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Mark Scheme (Pre-Standardisation)
Summer 2008

IGCSE

IGCSE Mathematics (4400/3H)

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Q	Working	Answer	Mark	Notes
1.	$\frac{17.28}{2.4}$		2	M1 for 17.28 or 2.4 seen
		7.2		A1 cao
				Total 2 marks

2.	$\frac{1-0.6}{2}$		2	M1 for 1 − 0.6 or 0.4 or division by 2
		0.2		A1 cao
				Total 2 marks

3. (a)	Enlargement scale factor 2 centre (1, 3)		3	B3 B1 for enlargement B1 for 2 B1 for (1, 3)
(b)	Reflection in the line $y = x$		2	B2 B1 for reflection B1 for $y = x$
				Total 5 marks

4.	3 + 1 or 4 seen		2	M1
		210		A1 cao
				Total 2 marks

5. (a)(i)		1, 9, 17	2	B1 cao
(ii)		1, 5, 9, 13, 17, 25, 33		B1 cao
(b)		eg No members in common	1	B1
				Total 3 marks

6.	$\tan x° = \frac{3}{8} = 0.375$		3	M1 for tan A1 for $\frac{3}{8}$ or 0.375
		20.6		A1 for 20.6 or better (20.5560…)
				Total 3 marks

7.	$\pi \times 7.8$		2	M1
		24.5		A1 for 25.4 or better (24.504…)
				Total 2 marks

8. (a)		$n = 2p + 1$	3	B3 B2 for $2p + 1$ B1 for n = linear function of p eg $n = p + 1$
(b)	$2p = n - 1$		2	M1
		$\frac{n-1}{2}$ oe		A1
				Total 5 marks

9. (a)	$7x - 7 = 5 - 2x$ $9x = 12$		3	M1 for $7x - 7$ seen M1 for correct rearrangement into form $ax = b$ ft from "$7x - 7$"
		$1\frac{1}{3}$ oe		A1
(b)(i)	$4x \leq 16$		4	M1
		$x \leq 4$		A1
(ii)		1 2 3 4		B2 B1 for3 correct and none wrong or for 4 correct and 1 wrong
				Total 7 marks

10. (a)	29 832 – 28 250 or 1582		3	M1	or
	$\frac{1582}{28250} \times 100$ or $\frac{1582}{29832} \times 100$			M1 for $\frac{1582}{28250}$ or $\frac{1582}{29832}$ or 0.056 or 0.053…	M1 for $\frac{29832}{28250}$ or 1.056 M1 for "1.056" – 1
		5.6		A1	cao
(b)	1.052 seen		3	B1	
	$\frac{28141}{1.052}$			M1	
		26 750		A1	cao
					Total 6 marks

11. (a)		$60 < p \leq 70$	1	B1	Accept 60-70
(b)	$55 \times 7 + 65 \times 21 + 75 \times 15 + 85 \times 14 + 95 \times 3$ or $385 + 1365 + 1125 + 490 + 285$ or 4350		4	M1	for finding products $f \times x$ consistently within intervals (inc end points) and summing them
				M1	(dep) for use of halfway values
	$\frac{\text{"4350"}}{60}$			M1	(dep on 1st M1) for division by 60
		72.5		A1	for 72.5 Accept 73 if all M marks awarded
(c)	30 (or 30½) indicated on graph or stated		2	M1	
		124 or 125		A1	Accept any value in range 124-125 inc
(d)	Use of $p = 131$ on graph		2	M1	May be shown on graph or implied by 47, 48 or 49 stated
		≈ 12		A1	Accept any value in range 11-13 inc
					Total 9 marks

12.	3^2 or 9 or $\pi \times 3.385\ldots^2$		2	M1	
		36		A1	cao
					Total 2 marks

13.	(6 − 2) × 180 or 720		5	M1
	720 ÷ 6 or 120			A1
	360 − (120 + 90) or 150			M1
	$\frac{360}{180-"150"}$			M1
		12		A1 cao
				Total 5 marks

