UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the June 2005 question paper

0580/0581 MATHEMATICS

0580/02, 0581/02 Paper 2 (Extended), maximum raw mark 70

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initialy instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

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 discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the June 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Grade thresholds for Syllabus 0580/0581 (Mathematics) in the June 2005 examination.

	maximum mark available	minimum mark required for grade:			
		A	C	E	F
Component 2	70	58	36	23	n/a

The threshold (minimum mark) for B is set halfway between those for Grades A and C.
The threshold (minimum mark) for D is set halfway between those for Grades C and E.
The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.
Grade A* does not exist at the level of an individual component.

TYPES OF MARK

Most of the marks (those without prefixes, and 'B' marks) are given for accurate results, drawings or statements.

- **M** marks are given for a correct method.
- **B** marks are given for a correct statement or step.
- **A** marks are given for an accurate answer following a correct method.

ABBREVIATIONS

a.r.t.	Anything rounding to
b.o.d.	Benefit of the doubt has been given to the candidate
c.a.o.	Correct answer **only** (i.e. no 'follow through')
e.e.o.	Each error or omission
f.t	Follow through
i.s.w.	Ignore subsequent working
o.e.	Or equivalent
SC	Special case
s.o.i.	Seen or implied
ww	Without working
www	Without wrong working
√	Work followed through after an error: no further error made

June 2005

IGCSE

MARK SCHEME

MAXIMUM MARK: 70

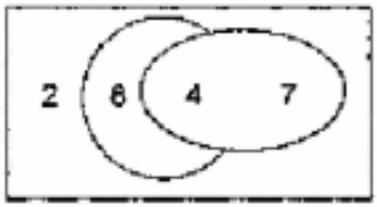
SYLLABUS/COMPONENT: 0580/02, 0581/02

MATHEMATICS

Paper 2 (Extended)

UNIVERSITY *of* CAMBRIDGE
International Examinations

* indicates that it is necessary to look in the working following a wrong answer

1	**(a)** **(b)**	25/32 0.781 (25)	1 1√	
2	0.27**6**		2*	**M1 sin** 5° = h/3.17 0.28 may score **M0**
3	**(a)** **(b)**	0.016 1.6×10^{-2}	1 1√	Allow 2/125 x 10 essential
4	1(.00) or 0.9^{r}		2	**M1 A0** other answers in range 0.99 to 1.053
5	**(a)** **(b)**	3 3 lines	1 1	 by eye
6	**(a)** **(b)**	5.66 32(.0)	2 1√	**M1** $4^2 + 4^2$ or 4/sin45 or $4\sqrt{2}$ or $\sqrt{32}$ $(a)^2$ from the answer space
7	**(a)** **(b)**	21.5 22.5 172	1,1 1√	**SC1** correct but reversed (a) least value x 8
8	$x = 8$ $y = 6$		3*	**M1** for multiplication and subtraction
9	**(a)** **(b)**	$wf = 300000$ oe 500	2 1√	**M1** $wf = k$ **A1** k = 300000
10	**(a)** **(b)**	8/19 or 0.421 7/18 or 0.389	2 1√	**M1** their prime number count/19
11			3	**B1** for 8 in correct place **B1** for 2 in correct place **B1** for 4 and 7 in correct place **SC2** 2 4 8 7 or 2 6 6 7
12	**(a)** **(b)**	$\begin{bmatrix} 2x & 4x \\ 4x & 2x \end{bmatrix}$ $\begin{bmatrix} 5x^2 & 4x^2 \\ 4x^2 & 5x^2 \end{bmatrix}$	1 2*	**M1** $\begin{bmatrix} x^2+4x^2 & 2x^2+2x^2 \\ 2x^2+2x^2 & x^2+4x^2 \end{bmatrix}$
13	**(a)** **(b)** **(c)** **(d)**	8, 11, 14 $3n + 2$ 182 29	1 1 1√ 1√	 integers only
14	**(a)** **(b)**	20% 400%	2* 2*	**M1** for $\frac{62000}{310000}$ x 100 **M1** for $\frac{248000}{62000}$ x 100
15	**(a)** **(b)**	3/2 oe $y = 3/2x - 7$	1 2*√	 **M1** correct method
16	$\frac{4(x+1)}{x(x+2)}$ oe		3*	**M1** $(x + 2)(x + 2) - x^2$ **B1** $x^2 + 4x + 4$

17	**(a)** **(b)** **(c)**	0 –1.5 below the height at midday		1 2* 1	**M1** for $t = 7$
18	**(a)** **(b)**	0.4,0.3, 0.3 0.46		1 3*	**M1** 0.6 × "0.3" or "0.4" × 0.7 **dep M1** add
19	**(a)**	–12 $x > -1$ cao		2* 3*	**M1** $0.2x = -2.4$ **B1** for every two moves completed correctly
20	**(a)** **(b)**	232° 175(.4)°		2* 4*	**M1** for 360 – (63 + "65") **M1** for $\frac{410}{\sin 63} = \frac{400}{\sin x}$ **A1** GAW = 60.4 **M1** 115 + GAW and no further working **A1** √
21	**(a)** **(b)**	**(i)** **(ii)** **(i)** **(ii)**	20 70 3.49 8.73	1 1 2* 2*	**M1** $\frac{40}{360} \times 2 \times \pi \times 5$ **M1** $\frac{40}{360} \times \pi \times 5^2$
			TOTAL	**70**	