Location Entry Codes

UNIVERSITY of CAMBRIDGE
International Examinations

As part of CIE's continual commitment to maintaining best practice in assessment, CIE has begun to use different variants of some question papers for our most popular assessments with extremely large and widespread candidature, The question papers are closely related and the relationships between them have been thoroughly established using our assessment expertise. All versions of the paper give assessment of equal standard.

The content assessed by the examination papers and the type of questions are unchanged.

This change means that for this component there are now two variant Question Papers, Mark Schemes and Principal Examiner's Reports where previously there was only one. For any individual country, it is intended that only one variant is used. This document contains both variants which will give all Centres access to even more past examination material than is usually the case.

The diagram shows the relationship between the Question Papers, Mark Schemes and Principal Examiner's Reports.

Question Paper	Mark Scheme	Principal Examiner's Report
Introduction	Introduction	Introduction
First variant Question Paper	First variant Mark Scheme	First variant Principal Examiner's Report
Second variant Question Paper	Second variant Mark Scheme	Second variant Principal Examiner's Report

Who can I contact for further information on these changes?
Please direct any questions about this to CIE's Customer Services team at: international@cie.org.uk

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0580/0581 MATHEMATICS

0580/21 and 0581/21 Paper 21 (Extended), maximum raw mark 70

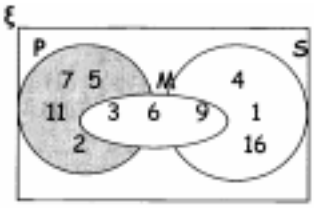
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

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.

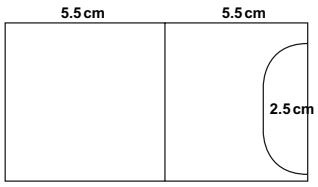
Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2008 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1	53 and 59	1, 1	independent of each other
2	$\frac{11x}{18}$	2	**M1** $\frac{6x}{18}+\frac{10x}{18}-\frac{5x}{18}$ **oe** fractions with common denom. not decimals
3	150	2	**M1** $\frac{18}{12}\times 100$
4	**(a)** 2870 **(b)** $(n+3)^2+1$	1 1	**cao** Allow $n^2+6n+10$, $(n+2+1)^2+1$, $(n-1+4)^2+1$ **oe**
5	\$231.13 **cao**	2	**M1** 245 / 1.06 or 245 × 0.94(3...) Allow 231, 231.1, 231.13… for **M1**
6	$\frac{598}{601}$ $\frac{399}{401}$ $\frac{698}{701}$	2	**M1** correct decimals seen 0.99501.... 0.9957(2…) 0.99500… First and third must be to at least 5sf Accept these decimals in answer space
7	**(a)** 1045.28 **cao** **(b)** 1000	1 1	 Allow 1.0×10^3
8	$9x^2$	2	**B1** 9 **B1** x^2 terms must be multiplied
9	$y=\frac{1}{2}x+5$	3	**M1** $(m=)\ \frac{8-5}{6-0}$ **oe B1** $(c=)$ 5 **or** **M1 A1** $y-8=\frac{1}{2}(x-6)$ or $y-5=\frac{1}{2}(x-0)$ Allow 3/6 for the $\frac{1}{2}$ **A1** $y=\frac{1}{2}x+5$ or $2y-x=10$ **oe**
10	$r=18$ $h=42$ **cao www**	3	**M1** Length scale factor of 6 **used or stated Al Al**
11	(±) 7.94	3	**M1** $21^2=(2x)^2+x^2-2.2x.x.\cos 120$ **oe** **M1** $441=7x^2$
12	**(a)**  **(b)** 4	2 1√	**B1** P and S not intersecting. Two sets must be labelled Three intersecting circles will have P ∩ S empty. from the number of elements in the shaded area
13	$x<-23\frac{1}{2}$ or -23.5	3	**M1** 2 moves **completed** correctly **M1** 2 more moves completed correctly

