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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Abbreviations

cao	correct answer only
cso	correct solution only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
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SC Special Case

www without wrong working

Qu.	Answers	Mark	Part Mark	
1	2y(x-2z)	2	<b>B1</b> 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	<b>M1</b> 197.5 and 210.5 seen	
5	<i>a</i> any negative integer <i>n</i> any even (positive) integer	2	B1 for one correct	
6 (a)	$1.646 \times 10^{7}$	1		
(b)	$3.32 \times 10^{-2}$	2	<b>B1</b> for 0.0332 seen or $3.3 \times 10^{-2}$ as answer or <b>B1</b> for $3.32 \times 10^{k}$	
7 (a)	36	1		
(b)	correct working	2	<b>M1</b> for $\frac{7}{6}$ oe improper fraction	
			<b>M1</b> 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	<b>M1</b> $7t + 11(t + 5) = 2215$ <b>A1</b> $18t + 55 = 2215$	
11	500	3	<b>M1</b> $V = kL^3$ any letters may be used for <i>V</i> , <i>k</i> and <i>L</i> <b>A1</b> $k = 4$	

Pag	e 3	Mark Scheme: Teach		sion	Syllabus	Paper
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12	$\frac{840-}{d}$	$\frac{x}{d}$ or $\frac{840}{d} - \frac{x}{d}$	3	M1 400 × 2 M1 "400 ×		
13		R	3	Give the mark for R shown in region below 2 $3$ $2$ $1$ $2$ $1$ $0$		
14	y = 4x	+ 1	3	<b>B1</b> correct <b>B1</b> $c = 1$ <b>B1</b> $m = 4$	numerical $y = mx +$	С
15	4.94		3	$\mathbf{M1} \ \pi \ r^2 \times \mathbf{M1} \ \mathbf{M1} \ (r^2) = -$	12 = 920 920 their ( $\pi \times 12$ )	
16	$\frac{5x}{(x-2)}$	(x-2)(x+2)	3		(x + 2) seen (x + 2) common deno	om. seen
17 (a)	4.5(0)		1			
(b)	200		2	<b>M1</b> 0.5 ³ or	2 ³ seen	
18 (a)	$27x^9$		2	<b>B1</b> $kx^9$ or 2	$7x^n$	
(b)	$25x^4$		2	<b>B1</b> $kx^4$ or 2	$5x^n$	
19 (a)	32		2	<b>B1</b> figs 32	or 1 cm to 2.5 km o	r 8 000 000 seen
(b)	37.5		2	<b>B1</b> (figs 25	$)^2$ seen or figs 375 i	n answer
20 (a)	35		1			
<b>(b)</b>	55		1ft	90-( <b>a</b> ) b	ut $b > 0$	
(c)	55		1ft	= (b)		
(d)	125		1ft	180 – <b>(c)</b>		
21	96 ww	W	5	M1 $3^2 + 4^2$ A1 5 M1 $\frac{1}{2} \times 6 \times 6$ M1 4 × the	× "5" (= 15) ir 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	<b>M1</b> 3 × (1000/60) oe		
(ii)	0.208		2	M1 evidence $(v-u)/t$	e of numerical rise/	run or use of