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Mark Scheme (Results)

January 2015

Pearson Edexcel International GCSE
Mathematics A (4MA0)
Paper 1FR

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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.
- **Types of mark**
    - M marks: method marks
    - A marks: accuracy marks
    - B marks: unconditional accuracy marks (independent of M marks)
- **Abbreviations**
    - cao – correct answer only
    - ft – follow through
    - isw – ignore subsequent working
    - SC - special case
    - oe – or equivalent (and appropriate)
    - dep – dependent
    - indep – independent
    - eeoo – each error or omission

- **No working**
  If no working is shown then correct answers normally score full marks
  If no working is shown then incorrect (even though nearly correct) answers score no marks.
- **With working**
  If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
  If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.
  Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks.
  If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
  If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.
  If there is no answer on the answer line then check the working for an obvious answer.
- **Ignoring subsequent work**
  It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. Incorrect cancelling of a fraction that would otherwise be correct.
  It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.
  Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.
- **Parts of questions**
  Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

Question		Working	Answer	Mark	Notes
1	(a)		14 026	1	B1
	(b)		6500	1	B1
	(c)		2000	1	B1 accept two thousand
	(d)	650 − 282	368	1	B1
	(e)	484 + 346	830	1	B1
					Total 5 marks

Question		Working	Answer	Mark	Notes
2	(a) (i)		70	1	B1
	(a) (ii)	$\frac{70}{100}$	$\frac{7}{10}$	2	M1 or any fraction equivalent to $\frac{70}{100}$ ft from (i) A1 ft from (i) providing that fraction arising can be simplified
	(b)		Sri Lanka	1	B1 accept mis-spellings
	(c) (i)		bar to 55%	1	B1 for 50 , bar < 60
	(c) (ii)		45%	1	B1
					Total 6 marks

Question	Working	Answer	Mark	Notes
3 (a) (i)		pentagon	1	B1 accept mis-spellings
(a) (ii)		5	1	B1
(b) (i)		E	1	B1
(b) (ii)		A, C	2	B2 B1 for A; B1 for C
				Total 5 marks

Question	Working	Answer	Mark	Notes
4 (a)		12, 26	2	B2 B1 for 12; B1 for 26
(b)		16 or 24	1	B1 for 16 or 24 or both
(c)		1, 2, 4, 5, 8, 10, 20, 40	2	B2 cao B1 for any two or more correct −1 mark for incorrect addition(s) ignore repetitions
(d)		29, 37	2	B2 B1 for 29; B1 for 37
				Total 7 marks

Question	Working	Answer	Mark	Notes
5 (a)		37, 41	2	B2 B1 for 37; B1 for 41
(b)		eg added 4; +4	1	B1 or sight of $4n + 13$
(c)		61	1	B1
(d)		eg. even number all numbers in sequence are odd	1	B1 or 69, 73 are in the sequence or solution of $4n + 13 = 70$ does not give an integer
				Total 5 marks

Question		Working	Answer	Mark	Notes
6	(a)		(1, 6)	1	B1
	(b)		5.8	1	B1 ± 0.2 accept 58 mm ± 2 mm
	(c)	4 + 5 + 7 + '5.8'	 21.8	 2	M1 A1 ft from (b)
					Total 4 marks

Question		Working	Answer	Mark	Notes
7	(a)		2	1	B1
	(b)	8 − 1	 7	 2	M1 A1
	(c)	(5+8+5+2+2+1+3+2+8)÷9 **or** 36 ÷ 9	 4	 2	M1 condone omission of brackets A1
	(d) (i)		more	1	B1 ft from (c)
	(d) (ii)		eg7 is greater than the mean of the original 9 numbers	1	B1 ft from (c) or new mean is 4.3
					Total 7 marks

Question		Working	Answer	Mark	Notes	
8	(a)		13	1	B1	
	(b)		$7e + 4f$	2	B2	B1 for $7e$ or $4f$
	(c)		$3(2w + 5)$	1	B1	
	(d)	$x^2 + 4x + 7x + 28$		2	M1	for 3 correct terms out of 4 or for 4 correct terms ignoring signs or for $x^2 + 11x + c$ for any non-zero value of c or for ... + $11x$ + 28
			$x^2 + 11x + 28$		A1	
						Total 6 marks

Question	Working	Answer	Mark	Notes	
9	180 − 118 or 62		3	M1	
	180 − 2 × '62'			M1	(dep) or 118 − '62'
		56		A1	
					Total 3 marks

Question		Working	Answer	Mark	Notes	
10	(a)	320 : 500	16 : 25	2	M1 A1	or any correct unsimplified ratio SC If M0, award B1 for 25 : 16
	(b)	640 ÷ (7 + 9) × 9 or 40 × 9	360	2	M1 A1	 SCB1 for 280
						Total 4 marks

Question		Working	Answer	Mark	Notes	
11	(a) (i)		$\frac{1}{6}$	1	B1	for $\frac{1}{6}$ oe accept decimal truncated or rounded to 2 decimal places
	(a) (ii)		0	1	B1	Also accept $\frac{0}{6}$, $\frac{0}{1}$ do not accept any other denominator
	(a) (iii)		$\frac{4}{6}$	1	B1	for $\frac{4}{6}$ oe accept decimal truncated or rounded to 2 decimal places
	(b)	$1 - 0.7$	0.3	1	B1	
	(c)	80×0.7	56	2	M1 A1	NB. an answer of $\frac{56}{80}$ scores M1 A0
						Total 6 marks

Question	Working	Answer	Mark	Notes	
12	$\frac{1}{2} \times 8 \times 15$ or 60		3	M1	
	'60' ÷ 12			M1	(dep)
		5		A1	
					Total 3 marks

