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Mark Scheme (Results)

Summer 2014

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

Pearson Edexcel Level 1/Level 2 Certificate Mathematics A (KMA0/1F) Paper 1F

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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: e.g. 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.
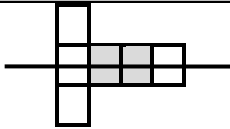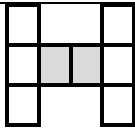
- **Parts of questions**

  Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

In all questions, 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)		Eight thousand, five hundred and twenty	1	B1 Accept 8 for 'Eight' and 5 for 'five' Condone omission of 'and'
(b)		4 hundred	1	B1 Accept 400, 4 x 100, 100, hundreds
(c)		2000	1	B1 Accept two thousand
(d)		70	1	B1
(e)	30/100 x 8520 or 852 × 3 oe	2556	2	M1 A1
				Total 6 marks

Question	Working	Answer	Mark	Notes
2.		1, 2, 3, 5, 6, 10,15,30	2	B2 cao B1 for any two or more correct (ignore repetitions) – 1 mark for incorrect addition(s)
				Total 2 marks

Question	Working	Answer	Mark	Notes
3. (a)			1	B1
(b)	$\frac{2}{6}$	$\frac{1}{3}$	2	M1 Any fraction equivalent to $\frac{2}{6}$ A1
(c)		14	1	B1
(d)			1	B1
				Total 5 marks

Question	Working	Answer	Mark	Notes
4. (a)		30, 34	2	B1 B1
(b)		Added 4	1	B1 accept +4, 4 more, jumped forward by 4, difference = 4, 4n + 6 oe
(c)		54	1	B1
(d)		98 and/or 102 are terms in sequence	1	B1 "Series would have to start at 4" or "100 is a multiple of 4" or "100 divides by 4" or "100 is in the 4 times table", or "4n + 6 = 100 leading to 23.5 (which is not an integer value)" etc.
				Total 5 marks

Question	Working	Answer	Mark	Notes
5. (a)		1, 4	1	B1
(b)		− 3, 1	1	B1
(c)		Trapezium	1	B1
(d) (i)		143 (± 2°)	1	B1 Tolerance of ± 2°
(d) (ii)		Obtuse	1	B1
(e)		18	2	B2 If not B2 then B1 for (0.5 x 4 x 3) & (4 x 3) or for $0.5 \times (8+4) \times 3$ or B1 for $16 \leq$ area < 18 or 18 < area ≤ 20
				Total 7 marks

Question	Working	Answer	Mark	Notes
6. (a)		2	1	B1
(b)	Numbers in order 1, 2, 2, 2, 3, 4, 5, 7, 8	3	2	M1 Ascending or descending order. Condone 1 omission. A1
(c) (i)		Impossible	1	B1
(ii)		Unlikely	1	B1
(d) (i)		B	1	B1 Accept 1/9
(ii)		E	1	B1 Accept 1
(iii)		C	1	B1 Accept 5/9
				Total 8 marks

Question	Working	Answer	Mark	Notes
7. (a)		–8, –4, –3, 2, 5	1	B1
(b) (i)		1	1	B1 Accept +1
(b) (ii)		– 5	1	B1
(b)(iii)		– 6	1	B1
(b) (iv)		2	1	B1 Accept +2
				Total 5 marks

Question	Working	Answer	Mark	Notes
8. (a)		14 45	1	B1 Accept 14:45 14.45 14.45 pm etc.
(b)		3	1	B1
(c)	65 x 4 oe			M1
		260	2	A1
				Total 4 marks

Question	Working	Answer	Mark	Notes
9. (a) (i)		$3d^2$	1	B1
(ii)		$4x - 3y$	2	B2 B1 for $4x$ or $+4x$ B1 for $-3y$ SC: Award B1 for: $4x - 3y$ followed by an incorrect expression
b	$6x = 16 + 5$ or $6x = 21$ or $(16 + 5) \div 6$ or $6x - 21 = 0$ or $-6x - 21 = 0$	3.5oe	2	M1 Condone omission of brackets or 16.8(333....) A1 A1 for 3.5 or $\frac{7}{2}$ or $\frac{21}{6}$ oe
				Total 5 marks