14.	(a)		$5(2y - 3)$	1	B1 cao
	(b)		$3pq(3p + 4q)$	2	B2 B1 for $3pq(\ldots)$ or $\ldots(3p + 4q)$ or $3p(3pq + 4q^2)$ or $3q(3p^2 + 4pq)$ or $pq(9 + 12q)$
	(c)(i)		$(x - 2)(x + 8)$	3	B2 B1 for one correct factor or $(x + 2)(x - 8)$
	(ii)		2, −8		B1 ft from (i) if two linear factors
					Total 6 marks

15.	(a)(i)		57.5	2	B1 cao
	(ii)		56.5		B1 cao
	(b)	62.5 − "56.5"		2	M1
			6		A1 ft from "56.5"
					Total 4 marks

16. (a)	$\frac{5}{9}\times\frac{5}{9}$		2	M1
		$\frac{25}{81}$		A1 for $\frac{25}{81}$ or 0.31 or better
(b)	$\frac{1}{9}\times\frac{1}{9}$ or $\frac{1}{81}$		3	M1
	$\frac{1}{9}\times\frac{1}{9}\times 4$ oe			M1
		$\frac{4}{81}$		A1 for $\frac{4}{81}$ or 0.05 or better
				Total 5 marks

17. (a)	$d = k\sqrt{h}$		3	M1
	54 = 15k			M1
		$3.6\sqrt{h}$		A1
(b)		28.8	1	B1 ft from “3.6”
(c)	$\sqrt{h} = \frac{61.2}{"3.6"}$		2	M1
		289		A1 ft from “3.6”
				Total 6 marks

18.	$\frac{a}{\sin 35°} = \frac{6.8}{\sin 64°}$		3	M1	for correct statement of Sine rule
	$a = \frac{6.8 \sin 35°}{\sin 64°}$			M1	for correct rearrangement
		4.34		A1	for 4,34 or better (4.3395…)
					Total 3 marks

19.	$\frac{12}{2\sqrt{2}}$		2	B1	for use of $\sqrt{8} = 2\sqrt{2}$
	$\frac{12}{2\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$	$3\sqrt{2}$		B1	for multiplication of numerator and denominator by $\sqrt{2}$
					Total 2 marks

20. (a)(i)		59	2	B1 cao
(ii)	angle at the centre = twice angle at the circumference			B1
(b)	180 − (x + 36) oe seen		5	B1
	$x = 2(180 - x - 36)$			M1
	$x = 288 - 2x$			M1
	$3x = 288$			M1
		96		A1 cao
	OR			
	$x + 36 + \frac{x}{2}$ oe seen		5	B1
	$x + 36 + \frac{x}{2} = 180$			M1
	$\frac{3x}{2} + 36 = 180$			M1
	$\frac{3x}{2} = 144$			M1
		96		A1 cao
				Total 7 marks

21. (a)	tan drawn at (3,7)		3	M1	within guidelines
	$\frac{\text{vertical difference}}{\text{horizontal difference}}$			M1	use of tan or chord joining points near (3,7)
		≈ 3		A1	dep on 2nd M1
(b)		−1.7	1	B1	Accept answer in range −1.7 - −1.65
(c)(i)	line joining (−1,11) & (1,13)		4	M1	
		12		A1	cao
(ii)	produces line to cut curve again			M1	
		4		A1	ft from line
					Total 8 marks

22.	$\frac{1}{2}\times 2\times 2$ or 2		6	B1	for area of triangle *BCD*
	$BD^2 = 2^2 + 2^2$			M1	
	$BD = \sqrt{8}$ or 2.828…			A1	
	$AM^2 = 10^2 - \left(\frac{BD}{2}\right)^2$			M1	(*M* is midpoint of *BD*)
	$AM = \sqrt{98}$ or 9.899…			M1	
		16		A1	for 16 or answer rounding to 16.0
					Total 6 marks