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.

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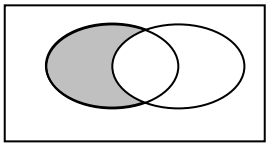
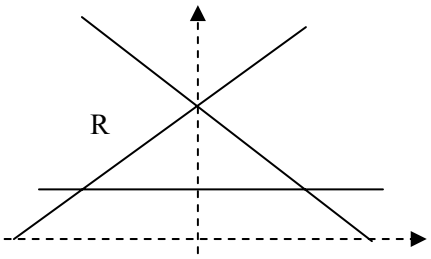
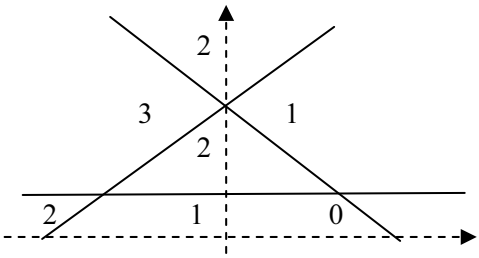
UNIVERSITY of CAMBRIDGE
International Examinations

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	$(x =)\ 5 \quad (y =) -1$	**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** $k = 4$

12	$\frac{840-x}{d}$ or $\frac{840}{d}-\frac{x}{d}$	**3**	**M1** 400 × 2.1 **M1** "400 × 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** ½ × 6 × "5" (= 15) **M1** 4 × their triangle area + 6^2

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