Question	Working	Answer	Mark	Notes
10.	*ABD* or *CBD* = 35 (*ADB* or *CDB)* = 180 – 2 x 35 (=110) (*x* =) 360 – 2 x "110"	 140	 4	M1 can be marked on diagram M1 can be marked on diagram M1 dep on previous M1. ft from 110 above A1 cao
				Total 4 marks

Question	Working	Answer	Mark	Notes
11.	13.50 x 4 (=54) or 270 − 13.5 x 4 (= 216) (270 – "54") ÷ 24	 9	 3	M1 M1 dep dep on M1 above A1 SC: Award B2 for 267.75 with or without working
				Total 3 marks

Question	Working	Answer	Mark	Notes
12. (a)		Heads 2 4 6 8 (10) 12 Tails 2 3 (4) 5 6 7	 2	B2 All values correct If not B2 then B1 for one row correct or a maximum of 2 errors
(b)		2/12 oe	2	M1 ft ft from their table. Accept $\frac{"2"}{a}$ with a > "2" or $\frac{b}{12}$ with b < 12 A1 ft Accept decimal equivalents to 2 dp or better (rounded or truncated)
(c)	"1"/12 x 60 or oe	5	2	M1 ft ft from their table A1 ft
				Total 6 marks

Question	Working	Answer	Mark	Notes
13. (a)	Eg 0.777..., 0.833..., 0.583..., 0.666....	$\frac{7}{12}, \frac{2}{3}, \frac{7}{9}, \frac{5}{6}$	2	B2 For $\frac{7}{12}, \frac{2}{3}, \frac{7}{9}, \frac{5}{6}$ or for correct decimal equivalents in ascending order (rounded or truncated to at least 3 dp) o for correct fraction equivalents in ascending order (e.g. $\frac{21}{36}, \frac{24}{36}, \frac{28}{36}, \frac{30}{36}$) If not B2 then B1 for: • 3 fractions in correct order or • 2 fractions correctly converted to decimals (rounded or truncated to 2 dp) or • 2 fractions expressed as equivalent fractions with denominators of a multiple of 36 or • $\frac{5}{6}, \frac{7}{9}, \frac{2}{3}, \frac{7}{12}$
(b)	$\frac{4}{9} \times \frac{6}{5}$ oe	$\frac{24}{45}$ oe	2	M1 or $\frac{0.8}{1.5}$ A1 dep on M1 awarded. Accept $\frac{8}{15}$ if clear cancelling seen
	Alternative: $\frac{8n}{18n} \div \frac{15n}{18n}$ for any integer n	$\frac{8}{15}$ oe	2	M1 $\frac{8n}{18n} \div \frac{15n}{18n}$ A1 dep on M1 awarded. Answer must come directly from their method e.g. $\frac{16}{36} \div \frac{30}{36}$ must be followed by $\frac{16}{30}$ for M1A1
				Total 4 marks

Question	Working	Answer	Mark	Notes
14. (a)	89.7 ÷ 8.41....	10.66(053284)	2	M1 for 89.7 or 8.41 (Accept if first 3 sig figs correct) A1 accept if first four sig figs correct.
(b)		10.7	1	B1ft ft if (a) > 3 sig figs
				Total 3 marks

Question	Working	Answer	Mark	Notes
15. (a)		Reflection (in line) x = – 2	2	B1 Accept, for example, reflect, reflected B1 Multiple transformations score B0B0
(b)		Shape in correct position	2	B2 vertices at (1, –1) (7, –1) (7, –4) (4, –4) (4, –2) (1, –2) Condone omission of inner square and/or omission of shading and/or omission of the label 'C' If not B2 then B1 for correct orientation but wrong position or B1 for rotation 90° anticlockwise about (0,0)
				Total 4 marks

Question	Working	Answer	Mark	Notes
16. (a)		$56 \, d^{2}$	1	B1 cao
(b)		$12e - 20$	1	B1 Accept −20 + 12*e*
(c)		$f(f - 2)$	2	B2 Accept ($f \pm 0$) ($f - 2$) oe If not B2 then B1 for factors when expanded and simplified give 2 terms, 1 of which is correct except B0 for (f + a)(f – a)
(d)	$2^{3} + 6 \times 2$ or 8 + 12	20	2	M1 A1 cao
				Total 6 marks

