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Mark Scheme (Pre-Standardisation)
Summer 2008

IGCSE

IGCSE Mathematics (4400/4H)

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.

1.						T & I: Full mks or 0 Embedded ans: Lose A or B mk
	(a)	$6x - 2x = 7 - 13$ or $4x + 6 = 0$ $4x = -6$ or $-4x = 6$	$x = -1\frac{1}{2}$	**3**	M1 M1 A1	attempt collect x's and constants
	(b)	$y - 10 = 20$ or $y/5 = 6$ oe	$y = 30$	**2**	M1 A1	
						Total 5 marks

2.	(a)		250±2	**2**	B2	B2 for angle 248 to 252 inclusive. B1 for angle 190 to 260 inclusive
	(b)		305	**2**	M1 A1	125 + 180 or mark C, bearing 90 to 180 exact
						Total 4 marks

3.	(a)	Attempt find 10th &/or 11th	6	**2**	M1 A1	
	(b)		No or not nec'y oe Some may have both	**2**	B1 B1	dep on 2nd B1 or Yes, if none have both: B2
						Total 4 marks

4	(a)	3 - 5x(-2)	13	**2**	M1 A1	Allow omission of bracket
	(b)		$5y - 10$	**1**	B1	
	(c)		$w(w + 5)$	**2**	B1B1	$w(\ )$: B1 $(w + 5)$: B1
						Total 5 marks

5.	(a)	30 x 0.2	6	**2**	M1A1	or 30 ÷ 5
	(b)	0.2 + 0.1	0.3	**2**	M1A1	
						Total 4 marks

6.	(a)	Attempt c. d. 12 or mult of 12	$^{8}/_{12}$, $^{3}/_{12}$	**2**	M1 A1	
						Total 2 marks

7.	(a)		3^{14}	**1**	B1	
	(b)		7^{3}	**1**	B1	
	(c)	$n + 3$ or $n - 4$ or 5^{9} seen	$n = 6$	**2**	M1 A1	
	(d)		24 or 2^{3} x 3	**2**	M1 A1	M1 for primes 2 and 3 only seen
						Total 6 marks

8.		½ x 3 x 4 3 x 15, 4 x 15, 5 x 15 2 x tri + 3 diff rects	192	**4**	M1 M1 M1 A1	any one or 12 x 15 can be implied
						Total 4 marks

9.		$8x = 12$	$x = 1.5$ oe $y = -0.5$ oe	**3**	M1 A1 A1	allow $8x = c$ No working, $x = 1.5$: M1A1
						Total 3 marks

10.	(a)	$8x = 12$	4.8	**1**	B1	or 48mm
	(b)	5^2 - "4.8"^{2} or x^2 + "4.8"^{2} = 25^2 $\sqrt{}(5^2$ - "4.8"^{2})	1.4	**3**	M1 M1dep A1	or 1.96.

						Total 4 marks

11.			123.47 & 123.53	**2**	M1A1	M1 for 2 nos = to 1 dp
						Total 2 marks

12.	(a)		63	**1**	B1	
	(b)	$y = 4 \times 5/8$ oe	2.5	**2**	M1 A1	or $4/8 \times 5$ or $4 \times 5 / 8$
	(c)	$z = 6 \times 8/5$ oe	9.6	**2**	M1 A1	or $6/5 \times 8$ or $6 \times 8 / 5$
						Total 5 marks

13.	(a)		$^2/_3$ correctly placed once Correct structure All correct	**3**	B1 B1 B1	correct 4 new lines, ignore labels/probs including labels/probs
	(b)	$^2/_3 \times {}^2/_3$ $1 - {}^2/_3 \times {}^2/_3$	$^5/_9$ oe	**3**	M1 M1 A1	$^1/_3 \times {}^2/_3$ or $^2/_3 \times {}^1/_3$ or $^1/_3 \times {}^1/_3$ $^1/_3 \times {}^2/_3 + {}^2/_3 \times {}^1/_3 + {}^1/_3 \times {}^1/_3$
						Total 6 marks

14.	(a)(i)	vert/horiz	0.5 oe	**2**	M1 A1	using rt <d tri on **L**. eg not 3/4
	(a)(ii)		$y =$ "0.5"$x + 1$	**2**	B1fB1	B1 x coeff. B1 const. Omit "$y =$": -B1
	(b)		$x \leq 4$, $y \geq -1$ $y \leq$ "$0.5x + 1$"	**3**	B1B1 B1f	Allow <, > Allow <
						Total 7 marks

15.		$3.1^2 + 3.9^2 -$ $2x3.1x3.9x\cos 80^o$ $\sqrt{}$ "20.6…"	4.54	**3**	M1 M1 A1	or 20.621… or 20.6 dep M1 or ans that rnds to 4.54
						Total 3 marks

16.	(a)	$\frac{5 \pm \sqrt{((-5)^2 - 4x3)}}{2}$	4.30, 0.697 or $\frac{5 + \sqrt{13}}{2}$, $\frac{5 - \sqrt{13}}{2}$	**3**	M1 A1A1	Allow one sign error
	(b)		$-3 < y < 3$	**2**	B2	Allow $\leq$ B1 for $y < 3$ B0 for $y < \pm 3$
						Total 5 marks

17.	(a)	8 seen, 20 seen	40%	**3**	M1M1 A1	or two nos in ratio 8:20 M2
	(b)	10 seen	4	**2**	M1 A1	
						Total 5 marks

18.		x x 4 = 3 x 14 oe	x = 10.5 oe	**2**	M1 A1	
						Total 2 marks

19.	(a)		$2t$ - 6	**2**	B1B1	
	(b)	2 x 5 - 6	4	**2**	M1 A1	Subst t = 5 in attempted ds/dt dep B1

	(c)	d("$2t - 6$")/dt	2	**2**	M1 A1	Attempt diff her ds/dt
						Total 6 marks

20.	(a)		1.4×10^{13}	**2**	B2	Figs 14 or 1.4e13 : B1
	(b)(i)		16	**1**	B1	
	(b)(ii)	$(p + q) / 10^{n - 15}$	$(p + q)/10$	**2**	M1 A1	cao
						Total 5 marks

21.	(a)(i)		**a + b** oe	**1**	B1	
	(a)(ii)		**-a**	**1**	B1	
	(a)(iii)		**b – a** oe	**1**	B1	
	(b)		5	**1**	B1	
						Total 4 marks

22.		$^1/_2 \times 6 \times 8 \times \sin x^o = 12$ $\sin x^o = 0.5$ 30	$x = 150$	**4**	M1 M1 A1 A1	allow $x = 30$
						Total 4 marks

23.	(a)	$(x - 3)(x + 3)$ $x(x + 3)$	$\frac{x-3}{x}$	**3**	M1 M1 A1	
	(b)	$\frac{\frac{1}{x^2} \quad 3}{\frac{1}{x^2}}$	$1 - 3x^2$	**2**	M1 A1	ft only $\frac{x+3}{x}$ cao
						Total 5 marks