UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0580, 0581 MATHEMATICS

0580/12, 0581/12   Paper 12 (Core), maximum raw mark 56

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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Abbreviations

aro	Answer rounding to
BOD	Benefit of the doubt is to be given to the candidate
CAO	Correct answer **only**
eeo	Each error or omission
NR	Answer space is completely blank
o.e.	or equivalent
SC	Special case
www	Without wrong working
ft or √	Work has been followed through after an error
dep	Dependent on the previous mark

Qu	Answer	Mark	Part Marks/Notes
1	9	1	
2	3 (h) 29 (min) cao	1	If not in the answer space units must be clear. E.g. Not 3:29 or 3.29.
3	196	1	
4	20	1	
5	$33(\%) < \frac{1}{3} < 0.35$	1	Accept the values in any form. $\frac{1}{3}$ must be to 3 or more s.f.
6	–9	1	
7	3.62×10^{-3} cao	1	
8	**(a)** 2	1	
	(b) 2	1	
9	($)1012	2	M1 $276 \div 3 \times 11$ or $276 \times \frac{11}{3}$ or better.
10	$11.5 \leqslant h < 12.5$	1 + 1	1 mark for each value in correct place.
11	($)1.25 or 125 cents	2	M1 $2.25 \div (5 + 4)$ implied by 0.25. SC1 for answer 125. For answer in cents units must be stated.
12	**(a)** $\frac{17}{29}$ isw	1	Ignore further attempts at cancelling in **(a)** and **(b)**. Allow equivalent **fractions** in **(a)** and **(b)**. SC1 **Both** correct but written as decimals or %. (Give mark in part **(b)**).
	(b) $\frac{13}{20}$ isw	1	
13	13.5 or 13½	2	M1 $½ \times 8 \times h = 6 \times 9$ or better. Implied by $\frac{54}{4}$ or $\frac{27}{2}$ seen.

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14	**(a)** 32.67256(3…) or 32.6768 or 32.656	1	π from calculator value or 3.142 or 3.14 respectively. 33 or follow through from their **(a)** but only if the answer to **(a)** is greater than 1.
	(b) 33 (Ignore trailing zeros)	1 ft	
15	Vertices (3,1), (5,1), (2,4), (0,4) and ruled parallelogram drawn.	2	M1 3 or 4 vertices correctly plotted. SC1 Correct reflection in $y = 3$. (3,5), (1,5), (4,2), (6,2).
16	4.4598 to 4.4611	2	M1 $1.5^2 + 4.2^2$ or better. Square root not essential for M1. Implied by 19.89 or 2.25 + 17.64 seen.
17	(\$)1.14 or 114 cents	2	M1 $8 \times 0.68 - 2 \times 2.15$ or $8 \times 68 - 2 \times 215$. For answers in cents units must be stated.
18	$3x(2 - 3xy)$ final answer	2	SC1 $3(2x - 3x^2y)$ or $x(6 - 9xy)$ or $3x(2 + 3xy)$ as answers.
19	**(a)** **(i)** −64 **(ii)** −144	1 1	
	(b) z	1	Allow z^1.
20	**(a)** $\sqrt{4}$ or 2	1	
	(b) $\sqrt{81}$ or 9	1	
	(c) $\sqrt{64}$ or 8	1	
	(d) $\sqrt{14}$ or 3.7(4…)	1	
21	**(a)** 25	1	
	(b) 43	1	
	(c) $3n + 10$ oe final ans.	2	SC1 $3n + k$ oe ($k \neq 10$) as answer.
22	**(a)** 12	1	
	(b) **(i)** 0.83(3…) or $\frac{10}{12}$ oe isw	1	
	(ii) 49.8 to 50	1 ft	ft $60 \times$ their **(b)(i)** correct to 3sf.
	(c) 46	2	W1 for ($CD =$) 12 seen in working space, or answer line or between dotted lines at C and D.

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23	(a)	1332	2	M1 for $\dfrac{6000 \times 3 \times 7.4}{100}$ or SC1 for 7332 final ans.
	(b)	1350.26 Allow 1350 or 1350.258 or 1350.25 or 1350.2 or 1350.3	3	M2 for $6000 \times \left(1 + \dfrac{7}{100}\right)^3$ or better. or M1 for $6000 \times \left(1 + \dfrac{7}{100}\right)^2$ or better. Alt. M1 for $(6000 + 6000 \times 0.07) \times 0.07$. M1 dep for '6869.4' $\times$ 0.07. (NB Interest only method)
24	(a) (i)	$\begin{pmatrix} 0 \\ 4 \end{pmatrix}$	2	1 mark for each component.
	(ii)	$\begin{pmatrix} -4 \\ 4 \end{pmatrix}$	2	1 mark for each component.
	(b)	Line segment from P to (–1, 6)	2	W1 for (–1, 6) indicated or $\begin{pmatrix} -2 \\ 4 \end{pmatrix}$ seen anywhere. If zero, SC1 for line segment from P to (–1, k) or to (k, 6) or a line through P and (–1, 6).

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