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Mark Scheme (Results)

June 2011

International GCSE
Mathematics (4MA0) Paper 1F

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International GCSE Maths June 2011 – Paper 1F Mark scheme					
Apart from Question 16(b) (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.					
Question	**Working**	**Answer**	**Mark**	**Notes**	
1. (a)		1063	1	B1	cao
(b)	one thousand and eighty three		1	B1	Accept 1 for 'one' and 3 for 'three'. Condone omission of 'and'
(c)		tens	1	B1	Also accept 10, 50
(d)		1770	1	B1	cao
(e)		1530	1	B1	cao
(f)		1411	1	B1	cao
(g)		961	1	B1	cao
					Total 7 marks

2. (a)		China Russia	1	B1	Condone spelling errors
(b)		38	1	B1	Accept 35 < ans < 40 even if non-integer
(c)		10 < bar < 15	1	B1	
(d)	10 : 15		2	M1	
		2 : 3		A1	SC if M0, award M1 for 3 : 2 or 1 : 1.5
					Total 5 marks

3.	(a)(i)	Award this mark for 'pyramid' even if accompanied by another word	pyramid	3	B1	Accept any recognisable spelling
	(ii)		cylinder		B1	
	(iii)		sphere		B1	
	(b)(i)		5	2	B1	cao
	(ii)		8		B1	cao
	(c)		14	3	B2	for 14 B1 for 13 or 15
		cm^3 or cubic centimetres			B1	indep Also accept m*l* or millilitres
						Total 8 marks

4.	(a)		1024 4096	2	B1	B1 for 1024 B1 for 4096
	(b)		eg × 4	1	B1	
	(c)		6	1	B1	cao
						Total 4 marks

5.	(a)		3	1	B1	cao
	(b)	7 + 3 + 4 + 3 + 9 + 10 + 2 + 3 + 4 or 45		3	M1	for clear attempt to sum results or 45
		"45" ÷ 9			M1	dep for division by 9
			5		A1	cao
						Total 4 marks

6.	(a)	$\frac{16}{100}$		2	M1	for $\frac{16}{100}$ or $\frac{8}{50}$
			$\frac{4}{25}$		A1	cao
	(b)		0.07	1	B1	Also accept .07
	(c)		31	1	B1	cao
	(d)	eg $\frac{16}{100} \times 21$, $\frac{16}{100} \times 21\,000\,000$		2	M1	
			3		A1	for 3 Also accept 3.4 or 3.36
						Total 6 marks

7.	(a)(i)		31	2	B1	cao
	(ii)	eg sum of angles on a straight line is 180°			B1	'line' and '180' needed
	(b)(i)		52	1	B1	cao
	(ii)	eg 180 − (81 + 52)		2	M1	for sum and subtraction from 180
			47		A1	cao
						Total 5 marks

8.	(a)(i)		4.358898944	2	B1	Accept 3 or more dp rounded or truncated
	(ii)		4.36		B1	ft from (b)(i) if non-trivial ie (a) must have more than 3 dp
	(b)		4096	1	B1	cao
						Total 3 marks

9.	(a)		$3m$	1	B1	Also accept $3\times m$, $m\times 3$, $m3$
	(b)		$9x - 5y$	2	B2	B1 for $9x$ B1 for $-5y$
						Total 3 marks

10.	1210 seen		4	B1 Also award for 0.06
	"1210" – 60 or 1150			M1 for number with digits 121 – number with digit 6
	"1150" ÷ 2.5			M1 dep on first M1 for division by 2.5 or by 0.0025 as appropriate
		460		A1 cao
				Total 4 marks

11.	(a)	(2,3)(2,5)(2,7)(4,1)(4,3)(4,5)(4,7)(8,1)(8,3)(8,5)(8,7) and no extras	2	B2	B1 for 6 or more ignoring extras
	(b)	$\frac{7}{12}$	2	M1	for denominator ft from (a) if at least B1 scored
				A1	ft from (a) if M1 scored
					Total 4 marks

12. (a)	9 × 3 + 7 or 27 + 7 or 34		2	M1	
		17		A1	cao
(b)	26 × 2 − 7 or 45 or $\frac{? \times 3 + 7}{2} = 26$ oe		2	M1	
		15		A1	cao
(c)		$C = \frac{3d + 7}{2}$ oe	3	B3	B2 for $\frac{3d + 7}{2}$ oe B2 for $C = 3d + 7 \div 2$ oe B1 for $3d + 7 \div 2$ B1 for C = linear expression in d
					Total 7 marks

13.	$\frac{52}{8}$ or 6.5		3	M1	
	2 × 8 + 2 × "6.5" or 16 + 13			M1	
		29		A1	cao
					Total 3 marks

