CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the November 2004 question papers

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 November 2004 question papers for most IGCSE and GCE Advanced Level syllabuses.

Grade thresholds taken for Syllabus 0580/0581 (Mathematics) in the November 2004 examination.

	maximum mark available	minimum mark required for grade:			
		A	C	E	F
Component 2	70	58	36	21	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
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

November 2004

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 70

SYLLABUS/COMPONENT: 0580/02, 0581/02

MATHEMATICS

Paper 2 (Extended)

UNIVERSITY of CAMBRIDGE
International Examinations

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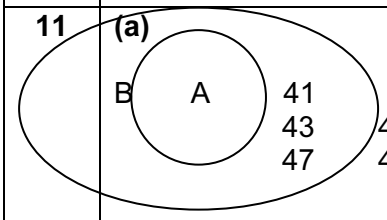
* indicates that it is necessary to look in the working following a wrong answer

1	15	**1**	
2	550.6	**2**	**M1** for 550, 551, 550.59, 550.5 seen **SC1** 87.7 only
3	**(a)** $\sqrt{16}$ or 65/13 **(b)** π or $\sqrt{14}$	**1** **1**	Allow 4 or 5 Not 22/7
4	x > -4 or -4 < x	**2***	**M1** -4 seen on answer line or **M1** correct movement of 2 terms
5	14	**2***	**M1** correct movement of 2 terms
6	**(a)** (-)96 **(b)** 0	**2*** **1**	**B1** answers in the range 90 to 100 or 1.5 to 1.7
7	3200	**3***	**M1** $R = kv^2$ **M1** k = 2 Note 2400 scores **M0**
8	3.23	**2***	**M1** $\frac{\text{figs } 4}{\text{figs } 124}$ or $\frac{\text{figs } 128 - \text{figs } 124}{\text{figs } 124}$ Note 3.13 is **M0**
9	**(a)** 71 **(b)** 7n + 1 **(c)** 37	**1** **1** **1**√	Allow 7 x n + 1 Their part (b) = 260 correctly solved
10	766	**3***	**M1** sin 12 = h/864 **M1** 586 + their "180" cos78 or sine rule
11	**(a)**  **(b)** 2	**2*** **1**√	**B1** One region correct The numbers must be completely **inside** the correct region Count the numbers in the region between A and B Not 45, 49
12	$c = \frac{b^2 + 5}{3}$	**3***	**M1** for a correct operation **M1** for a second correct operation

Page 2	Mark Scheme	Syllabus	Paper
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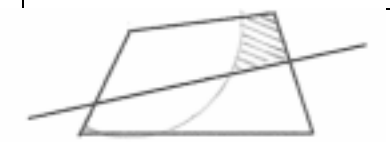
13	**(a)** 115 125 **(b)** 2400	**1** **2**√	**M1** their 125^2 – their 115^2
14	**(a)** (-1, 0) (1, -4) **(b)** -1 < x < 1	**1, 1** **1**	Allow in words provided ± 1 clearly excluded
15	 **(c)**	**1*** **2*** **1**	**M1** for complete arc radius 5cm ± 1mm **M1** for perp. bisector of CD **M1** construction arcs **B1** shading to the right of (a) and above (b), can be scored if parts (a) and (b) are incomplete but there must be only 4 boundaries
16	P = 54° q = 51° r = 78°	**1** **1**√ **2**√	 105 – p r = 180 – 2q **M1** for use of 180 – 2q
17	3.10 or -7.10	**4**	**M1** for 4^2 -4 x 1 x -22 or better **M1** for $\frac{-4 \pm **}{2}$ **A1 A1** **SCA1** 3.09 **and** -7.09 or 3.1 **and** -7.1
18	**(a)** $\begin{pmatrix} -7 & -8 \\ 4 & -11 \end{pmatrix}$ **(b)** $\begin{pmatrix} 22 & 0 \\ 0 & 22 \end{pmatrix}$ **(c)** $\frac{1}{22}\begin{pmatrix} 4 & 2 \\ -1 & 5 \end{pmatrix}$ o.e	**2** **2** **2**	**B1** any 2 correct **B1** either column correct **M1** either adjoint matrix correct or determinant 22 seen
19	**(a)** 180 **(b)** 37.7	**3*** **2***	**M1** for 2 x π x 35 oe **M1 dep** for 400 - π x 70 **M1** for 2 π (41 – 35) or 2 π 41 + (a) – 400

Page 3	Mark Scheme	Syllabus	Paper
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20	**(a)** $\frac{11}{24}$ $\frac{14}{24}$ $\frac{10}{24}$	**2**	**B1** any 2 correct and ISW
	(b) (i) $\frac{91}{300}$ o.e (= 0.303)	**2***	**M1** $\frac{14}{25} \times \frac{13}{24}$ only
	(ii) $\frac{77}{150}$ o.e (= 0.513)	**2***	**M1** for adding their R x Y and Y x R probabilities
21	**(a)** vector lines drawn	**1, 1**	**AB** ends at (4,6) **BC** horizontal 4 units long
	(b) (5, 1)	**1, 1**	**SC2** for (1, 5) if B is at (6, 4) and C is at (6, 8)
	(c) 5.83	**2***	**M1** $\sqrt{(3^2 + 5^2)}$
	TOTAL	**70**	