

# Mark Scheme (Results)

January 2012

International GCSE Mathematics  
(4MA0) Paper 2F

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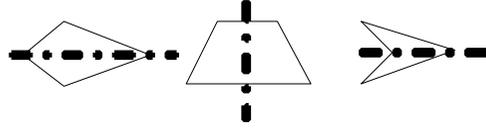
January 2012 International GCSE Mathematics (4MA0) Paper 2F Mark Scheme

Apart from Question 15 (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
<b>1.</b> (a)		$2.5 < \text{ans} < 3$	1	B1
(b)		National Gallery	1	B1
(c)		$3.5 < \text{bar} < 4$	1	B1
(d)		Tate Modern	1	B1
				<b>Total 4 marks</b>

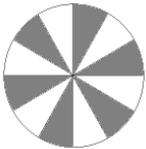
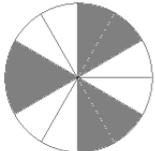
<b>2.</b> (a)		Freetown	1	B1
(b)		one thousand, two hundred and three	1	B1 Accept 1 for 'one', 2 for 'two' and 3 for 'three'. Condone omission of 'and'
(c)		tens	1	B1 Also accept 10, 40
(d)		3440	1	B1 cao
(e)		1920	1	B1 cao
(f)		2443 2415	2	B2 B1 for each number
(g)		1.92(0)	1	B1
				<b>Total 8 marks</b>

4MA0 | 2012 | January | Paper 2F | GradeMax

3.	(a)(i)		isosceles	2	B1	Condone spelling errors
	(ii)		line of symmetry		B1	
	(b)(i)		drawing of kite or isosceles trapezium or arrowhead (dart, deltoid)	3	B1	
	(ii)		line of symmetry		B1	Award for clear attempt to draw a line which passes through A and the midpoint of BC.
	(iii)		correct name of their shape		B1	dep on first B1 Accept any recognisable spelling (Condone omission of 'isosceles')
<b>Total 5 marks</b>						

4.	(a)		35 32	2	B1	for each number
	(b)		eg took away 3, subtracted 3, 3 less	1	B1	
	(c)		8	1	B1	cao
	(d)		eg 50 is not a multiple of 3, 3 is not a factor of 50, 2 is in the sequence, -1 is in the sequence	1	B1	
	<b>Total 5 marks</b>					

5.	(a)		$\frac{2}{3}$	1	B1	cao
	(b)	$48 \div 6$ or $8 \times 48$ or $240$		2	M	1
			40		A1	cao
	(c)	$7 \div 8$		2	M	1
			0.875		A1	Accept 0.88
<b>Total 5 marks</b>						

6.	(a)(i)		4	2	B1 cao
	(ii)		2		B1 cao
	(b)(i)		eg	2	B1 for a correct diagram
					
	(ii)		eg		B1 for a correct diagram Accept diagram with rotational symmetry of order 3 and 3 sectors shaded
					
					<b>Total 4 marks</b>

7.	(a)		hundredths	1	B1 Accept 0.01, $\frac{1}{100}$ , 0.07, $\frac{7}{100}$
	(b)		0.08 0.1 0.12 0.18	1	B1
	(c)		2.8	1	B1
	(d)		3.1	1	B1
	(e)		7	1	B1

8.	$\frac{2+9+7+3}{8}$ or $\frac{5+8+9+8}{8}$ or $\frac{52}{8}$			2	M 1 for clear attempt to add and divide by 8	SC If M0, award B1 for 45
			6.5		A1 for 6.5 oe	
					<b>Total 2 marks</b>	

4MA0 | 2012 | January | Paper 2F | GradeMax

<b>9.</b> (a)	$3 \times 2 + 4 \times 5$ or $6 + 20$		2	M 1 for correct substitution
		26		A1 cao
(b)	$-12 + 14$		2	M 1 for correct evaluation of one term ie $-12$ or $14$
		2		A1 cao
(c)	$9 = 3d + 4 \times 6$		3	M 1 for correct substitution
	$3d = 9 - 24$ or $3d = -15$			M 1 for correct rearrangement
		-5		A1 cao Award 3 marks for correct answer
				<b>Total 7 marks</b>

<b>10.</b> (i)	$2000 \div 72$ or $200 \div 7.2$ or $2 \div 0.072$ or $27.77\dots$		5	M 2 M1 for $2 \div 72$ or $0.0277\dots$ or for division with incorrect conversion(s) eg $200 \div 72$ or $2.77\dots$ $20 \div 72$ or $0.277\dots$ $2 \div 0.72$ or $2.77\dots$
		27		A1 cao
(ii)	"2000" - "27" / 2" or $2000 - 19$ or $0.777\dots \times$			M 1 Their "27" must be a whole number.
		56		A1 cao
				<b>Total 5 marks</b>

4MA0 | 2012 | January | Paper 2F | GradeMax

<b>11.</b>	$\frac{4.2}{1.12}$		2	M 1 for 4.2 or 1.12 or 0.6 or $\frac{15}{4}$
		3.75		A1
				<b>Total 2 marks</b>

