CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0444 MATHEMATICS (US)

0444/21 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.

Cambridge will not enter into discussions about these mark schemes.

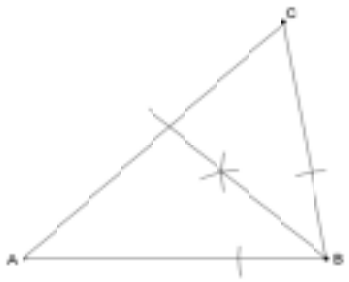
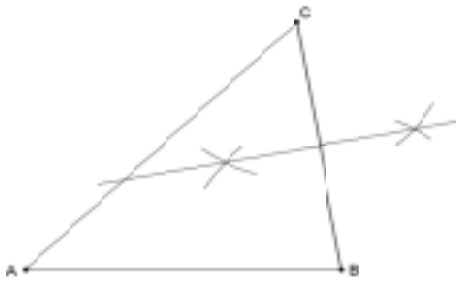
Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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	Answer	Mark	Part marks
1	80	**1**	
2	2.5 oe	**2**	**B1** for 0.5/0.2
3	125	**2**	**B1** for 55 or 125 in any other correct position on diagram or **M1** for 180 – 55
4	6.8	**2**	**M1** for 40× 0.17 oe
5	4.8 oe	**2**	**M1** for $5 + 19 = 3x + 2x$ oe or better or **B1** for $24 – 2x = 3x$ oe or $5 = 5x – 19$ oe
6 (a)	$\frac{2}{6}$ oe	**1**	
(b)	200	**1FT**	FT 600 × *their* **(a)** providing *their* **(a)** is a probability
7	9×10^{12}	**2**	**B1** for correct answer but not in scientific notation e.g. 0.9×10^{13} or **M1** for 11×10^{12} or 0.2×10^{13}
8	3 120	**1** **1**	
9	130	**3**	**M2** for $\frac{26 \times 100}{4 \times 5}$ oe **or M1** for $\frac{x \times 4 \times 5}{100} = 26$ or 4% = 5.2 oe If 0 scored **SC1** for figs 130
10 (a)	$\frac{n}{n+2}$ final answer	**1**	
(b)	$n^2 – 1$ oe final answer	**2**	**B1** for any quadratic in final answer

11	[±] $\sqrt{c^2 - a^2}$ final answer	**3**	**M1** for correct square **M1** for correct re-arrangement **M1** for correct square root
12	40	**3**	**M1** for m^2 to cm^2 or cm^2 to m^2 **M1** for square root of $\frac{figs\ 32}{figs\ 2}$ or $\frac{figs\ 2}{figs\ 32}$
13 (a)	110	**1**	
(b)	79 cao	**2**	**B1** for $DAC = 42$ or $ACB = 79$ or $ACD = 28$
14 (a)	$\frac{5}{4}$ oe	**1**	
(b)	$4y^6$	**2**	**B1** for ky^6 or y^6 or $4y^k$ or 4 as final answer
15	$\frac{2t-5}{t-1}$ cao final answer	**3**	**B1** for $\frac{3(t-1)}{t-1}$ or better **B1** for $3(t-1)-(t+2)$ oe or better If 0 scored **SC1** for $\frac{3t-1-t-2}{t-1}$ oe or better
16 (a)	$\frac{2}{3}$	**2**	**M1** for $\frac{9}{12}-\frac{1}{12}$ oe
(b)	$\frac{2}{5}$	**2**	**M1** for $\frac{5}{2}\times\frac{4}{25}$ oe
17 (a)	$\begin{pmatrix}8\\6\end{pmatrix}$	**1**	
(b)	10	**2**	**M1** for $(their\ 8)^2 + (their\ 6)^2$
(c)	(15, 13)	**1FT**	FT *their* 8 and 6. (7 + *their* 8, 7 + *their* 6) correctly evaluated
18 (a)	$(a+b)(1+t)$	**2**	**B1** for $1(a+b)+t(a+b)$ or $a(1+t)+b(1+t)$
(b)	$(x-6)(x+4)$	**2**	**SC1** for answer of $(x+a)(x+b)$ where $ab = -24$ or $a+b=-2$
19	486 cao	**4**	**M1** for $\frac{1}{2}\times 4\pi r^2 + \pi r^2 = 243\pi$ or better **A1** for $[r =]\ 9$ **M1** for $\frac{1}{2}\times\frac{4}{3}[\pi](their\ r)^3$

20 (a)	20	**2**	**M1** for 72 × 1000 ÷ 60 ÷ 60 o.e
(b)	7	**2FT**	FT 140 ÷ *their* **(a)** **M1** for dist ÷ *their* **(a)** or dist ÷ 20 or dist ÷ 72 × 1000 ÷ 60 ÷ 60 **or B1** for 140 seen
21 (a)		**2**	**B2** for correct bisector with correct arcs or **B1** for correct bisector with no arcs
(b)		**2**	**B2** for correct bisector with correct arcs or **B1** for correct bisector with no arcs
22 (a)	150	**2**	**M1** for $\frac{1}{2}\times 25\times 12$ o.e.
(b)	$2\sqrt{3}$	**3**	**M1** for tan60 = $\frac{6}{BX}$ oe or better **B1** for tan60 = $\sqrt{3}$ or tan30 = $\frac{1}{\sqrt{3}}$ o.e.
23 (a)	$\frac{56}{110}$ oe	**3**	**M2** for $\frac{4}{11}\times\frac{7}{10}+\frac{7}{11}\times\frac{4}{10}$ o.e. **M1** for one of these products
(b)	$\frac{168}{990}$ oe	**2**	**M1** for $\frac{7}{11}\times\frac{6}{10}\times\frac{4}{9}$