Question		Working	Answer	Mark	Notes	
13	(a)	$4\times-5-24$ or $-20-3\times8$ or $-20-24$	-44	2	M1 A1	for correct evaluation of one term ie. -20 or 24 or
	(b)	$30 = 4g - 3\times6$ or $M + 3h = 4g$ or $(30 + 3\times6)\div4$ $30 + "18" = 4g$ or $48 = 4g$ or $30 + 3\times6 = 4g$	12	3	M1 M1 A1	for correct substitution or correct rearrangement for correct substitution and correct rearrangement
						Total 5 marks

Question		Working	Answer	Mark	Notes	
14		$0\times5 + 1\times8 + 2\times2 + 3\times3 + 4\times2$ or $0 + 8 + 4 + 9 + 8$	29	2	M1 A1	condone one error in products (products need not be evaluated) SC : B1 for an answer of 34 or 1.45 with no working
						Total 2 marks

Question		Working	Answer	Mark	Notes	
15	(a)	$15625 + \frac{173}{2.5}$	15694.2	2	B2	B1 for 15625 or 69.2 or $\frac{346}{5}$ or $\frac{78471}{5}$
	(b)		15700	1	B1	ft from (a) if non-trivial
						Total 3 marks

Question	Working	Answer	Mark	Notes
16 (a)		correct reflection	1	B1
(b)		Translation 4 right and 6 up	2	B2 B1 for translation B1 for 4 right and 6 up or $\begin{pmatrix}4\\6\end{pmatrix}$
				Total 3 marks

Question	Working	Answer	Mark	Notes
17	(−2,−4)(−1,−1)(0, 2)(1, 5)(2, 8) (3, 11)(4, 14)	Correct line between $x = -2$ and $x = 4$	4	B4 For a correct line between $x = -2$ and $x = 3$ B3 For a correct line through at least 3 of (−2,−4)(−1,−1)(0, 2) (1, 5)(2, 8)(3, 11)(4, 14) **OR** for all of (−2,−4)(−1,−1)(0, 2) (1, 5)(2, 8)(3, 11)(4, 14) plotted but not joined B2 For at least 2 correct points plotted **OR** for a line drawn with a positive gradient through (0,2) and a clear attempt to use a gradient of 3 B1 For at least 2 correct points stated (may be in a table) **OR** For a line drawn with a positive gradient through (0, 2) or for a line with the correct gradient. **NB** a line joining (0, 2) to (3, 0) scores B0
				Total 4 marks

Question	Working	Answer	Mark	Notes
18 (a)	$\frac{12}{100}\times 45$ (=5.4) 45 − "5.4"	39.6(0)	3	M1 or M2 for 45 × 0.88 oe eg 45 × (1 − 0.12) (**NB** 45 ×(1−12%) scores zero unless accompanied by a correct answer) M1 Dep on correct method for 12% A1
(b)	546 − 525 (=21) $\frac{'21'}{525}$	4	3	M1 546/525(=1.04) M1 Dep (("1.04" – 1) × 100) or 546/525 × 100 – 100 A1
				Total 6 marks

Question	Working	Answer	Mark	Notes
19	$\frac{15}{2}-\frac{14}{3}=\frac{45a}{6a}-\frac{28a}{6a}$	shown	3	M1 Correct improper fractions M1 Correct fractions with a common denominator a multiple of 6 A1 dep on M2. Improper fraction required eg $\frac{17}{6}$, $\frac{34}{12}$
				Alt method M1 $(7)\frac{3}{6}-(4)\frac{4}{6}$ (ie can ignore integer parts) M1 $-\frac{1}{6}$ A1 Improper fraction required eg $\frac{17}{6}$, $\frac{34}{12}$ **or** $3-\frac{1}{6}$ Answer dep on M2
				Alt method M1 $7\frac{3}{6}-4\frac{4}{6}$ M1 $6\frac{9}{6}-4\frac{4}{6}$ A1 $2\frac{5}{6}$ required before final answer Answer dep on M2
				NB: Follow one strand that gives most marks
				Total 3 marks

Question	Working	Answer	Mark	Notes
20 (a)	$\pi \times 11^2$ (121π) (=380.1...) or $2\times\pi\times11^2$ (242π)(=760.2..)		4	M1
	$2\times\pi\times11\times30$ (660π) (=2073.4...)			M1
	2×"380" + "2073" or "760.2" + "2073" ($242\pi + 660\pi$ or 902π)			M1 dep on M2
		2800		A1 2833.71... awrt 2800 SC : B3 for 2453.59...or awrt 2500
(b) (i)		29.5	1	B1
(b) (ii)		30.5 or 30.49 rec	1	B1
				Total 6 marks

Question	Working	Answer	Mark	Notes
21	$3(x - 5) = 3x - 15$ $3x - 15 = 7x + 12$ $-15-12 = 7x - 3x$ *or* $3x - 7x = 12 + 15$ oe	 -6.75	3	M1 For correct expansion of bracket (seen anywhere) M1 correct rearrangement with x terms on one side and numbers on the other side $-15-12 = 7x - 3x$ or $3x - 7x = 12 + 15$ or better A1 Award 3 marks if M1 scored and answer correct, accept -6.75 oe
				Total 3 marks

Question	Working	Answer	Mark	Notes
22	$\tan A = \frac{80}{35}$ or $\tan B = \frac{35}{80}$		4	M1
	$(A =) \tan^{-1}\left(\frac{80}{35}\right)$ or $(B =) \tan^{-1}\left(\frac{35}{80}\right)$			M1
	$(A =)$ 66.37... or $(B =)$ 23.62...			A1 Accept answers that round to 66 or 24(allow answers without labels)
		204		B1 Allow answers in range 203.6 – 204 ft for correct conversion to bearing unless 180 + 66
				Total 4 marks

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