<b>12.</b>	$(\angle ABD =) 60^\circ$		4	B1 May be stated or marked on diagram
	$(\angle DBC =) \frac{180^\circ - 78^\circ}{2}$			M 1
	$51^\circ$			A1 May be stated or marked on diagram
		111		A1
				<b>Total 4 marks</b>

<b>13.</b>	1 7 7		3	B2 for 1 7 7 in any order B1 for three positive whole numbers with either a median of 7 or a sum of 15 SC B1 for 0 7 8 in any order
		6		B1 cao
				<b>Total 3 marks</b>

<b>14.</b>	$\frac{135}{180}$		3	M 1
	0.75 oe			A1
		45		A1 cao
				<b>Total 3 marks</b>

4MA0 | 2012 | January | Paper 2F | GradeMax

<b>15.</b>	$4x = 7$ or $4x = 2 + 5$ or $7x - 3x = 7$ oe or $4x - 7 = 0$ oe		3	M 2	for correct rearrangement with $x$ terms on one side and numbers on the other AND collection of terms on at least one side or for $4x - 7 = 0$ oe M1 for $7x - 3x = 2 + 5$ oe ie correct rearrangement with $x$ terms on one side and numbers on the other
			$1\frac{3}{4}$ oe	A1	Award full marks for a correct answer if at least 1 method mark scored
					<b>Total 3 marks</b>

<b>16.</b>	(a)(i)		1	4	B1	Also accept $\frac{1}{1}, \frac{8}{8}, 100\%$
	(ii)		$\frac{1}{8}$		B1	
	(iii)		$\frac{2}{8}$ or $\frac{1}{4}$		M 1 A1	for denominator of 8 for numerator of 2 SC B2 for $\frac{1}{4}$
	(b)	$\frac{3}{8} + \frac{2}{8}$ oe		2	M 1	
			$\frac{5}{8}$		A1	
					<b>Total 6 marks</b>	

4MA0 | 2012 | January | Paper 2F | GradeMax

<b>17.</b>	One correct point plotted or stated		4	B1	May appear in table	
	2nd correct point plotted or stated			B1	May appear in table	
	Correct line between $x = -2$ and $x = 4$			B2	B1 for a line joining two correct, plotted points	
						<b>Total 4 marks</b>

<b>18.</b>	(a)	$1 + 7$ or 8		2	M 1	8 may be denominator of fraction or coefficient $n$ in an equation such as $8x = 32$	SC If M0 A0, award B1 for 4 : 28
				28	A1	cao	
	(b)	$32 \times 45$ or 1440 or 14.4(0)m		3	M 1		
		$\frac{"1440"}{72}$			M 1	dep	
				20	A1	cao	
							<b>Total 5 marks</b>

<b>19.</b>	(a)		Rotation	3	B1	These marks are independent but award no marks if the answer is not a single transformation	
			$90^\circ$		B1		Also accept quarter turn or $-270^\circ$ (B0 for $90^\circ$ clockwise)
			(0, 0)		B1		Also accept origin, $O$
	(b)		<b>R</b> correct	1	B1		
							<b>Total 4 marks</b>

4MA0 | 2012 | January | Paper 2F | GradeMax

<b>20.</b>	Fully correct factor tree or repeated division or 2, 2, 2, 5, 5 or $2 \times 2 \times 2 \times 5 \times 5$		3	M 2	M1 for factor tree or repeated division with 2 and 5 as factors
		$2^3 \times 5^2$		A1	Also accept $2^3 \cdot 5^2$
<b>Total 3 marks</b>					

<b>21.</b> (a)		$c^7$	1	B1	cao
(b)	$y^{3+n-1} = y^6$ oe or $y^{3+n} = y^7$ oe or $3 + n - 1 = 6$ oe or $y^n = \frac{y^7}{y^3}$ or $y^n = \frac{y^6}{y^2}$ or $y^n = y^4$		2	M 1	SC if M0, award B1 for an answer of $y^4$
		4		A1	
<b>Total 3 marks</b>					

<b>22.</b> (a)	Complete, correct expression which, if correctly evaluated, gives 48 eg $4 \times \frac{1}{2} \times 6 \times 4$ , $2 \times \frac{1}{2} \times 12 \times 4$ , $\frac{1}{2} \times 12 \times 8$		3	M 2	M1 for correct expression for area of one relevant triangle eg $\frac{1}{2} \times 6 \times 4$ , $\frac{1}{2} \times 8 \times 6$ , or $\frac{1}{2} \times 12 \times 4$
		48		A1	cao
(b)	$4^2 + 6^2 = 100$ 36 = 52		3	M 1	for squaring and adding
	$\sqrt{4^2 + 6^2}$			M 1	(dep) for square root
		7.21		A1	for answer which rounds to 7.21 (7.211102...)
<b>Total 6 marks</b>					

23. (i)		$-1\frac{1}{2} < x \leq 2$	4	B2 Also accept $-\frac{3}{2} < x \leq 2$ or answer expressed as two separate inequalities B1 for $-1\frac{1}{2} < x$ or $-\frac{3}{2} < x$ or $x \leq 2$ (these may be as part of a double-ended inequality) or $-\frac{6}{4} < x \leq \frac{8}{4}$
(ii)		-1 0 1 2		B2 B1 for 4 correct and 1 wrong or for 3 correct and 0 wrong
				<b>Total 4 marks</b>

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