Question	Working	Answer	Mark	Notes		
17.	64 x 4 (=256) 70 x 5 (=350) "350" − "256"	94 or 94% or 94 / 100 or 94 out of 100	4	M1 M1 M1 dep on M2 A1	0.64 × 400 (= 256) 0.7 × 500 (= 350) "350" − "256"	0.64 × 4 (= 2.56) 0.7 × 5 (= 3.5) (3.5 - 2.56) × 100
				NB: 94 embedded in working but not on answer line gets M3A0 unless contradicted.		
	Alternative (i): List of 4 numbers adding to 256 List of 5 numbers adding to 350 list of 5 is identical to list of 4 but also contains 94 eg 94,50,50,56,100 and 50,50,56,100	94 or 94% etc (as above	4	M1 M1 M1 dep on M2 awarded A1 permitted answers as listed for A1 above		
	Alternative (ii): 70 - 64 (= 6) (70 - 64) × 4 (= 24) 70 + 24	94 or 94% etc (as above	4	M1 M1 M1 dep on M2 awarded A1 permitted answers as listed for A1 above		
						Total 4 marks

Question	Working	Answer	Mark	Notes
18.	one bearing line at 260° ± 2° or one 9.6 cm line (± 2mm) from A	Intersection of 2 lines in boundary of overlay	2	M1 A1 condone omission of *D* label Correct position of *D* within tolerance M1A1.
				Total 2 marks

Question	Working	Answer	Mark	Notes		
19. (a) (i)		{p, r, a}	1	B1	Withhold marks for repeats	
(ii)		{p, a, r, i, s, b, u, d, e, t}	1	B1	Withhold marks for repeats	
(b)		E no letters common to Prague and Lisbon		B1	dep on E in box Accept general reasons e.g. "no letters common to sets A and E" or "they share no common letters" or "no intersection (between A and E)" or "no letters the same" or "no letters in A are in E".	
			1			
					Total 3 marks	

Question	Working	Answer	Mark	Notes		
20.	167.4 – 155 (= 12.4) "12.4" ÷ 155 (= 0.08)			M1 M1 dep A1 cao If build up approach used, award M2A1 for correct answer, otherwise M0A0.	167.4 ÷ 155 (= 1.08) "1.08" – 1 (= 0.08)	167.4 ÷ 155 (= 1.08) "1.08" × 100 (= 108)
		8	3			
						Total 3 marks

Question	Working	Answer	Mark	Notes		
21.	$\sin 38 = \frac{PQ}{12.2}$ or $\cos(90 - 38) = \frac{PQ}{12.2}$ oe			M1	12.2cos38 (9.61...) **and** $12.2^2 - "9.61"^2$ (= 56.4..)	correct statement of sine rule eg $\frac{PQ}{\sin 38} = \frac{12.2}{\sin 90}$
	("PQ" =) 12.2 x sin 38 or 12.2cos(90 – 38) oe			M1	$\sqrt{"56.4"}$	correct expression for x eg (PQ) $= \frac{12.2\sin 38}{\sin 90}$
		7.51	3	A1 awrt 7.51		
						Total 3 marks

Question	Working	Answer	Mark	Notes

22.	0.5 x 10 x 12 (= 60) or 13 x 8 (= 104) or 8 x 10 (= 80)
	
	0.5 x 10 x 12 (= 60) and 0.5 x 10 x 12 (= 60) and 13 x 8 (= 104) and 13 x 8 (= 104) and 8 x 10 (= 80) or 2 x "60"and 2 x "104" and "80"
		408	3	M1 One correct face
				
				M1 dep on M1 above (for exactly 5 correct faces)
				
				A1
				     Award M0A0 for 0.5 x 10 x 12 × 8 and
				     M0A0 for 0.5 x 10 x 12 = 60 followed by 60 × 8, etc

				Total 3 marks

Question	Working	Answer	Mark	Notes
23. (a)		Correct line drawn	2	B2 Must be a single straight line passing through at least 3 of (0,4) (2,3) (4,2) (6,1) (8,0) (10,-1) If not B2 then B1 for a single straight line with a negative gradient passing through either (0,4) or (8,0) or at least 3 of (0,4) (2,3) (4,2) (6,1) (8,0) (10,-1) plotted or calculated
(b)		$x = 2$ drawn $y = 1$ drawn Correct region identified	3	B1 B1 B1 Ignore extra lines Accept R shaded or R′ shaded. Condone omission of label
				Total 5 marks

| | | | | **TOTAL FOR PAPER: 100 MARKS** |