CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2014 series

0581 MATHEMATICS

0581/21

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.

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			Syllabus O581
P	age 2	Mark Scheme	Syllabus
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Abbrev ao	v iations correct answ	wer only	Cambridge com
lep	dependent	·	1 28
follow through after error		ugh after error	age.
sw ignore subsequent working		sequent working	-OA
e	or equivale	nt	
SC	Special Cas	se	
ıfww	not from w	rong working	•
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Abbreviations

dependent dep

seen or implied soi

Question	Answers	Mark	Part Marks
1	1.37	2	B1 for 0.866 or $\frac{\sqrt{3}}{2}$ or 0.5 or $\frac{1}{2}$
			or B1 for 1.366 as final answer
2	$18\frac{1}{18}$	2	M1 for $\frac{2}{36} + \frac{36}{2}$ or better
3	30	2	M1 for $n-8=22$ or $\frac{n}{2}=15$
4 (a)	5×2	1	
	20		
(b)	0.5 or $\frac{1}{2}$ cao	1	
5	$0.5^3 0.5^2 0.5 \sqrt[3]{0.5}$	2	B1 for 0.25, 0.125 and 0.793 seen
			or for three in correct order
6	1.6[0]	3	M1 for 800 × 1.5
			and M1 for <i>their</i> 1200 ÷ 750
7	$4\pm\sqrt{y-6}$	3	M1 for their 6 moved correctly
	1		M1 for <i>their</i> $$ taken correctly
0	<u> </u>	2	M1 for <i>their</i> 4 moved correctly
8		3	B1 for common denominator $x(x+1)$ seen M1 for $2(x+1) - 2x$ oe or better
	x(x+1)		Will for $2(x+1)-2x$ be of better
9 (a)	119	3	M2 for $18 \times 6 + 11$ oe
()			or B1 for 18 or 11 or 108
(b)	[0] 1 [00] pm cao	1	
10 (a)	(a+b)(x+y)	2	B1 for $a(x + y) + b(x + y)$
			or $x(a+b) + y(a+b)$
(b)	(x-1)(3x-2)	2	B1 for $(x-1)(3(x-1)+1)$
			If B0 then SC1 for $(x + a)(3x + b)$ where $3a + b = -5$
			or $ab = 2$ or $3(x-1)(x-\frac{2}{3})$

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		1		2
11		113.9 to 114.0	4	M2 for [cos =] $\frac{8^2 + 2^2 - 9^2}{2 \times 8 \times 2}$ or M1 for $9^2 = 8^2 + 2^2 - 2 \times 8 \times 2 \times \cos x$ A1 for -0.406 or -0.4063 to -0.4062 or $-\frac{13}{32}$
				If 0 scored SC2 for 54.3[1] or 11.7 or 11.71 to
				11.72
				SC1 for [cos =] $\frac{9^2 + 2^2 - 8^2}{2 \times 9 \times 2}$ or
				$[\cos =] \frac{9^2 + 8^2 - 2^2}{2}$
12	(a)	2×10^{10}	2	$[\cos =] \frac{9^2 + 8^2 - 2^2}{2 \times 9 \times 8}$ B1 for 20 × 10 ⁹ or 20 000 000 000
	(b)	1.25×10^{-1}	2	B1 for 0.125 oe
13	(a)	32	2	B1 for <i>AOC</i> = 116
	(b)	35	2	B1 for $CDA = 122$
14		2 2	4	B1 for (9, 4)
		$y = \frac{2}{3}x - 2 \text{oe}$		and 2
				M2 for $y = kx - 2$ $(k \neq 0)$ or $y = \frac{2}{3}x + k$ $(k \neq 0)$ or
				$\left \frac{2}{3}x-2 \right $
				or M1 for $y = \frac{2}{3}x$ or $\frac{2}{3}x + k$ $(k \neq 0)$
15		[0], 1, 2, 3	4	M1 for moving the 5 correctly
				M1 for collecting <i>their</i> terms A1 for a correct inequality for $x \in [0 \le]$ $x < 4$
16	(a)	8	2	B1 for 2 ¹² or 4096
	(b)	$2q^{\frac{3}{2}}$	3	B2 for $kq^{\frac{3}{2}}$ as the answer
	()			or
				B1 for $2q^2$ and B1 for $q^{\frac{1}{2}}$ oe nfww
17	(a)	correct working	2	M1 for 1 holiday = 5 or $360 \div 72 = 5$ and B1 for $24 \times 5 = 120$
				or
				M2 for $\frac{24}{72} \times 360$ [=120] oe
	(b)	6 nfww	3	M1 for $150 + 120 + x + 2x = 360$ oe A1 for 30 identified as the required angle
18	(a)	correct working	2	B2 for $\sqrt[3]{\frac{1}{8}} = \frac{1}{2}$ or $\sqrt[3]{8} = 2$ AND $\frac{10}{2} = 5$ oe and $\frac{4}{2} = 2$
				oe or
				B1 for $\sqrt[3]{\frac{1}{8}}$ or $\sqrt[3]{8}$ or $8 = 2^3$ or $\frac{1}{8} = (\frac{1}{2})^3$
				8 01 40 01 0 2 01 8 (2)

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1				3.
	(b)	147 or 146.5 to 146.6	4	M3 for $\frac{7}{8} \times \frac{1}{3} \times \pi \times 4^2 \times 10$ or
				or
				M1 for $\frac{1}{3} \times \pi \times 4^2 \times 10$ and
				and
				M1 for $\frac{1}{3} \times \pi \times 2^2 \times 5$
				and
				M1 for subtracting <i>their</i> volumes
	19	1.38 or 1.39 or 1.384 to 1.389	7	M3 [Area $\Delta = \frac{1}{2} \times 8 \cos 60 \times 8 \sin 60$
				or M1 for [AE =] 8cos 60 and M1 for [ED] = 8sin 60 and
				M1 for Area sector $\frac{30}{360} \times \pi \times 8^2$
				and
				M1 for Area rectangle = $8 \times 8\cos 60$ or 8×4 M1 for their $32 - (their \ 13.86 + their \ 16.76)$ or better
			ı	l