

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS



**NOVEMBER 2002**

**INTERNATIONAL GCSE**

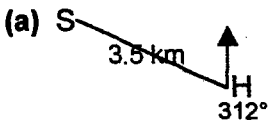
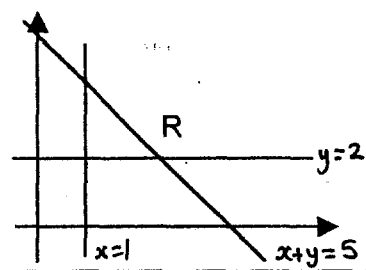
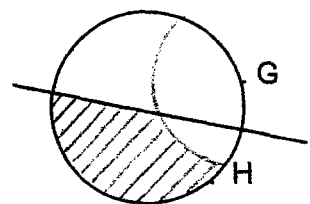
<b>MARK SCHEME</b>
<b>MAXIMUM MARK : 70</b>
<b>SYLLABUS/COMPONENT : 0580/2; 0581/2</b>
<b>MATHEMATICS</b>
<b>(EXTENDED)</b>

Page 1	Mark Scheme	Syllabus
	IGCSE Examinations – November 2002	0580; 0581

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

1	(a) 4 (b) 4.5	1 1	Allow – 4 Allow – 4.5
2	25.8	2*	M1 for $\frac{16}{62} \times 100$ or $100 - \frac{46}{62} \times 100$
3		2	B1 for A,B disjoint B1 for A,B subsets of K
4	512.82 cao	2*	M1 $500 \div 0.975$ or $500 \times 1.026$
5	$\frac{1}{1000}$ , 0.11%, 0.0108, $\frac{11}{1000}$	2*	M1 for conversions into decimals, percentages, SIF or fractions with identical denominators
6	$\frac{-2x^2}{5-x}$	2*	M1 $2x(5-x) - 10x$ or better, brackets essential
7	(a) $\frac{1}{9}$ (b) $1\frac{1}{3}$	1 2*	Allow 0.1recurring only M1 for $\frac{16}{9}$ Allow $\frac{4}{3}$ or 1.3 recurring only If no marks scored allow SC1 for 0.111 and 1.33
8	100 cao	3*	B1 for 385 or 3.85 seen M1 a distance $\div$ a speed
9	(a)  (b) rectangle	2 1√	B1 poor quality rectangle must be a quadrilateral
10	(a) 8 (b) 7.5 (c) 6.5	1 1 1	
11	$4.0 \times 10^7$	3*	M1 $2 \times \pi \times 6.4 \times 10^6$ SC1 $2.0 \times 10^7$ $4.0 \times 10^k$ , $4.02 \times 10^7$ , $4 \times 10^7$ score M1A1A0
12	(a) $71^\circ$ (b) $168^\circ$	1 2√	B1 720 or M1 for $\frac{1}{2}$ ("their 720" - 313 - (a)) M1 A1 √ for $\frac{1}{2}(407 - (a))$

Page 2	Mark Scheme	Syllabus
	IGCSE Examinations – November 2002	0580; 0581

13	(a) 1.6 (b) 19	1 2*	Allow – 1.6 M1 for attempting to find the area under the graph
14	(a) 80° (b) 67° (c) 12°	1 1√ 1√	147 – (a) 79 – (b)
15	$x = 1/4$ $y = -1/5$	4*	M1 multiplication M1 add or subtract A1 A1 or M1 rearrange M1 correct substitution
16	(a)  (b) 2.34	2  2*	-1 each item missing or wrong including the size of the angle (S and H interchanged is one error)  M1 $\sin 42 = d/3.5$ or $\cos 48 = d/3.5$
17		3 1√	B1 $x = 1$ B1 $y = 2$ B1 $x + y = 5$ B1 R correctly placed for their lines but B0 if the line $x + 5 = 5$ is drawn with a positive gradient
18		4	B1 arc radius 5cm $\pm$ 1mm B1 perp. bisector, dep B1 with arcs, each correct by eye. B1 $\checkmark$ shading for a line between G and H and the arc, with boundaries complete
19	(a) $x < 4.91$  (b) (0), 1, 2, 3, 4	3*  1√	M1 for $9/2$ oe M1 for $11x/12$ www can be implied by $4.9(1)$ or $54/11$ or M1 multiples of 60 – $8x > 6 + 3x$ M1 $11x < 54$  if possible

Page 3	Mark Scheme	Syllabus
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20	(a) $f^{-1}(x) = \frac{x+1}{2}$ (b) $gf(x) = 4x^2 - 4x$ oe	2 2*	 M1 for $(2x-1)^2 - 1$
21	(a) $\begin{pmatrix} -2 & 1 \\ -1 & -1 \end{pmatrix}$ (b) $\frac{1}{3} \begin{pmatrix} 1 & 1 \\ -1 & 2 \end{pmatrix}$	2* 3*	-1 eeo or M1 for subtracting from zero matrix B1 for each diagonal of the adjoint matrix B1 for division by 3 or M1 for $2a - c = 1$ and $a + c = 0$ (or similar) A1 each column
22	(a) 5 (b) $133^\circ$	2* 3*	M1 for $\sqrt{3^2 + 4^2}$ B1 for bisecting isosceles triangle M1 for $\sin x = 2.75/3$ or M1 $5.5^2 = 3^2 + 3^2 - 2 \times 3 \times 3 \cos A$ M1 $\cos A = -12.(25)/18$
	TOTAL	70	