

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

JUNE 2002

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK : 104

SYLLABUS/COMPONENT : 0580/3; 0581/3

MATHEMATICS
(Structured Questions)



UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

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Q1	a)i)	1440	2	M1 for rank order of 1210,1390,1400,1440,1530,1650,1880	2	
	a)ii)	1500	2	M1 for (their addition) / 7	2	
	a)iii)	explain	1	"only one of each number" or equiv.	1	
	b)i)	3,7,11,2,1	2	B1 for 3 or 4 correct or B1 if left as tallies (all correct) <i>B1 if correct</i>	2	
	b)ii)	28.125 or f.t.	3	accept 28.1 <i>accept 28.125 r.o.t.</i>		
				M1 for E fx (675) ($\sqrt{\quad}$ or $\sqrt{\quad}$)		
				M1 (dep) division by 24 ($\sqrt{\quad}$ or $\sqrt{\quad}$)	3	
	c	pie chart	1	M1 for $4/24 \times 360 = 60$ or equiv. Correctly seen once.		
			1	angles of 60,90,135,45,30 seen or implied ($\pm 2^\circ$)		
			2	accurate pie chart drawn (+ - 2) f.t. If complete diagram		
				SCB1 for 3 correct sectors or f.t. If incomplete diagram		
			1	correctly labelled (indep)	5	15
						15
Q2	a	10,5,3,3,2,5				
		2,1,1,1	3	B3 for all 7, B2 for 6, B1 for 5	3	
	b	points or f.t.	3	P3 for all 10 (within 1mm) P2 for 8/9 P1 for 6/7		
		curve	1	C1 for correct smooth curve	4	
	c)i)	12.5 or f.t.	1	accept between 12 and 13 inclusive f.t. only if unique sol.	1	
	c)ii)	16.7 or f.t.	1	accept between 16 and 17 inclusive f.t. only if unique sol.	1	
	d)i)	8, 0	2	B1 B1	2	
	d)ii)	line	2	correct straight line joining (0,8) to (40,0) (ruler)		
				B1 for correct but shorter line still crossing curve		
				or B1 for f.t. line if single straight line	2	
	e	(8, 6.25) or f.t.	1	accept x between 7 and 9 incl y between 6.2 and 6.6 incl		
		(32, 1.6) or f.t.	1	accept x between 31.5 and 33.5 incl y between 1.4 and 1.7 incl	2	
				f.t. only if unique solution.		
	f	-0.2	2	M1 if gradient = y/x or equiv seen <i>accept -4/56</i>	2	17
Q3	a	10	2	M1 for $\sqrt{6^2+8^2}$ sol	2	
	b	36.9	2	accept 36.86989765 rot.		
				M1 for inv. tan (6/8) or inv. sin (6/10) or inv. cos (8/10) f.t. <i>or 37</i>	2	
	c)i)	drawing (or f.t.)	3	f.t. is from their AC in (a) ± 0.1		
				SCB1 for correct scale used ± 0.2		
				SCB1 for correct arcs seen	3	
	c)ii)	50 or f.t.	1	accept 49 to 52 incl f.t. is + - 1 degree	1	
	d	pyramid	1	accept tetrahedron	1	9
						26

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Q4	a	6k-5m	2	SCB1 for 6k or 5m		2
	b	3/7	3	B1 for $2x-8+15-9x = 4$	accept 0.428571428 rot	
				B1 for $3 = 7x$ or equiv. Or f.t.		
				B1 for $x=3/7$ or 0.428571428 rot. or f.t.		3
	c)i)	7p + 3e	2	SCB1 for 7p or 3e		2
	c)ii)	7p+3e/100 or f.t	1	or any equivalent		1
	c)iii)	\$1.85	2	M1 for $(7 \times 20 + 3 \times 15) / 100$ or f.t.		2
	d)i)	16	1	cao		1
	d)ii)	128	1	cao		1
	d)iii)	2 ^{cl}	1	accept in words but must be powers		1
						13
Q5	a)i)	A	2	B2 for correct image		
				B1 for rotation about P, 90 but anticlockwise		
				B1 for rotation about any other point but still 90 clockwise		2
	a)ii)	B	2	B2 for correct image		
				B1 for x or y translation correct or by (-3)		2
	a)iii)	C	3	B3 for correct image		
				B2 for enlargement, scale factor 2 anywhere		
				B2 for enlargement, about (0,0), any scale factor		3
	a)iv)	D	3	B3 for correct image		
				B2 for reflection in $x=4$		
				B1 for any reflection		3
	d b	$\begin{pmatrix} 4 \\ 3 \end{pmatrix}$	1	cao		1
				penalty of max 1 if stem of flag missing		11
						24
Q6	a	180	1	cao		1
	b	230	1	accept 225 to 235 inclusive.		1
	c	1950-1960	1	cao		1
	d)i)	60	1	cao		1
	d)ii)	-20	1	cao		1
	e)i)	420 or f.t.	1	f.t. Is from d)ii) or graph		1
	e)ii)	428 or f.t.	1	accept 425 to 430 incl. f.t. Is from d)ii) or graph		1
	f	5	2	M1 for 50/10		2
						9
Q7	a)i)	140,40,30	3	B1,B1,B1		3
	a)ii)	trapezium	1	cao		1
	b)i)	140	3	M1 for 7×180	or M1 for $360 / 9$	
				M1dep for then $\div 9$	or M1 for 180 - answer	3
	b)ii)	12	3	M1 for (ext.angle)=180-150	or M1 for $180(n-2)/n=150$	
				M1 for $360 / 30$	or M1 for $30n = 360$	3
						10
						19

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Q8	a)i)	85.17	1	cao		1
	a)ii)	7665.3(0) or f.t.	1	f.t. Is (a)(i) x 90		1
	a)iii)	1026.3(0) or f.t.	2	f.t. Is 8691.60 - (a)(ii)		
				M1 for 120 x 72.43 - 7665.30 or (a)(ii)		2
	b)i)	13021.8(0)	2	M1 for 217 03 x 60		2
	b)ii)	130(.218) or f.t.	2	M1 for (b)(i) / 10,000 x 100		2
	c	120	3	M2 for evidence of 2 trials such as 13906.80/60 , 13906.80/90 etc. or M2 for evidence of 2 trials such as 178.93x60 , 136.27x90 etc. or M1 for evidence of any 1 trial.		3
				or 1032 for 115.89		11
Q9	a	7, 11	2	B1.B1		2
	b	17, 3n+2	2	B1.B1		2
	c	25, 36	1			
		24, 35	1			
		n^2-1	1	accept $(n-1)(n+1)$		
		36, 49	1			
		$(n+1)^2$	1	accept $n+2n+1$, $n(n+2)+1$		5
						9
						20
						104