Page 3	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0580/0581	21

14		1 1 1	Line in correct place; bisects rectangle Line 2cm long in correct place $\frac{1}{4}$ circles in correct place Not freehand.
15	$\begin{pmatrix} -11 \\ -11 \\ -14 \end{pmatrix}$	1 1 1	
16	(1, 3) **www**	3	**M1** consistent multiplication and subtraction/addition **A1 A1** Allow $x = 1$ and $y = 3$ (1, k) or (k, 3) scores 2 marks **ONLY** if **M1** is scored
17	20	4	**B1** $\frac{370+x}{500+x} = \frac{3}{4}$ **oe** fraction, decimal, percentage **M1** two moves **completed** correctly **M1** two more correct moves completed
18	**(a)** –14 **(b)** $2x^3 - 6x^2 + 12x - 9$ **(c)** $\frac{x+1}{2}$	1 2 2	 **M1** attempting to double f(x) and –1 **M1** valid method
19	**(a)** **(i)** Triangle (–1, –2)(–1, –3)(–3, –2) **(ii)** Reflection in $y = -x$ **(b)** $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$	2 2 2	**M1** for one correct vertex of the triangle drawn on the diagram **M1** for the **word** reflection **A1** $y = -x$ **oe** Combined transformation must be fully correct to the final answer but –1 once for the detail (e.g. centre, angle, etc) **B1** each column **or** **M1** solving two pairs of sim. equations **A1** all correct in answer space
20	**(a)** 12900 **(b)** 23300 **(c)** **(i)** 2.33×10^{13} **(ii)** 1.55×10^{13}	3 1√ 1√ 2√	**M1** $(160^2$ **or** $100^2) \times \pi \times 95/360$ **M1** subtracting the two areas above **(a)** multiplied by 1.8 **(b)** $\times 10^9$ **M1 (c)(i)** / 1.5

21	**(a)** 11.3	5	**B1** identifying angle FAC **M1** $600^2 + 800^2$ **Al** 1000 (for AC) **M1** tan$x$ = 200/their 1000 (or cos$x$ = "1000"/"1020") **Alternative method via DF and AF** **M1** "($200^2 + 600^2$)" + 800^2 **Al** 1020 **M1** sin$x$/(sin90) = 200/"1020" **oe** cosine rule also possible
	(b) 233	3	**M1** tan$y$ = 800/600 **oe** sin$y$, cos$y$ **M1** an angle **found** in **(b)** + 180 written in working

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2008 question paper

0580/0581 MATHEMATICS

0580/22 and 0581/22 Paper 22 (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.

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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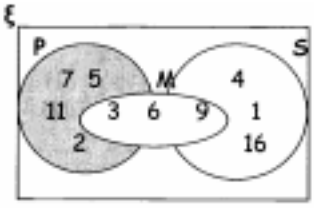
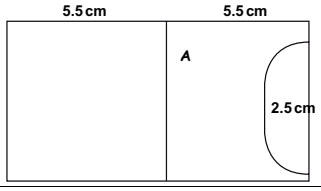
Page 2	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0580/0581	22