14. (a)	$\frac{24.1}{0.6} - 38.44$ = 40.166… – 38.44		2	M1	for 0.6 or $\frac{3}{5}$ or 40.166… or $40\frac{1}{6}$ or 38.44 or $38\frac{11}{25}$
		1.726666667		A1	Accept if first 4 figures correct (rounded or truncated) Also accept 1.726 or $\frac{259}{150}$ or $1\frac{109}{150}$
(b)		1.73	1	B1	ft from (a) if answer to (a) is a decimal with more than 3 sf
					Total 3 marks

						alternative method
15.	((5 – 2) × 180 or 3 × 180 or (2 × 5 – 4) × 90 or 6 × 90 or 360 + 180		4	M1		360–(83+66+53+96) Condone 1 incorrect ext angle
	540			A1	540 seen scores M1 A1	62
	"540" – (97 + 114 + 127 + 84)			M1	dep on first M1	180 – "62"
		118		A1	cao	
						Total 4 marks

16.	(a)		$w(w - 9)$	2	B2	Award B2 also for $(w \pm 0)(w - 9)$ B1 for factors which, when expanded and simplified, give two terms, one of which is correct except B0 for $(w + 3)(w - 3)$ SC B1 for $w(w - 9w)$
	(b)	$3x = -6$ or $3x = 1 - 7$ or $5x - 2x = -6$ oe		3	M2	for correct rearrangement with x terms on one side and numbers on the other AND correct collection of terms on at least one side M1 for $5x - 2x = 1 - 7$ oe ie correct rearrangement with x terms on one side and numbers on the other
			-2		A1	cao dep on M2
	(c)	$y^2 + 3y - 7y - 21$		2	M1	for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $y^2 - 4y + n$ for any non-zero value of n
			$y^2 - 4y - 21$		A1	cao
						Total 7 marks

17. (a)	1 – (0.6 + 0.3)		2	M1	
		0.1		A1	Also accept $\frac{1}{10}$ or 10%
(b)	30 × 0.6		2	M1	
		18		A1	cao Do not accept $\frac{18}{30}$
					Total 4 marks

18.	$\frac{10}{12}$ and $\frac{9}{12}$ eg $\frac{10-9}{12}$, $\frac{10}{12}-\frac{9}{12}$		2	B2	B1 for $\frac{10}{12}$ or $\frac{9}{12}$ or for $\frac{5\times2}{6\times2}$ or $\frac{3\times3}{4\times3}$ **Alternative method** B1 for both fractions correctly expressed as equivalent fractions with denominators that are common multiples of 6 and 4 eg $\frac{20}{24}$ and $\frac{18}{24}$ or $\frac{5\times4}{6\times4}$ or $\frac{3\times6}{4\times6}$ B1 for correct answer which is equivalent to $\frac{1}{12}$ eg $\frac{2}{24}$ **SC** B1 for multiplying both sides by 12 ie 10 – 9 = 1
					Total 2 marks

19. (a)		Rotation	3	B1	Also accept 'rotate', 'rotated' etc	These marks are independent but award no marks if the answer is not a single transformation
		90° clockwise		B1	Also accept quarter turn clockwise, −90° or 270°	
		(0, 0)		B1	Also accept origin, *O*	
(b)	vertices (4,4), (4,2), (5,2)	**R** correct	2	B2	Condone omission of label B1 for 2 correct vertices	
						Total 5 marks

20.	3+5+7 or 15		3	M1	15 may be denominator of fraction or coefficient in an equation such as $15x = 90$
	90 ÷ (3+5+7) or 90 ÷ 15 or 6 or $\frac{7}{15}$ oe			M1	dep
		42		A1	Also award for 18 : 30 : 42
					Total 3 marks

21.	$1 \times 8 + 3 \times 14 + 5 \times 26 + 7 \times 17 + 9 \times 10 + 11 \times 5$ or 8 + 42 + 130 + 119 + 90 + 55		3	M1	for finding at least four products $f \times x$ consistently within intervals (inc end points) and summing them
				M1	(dep) for use of halfway values
		444		A1	cao
					Total 3 marks

22. (a)(i)		3, 5, 7, 11	2	B1 cao	Brackets not necessary
(ii)		2, 3, 5, 7, 9, 11		B1 cao (B0 if 3 or 5 or 7 or 11 repeated)	
(b)	Yes and gives either a specific explanation eg 8 is not an odd number, 8 is an even number or a general explanation which shows understanding of the symbol $\notin$ eg 8 is not a member of A, 8 does not belong to the set of odd numbers.		1	B1	
					Total 3 marks

23.	$9.3^2 - 3.7^2$ or 86.49 – 13.69 or 72.8		3	M1	for squaring and subtracting
	$\sqrt{9.3^2 - 3.7^2}$			M1	(dep) for square root
		8.53		A1	for answer rounding to 8.53
					Total 3 marks

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