} + 6^2$

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22 (a)	159	3	M1 evidence of using area under graph M1 stating area correctly
(b) (i)	50	2	M1 $3 \times (1000/60)$ oe
(ii)	0.208	2	M1 evidence of numerical rise/run or use of $(v - u)/t$