

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

International General Certificate of Secondary Education

**MARK SCHEME for the October/November 2008 question paper****0580 and 0581 MATHEMATICS****0580/12 and 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.

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### Abbreviations

cao	correct answer only
ft	work has been followed through after an error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
soi	seen or implied
ww	without working

<b>Qu.</b>	<b>Answers</b>	<b>Mark</b>	<b>Part Marks</b>
<b>1</b>	36	1	
<b>2</b>	2	1	
<b>3</b>	-13	1	
<b>4</b>	7.4	1	
<b>5</b>	10 – 17x cao final answer	2	W1 for (+)10 or -17x seen anywhere
<b>6</b>	9.5	2	M1 for 3.8 × figs 25 or W1 for figs 95
<b>7 (a)</b>	>	1	
<b>(b)</b>	=	1	
<b>8</b>	23.65 cao	2	M1 for 30 ÷ 1.2685 or W1 for answers from 23 to 25
<b>9</b>	(x=) 10.6 or $10\frac{3}{5}$ isw	2	M1 for (54 – 1) ÷ 5 soi
<b>10</b>	$6650 \leq L < 6750$	1, 1	1 mark for each value correctly placed. SC1 both correct but reversed
<b>11 (a)</b>	12	1	
<b>(b)</b>	24	1	
<b>12</b>	(k=) 8	2	M1 for $0 = 2 \times 4 - k$ or better
<b>13 (a)</b>	$6.56 \times 10^{-3}$	1	
<b>(b)</b>	0.0066	1	Accept $6.6 \times 10^{-3}$
<b>(c)</b>	0.01	1	Accept $1 \times 10^{-2}$

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Qu.	Answers	Mark	Part Marks
14	$\frac{20}{3}$ seen	W1	
	$\frac{4}{9} \times \text{their } \frac{3}{20}$	M1	Must be inversion of an improper fraction Can be implied by $\frac{4}{9} \div \frac{20}{3} = \frac{12}{180}$
	$\frac{1}{15}$	A1	ww no marks
15(a)	Point marked at (3, 2)	1	Missing label not penalised.
(b)	(-2, 1)	1	More than 1 point seen, must be labelled.
(c)	-0.5 or $-\frac{1}{2}$	1	By eye 2mm
16(a)	1	1	
(b)	$q^8$	1	
(c)	$r^{-8}$ or $\frac{1}{r^8}$	1	
17(a)	12 seen on diagram at <b>A and B</b> or $180^\circ - 168^\circ = 12^\circ$ . <b>AND</b> $12 + 78 (= 90)$	1	Allow $168^\circ + 12^\circ = 180^\circ$ Allow $90^\circ - 78^\circ = 12^\circ$ or $90^\circ - 12^\circ = 78^\circ$ If the first condition is satisfied
(b)	$123^\circ$	2	W1 for angle $BAC$ (or angle $BCA$ ) = $45^\circ$
18(a)	1458216 to 1459145 or 1460000 or 1459000 Final answer	2	M1 for $\pi \times 60^2 \times 129$ or $\pi \times 0.6^2 \times 1.29$
(b)	Their (a) $\div 10^6$ evaluated	1ft	
19(a)	64	2	M1 for $2 \times (10 + 22)$ or $22 + 10 + 14 + 6 + (22 - 14) + (10 - 6)$
(b)	172	2ft	M1 for $(22 \times 10) - 6 \times '8'$ or $(140 \times 10) + '8' \times '4'$ or $14 \times 6 + 22 \times '4'$

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Qu.	Answers	Mark	Part Marks
<b>20 (a)</b>	15(%) or 0.15 or $\frac{15}{100}$ oe	1	isw for change of form or cancelling only in all parts. Not ratio.
<b>(b) (i)</b>	$\frac{4}{15}$ oe cao	1	Allow 0.267 or 0.266(6....) or % form Minimum 3 significant figures
<b>(ii)</b>	$\frac{10}{15}$ oe cao	1	Allow 0.667 or 0.666(6...) or % form Minimum 3 significant figures Consistent use of wrong denominator in all of <b>(b)</b> , –1 once.
<b>(iii)</b>	0 or $\frac{0}{15}$ cao	1	Allow nil, none or zero only. No other denominator allowed
<b>21 (a)</b>	Similar	1	
<b>(b)</b>	19.95 to 20.04	2	M1 for $12 \div 9 \times 15$ or equivalent method
<b>(c)</b>	297	2	M1 for $360 - 63$
<b>22 (a)</b>	45	1	
	5	1	
	75	1ft	Their '5' $\times 15$ or $120^\circ - '45'$
<b>(b)</b>	All sectors correct $\pm 2^\circ$	1ft	Ft provided angles total $360^\circ$
	'Correctly' labelled	1	Independent. Labelling of the other 3 sectors.