1	59 and 61	1, 1	independent of each other
2	$\frac{13x}{18}$	2	**M1** $\frac{6x}{18}+\frac{14x}{18}-\frac{7x}{18}$ **oe** fractions with common denom. not decimals
3	140	2	**M1** $\frac{21}{15}\times 100$
4	**(a)** 1240 **(b)** $(n+4)^2+1$	1 1	**cao** Allow $n^2+16n+17$, $(n+3+1)^2+1$, $(n-1+5)^2+1$ **oe**
5	\$308.41 **cao**	2	**M1** 330 / 1.07 or 330 × 0.93(4579...) Allow **M1** 308, 308.4(1...)
6	$\frac{598}{601}$ $\frac{399}{401}$ $\frac{698}{701}$	2	**M1** correct decimals seen 0.99501.... 0.9957(2…) 0.99500… First and third must be to at least 5sf Accept these decimals in answer space
7	**(a)** 2045.49 **cao** **(b)** 2000	1 1	 Allow 2.0×10^3
8	$8x^3$	2	**B1** 8 **B1** x^3 terms must be multiplied
9	$y=\frac{1}{2}x+7$	3	**M1** (m=) $\frac{10-7}{6-0}$ **oe B1** (c=) 7 **or** **M1 A1** $y-10=\frac{1}{2}(x-6)$ or $y-7=\frac{1}{2}(x-0)$ Allow 3/6 for the $\frac{1}{2}$ **A1** $y=\frac{1}{2}x+7$ or $2y-x=14$ **oe**
10	$r=24$ $h=36$ **cao www**	3	**M1** Length scale factor of 6 **used or stated Al Al**
11	(±) 7.21	3	**M1** $26^2=(3x)^2+x^2-2.3x.x.\cos 120$ **oe** **M1** $676=13x^2$
12	**(a)**  **(b)** 4	2 1√	**B1** P and S not intersecting. Two sets must be labelled Three intersecting circles will have P ∩ S empty. from the number of elements in the shaded area
13	$x<-23\frac{1}{2}$ or -23.5	3	**M1** 2 moves **completed** correctly **M1** 2 more moves completed correctly

Page 3	Mark Scheme	Syllabus	Paper
	IGCSE – May/June 2008	0580/0581	22

14		1 1 1	Line A in correct place; bisects rectangle Line 2cm long in correct place $\frac{1}{4}$ circles in correct place Not freehand.
15	$\begin{pmatrix} -11 \\ -11 \\ -14 \end{pmatrix}$	1 1 1	
16	(1, 3) **www**	3	**M1** consistent multiplication and subtraction/addition **A1 A1** Allow $x = 1$ and $y = 3$ (1, k) or (k, 3) scores 2 marks **ONLY** if **M1** is scored
17	20	4	**B1** $\frac{370 + x}{500 + x} = \frac{3}{4}$ **oe** fraction, decimal, percentage **M1** two moves completed correctly **M1** two more correct moves completed
18	**(a)** –17 **(b)** $2x^3 - 6x^2 + 12x - 17$ **(c)** $\frac{x+3}{2}$	1 2 2	 **M1** attempting to double f(x) and –3 **M1** valid method
19	**(a)** Triangle (–1, –2)(–1, –3)(–3, –2) Reflection in $y = -x$ **(b)** $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$	2 2 2	**M1** for one correct vertex of the triangle drawn on the diagram **M1** for the **word** reflection **A1** $y = -x$ **oe** Combined transformation must be fully correct to the specified answer but –1 once for the details (e.g. centre, angle, etc) **B1** each **<u>column</u> or** **M1** solving two pairs of sim. equations **A1** all correct in matrix
20	**(a)** 12900 **(b)** 23300 **(c)** **(i)** 2.33×10^{13} **(ii)** 1.55×10^{13}	3 1√ 1√ 2√	**M1** $(160^2$ **or** $100^2) \times \pi \times 95/360$ **M1** subtracting the two areas above **(a)** multiplied by 1.8 **(b)** $\times 10^9$ **M1 (c)(i)** / 1.5

21	**(a)** 11.3	5	**B1** identifying angle FAC **M1** $600^2 + 800^2$ **Al** 1000 (for AC) **M1** tan$x$ = 200/their 1000 (or cos$x$ = "1000"/"1020") **Alternative method via DF and AF** **M1** "($200^2 + 600^2$)" + 800^2 **Al** 1020 **M1** sin$x$/(sin90) = 200/"1020" **oe** cosine rule also possible
	(b) 233	3	**M1** tan$y$ = 800/600 **oe** sin$y$, cos$y$ **M1** an angle found in **(b)** + 180 written in working