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Mark Scheme (Results)

Summer 2013

International GCSE Mathematics (4MA0) Paper 2F

Level 1/Level 2 Certificate in Mathematics (KMA0) Paper 2F

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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**
  - awrt – answers which round to....
  - 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.

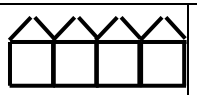
Apart from Questions 10bii and 18 (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method.				
Question Number	**Working**	**Answer**	**Mark**	**Notes**
1 (a) (i)		30	1	B1
(a) (ii)	1 – a(i)	70	1	B1 ft ft if 0 < ans to a(i)< 100
(b)		6 petals shaded	1	B1
				Total 3 marks

2 (a)		5.7	1	B1 accept trailing zeros (eg 5.70)
(b) (i)		Arrow at 6 marks beyond 3.7	1	B1 accept any mark (eg arrow, cross...etc) in correct position
(ii)		4	1	B1 accept trailing zeros
(iii)		7/10	1	B1 accept 1/10, tenth(s), (0).7, 0.70
(c)		3.765	1	B1 accept trailing zeros (eg 3.7650)
				Total 5 marks

3 (i)		Label A at 1	1	B1
(ii)		Label B at 1cm to 2.5 cm from 0	1	B1
(iii)		Label C at 0.5	1	B1
				Total 3 marks

4 (a)		Thursday	1	B1
(b) (i)		8	1	B1
(b)(ii)		40	1	B1 cao
(b)(iii)		26	1	B1 cao
(c)	10/24	5/12	2	M1 A1
				Total 6 marks

5 (a)		5.8 to 6.0 inc	1	B1
(b)		26° to 30° inc	1	B1
(c) (i)		radius	1	B1
(c) (ii)		segment	1	B1
				Total 4 marks

6 (a)			1	B1
(b)	6 x 5 +1	31	2	M1 A1
(c)	(61 – 1) ÷ 5	12	2	M1 brackets not necessary A1
				Total 5 marks

7 (a)		Cardiff	1	B1
(b)	−3 −5 or −3 + −5	−8	2	M1 A1
				Total 3 marks

8 (a)	25 ÷ 3.95 (=6.3.....)	6	2	M1 A1 cao
(b)	25 – "6" x 3.95	1.30	2	M1 25 – total cost of the plants A1 with correct money notation. Allow £1.30p
				Total 4 marks

9 (a)		correct lines marked	1	B1
(b)		correct angle marked	1	B1 Marked internally at (1,4) or internally at (1,1) or externally at (1,3)
(c)		(−3,1)	1	B1
(d)		$y = 1$	1	B1
(e)		12 cm^2	3	B2 B2 for 11≤ area ≤13 B1 for 9≤ area <11 or 13< area ≤15 B1indep accept sq cms etc
				Total 7 marks

10 (a) (i)		$3t$	1	B1 accept $t3$
(ii)		$5ab$	1	B1 any combination but do NOT accept multiplication signs
(b) (i)	$8x = 9 + 3$	1.5 oe	2	M1 or $9+3 \div 8$ with or without brackets A1
(ii)	$5y = 14$ or $7y - 2y = 14$ or $5y = 8 + 6$ or $5y - 14 = 0$	2.8	3	M2 for correct rearrangement with y terms on one side and numbers on the other AND correct collection of terms on at least one side or for correct collection of to 2 terms M1 for correct rearrangement with y terms on one side and numbers on the other eg $7y - 2y = 8 + 6$ **or** correct collection and simplification of either numbers or y terms eg. $5y - 6 = 8$ or $5y = a$ or $by = 14$ A1 2.8 oe dependent on at least one M1
(c)	$x^2 - 6x + 9x - 54$	$x^2 + 3x - 54$	2	M1 4 correct terms ignoring signs or for 3 correct terms out of 4 terms with signs A1
				Total 9 marks

11 (a)	450 x 1.4(0)	630	2	M1 A1
(b)	$840 \div 1.4(0)$	600	2	M1 A1
(c)	$100 \div 1.4(0)$ (=71.4...)	71	2	M1 or $1 \div 1.4(0)$ A1 awrt 71
				Total 6 marks

12	0.8 x 0.3 x "depth" = $108 \div 1000$ ("depth"=) $0.108 \div 0.24$ oe	0.45	3	M1 M1 for 0.8 x 0.3 or 0.24 or $108 \div 1000$ M1 A1
				Total 3 marks

13 (a)	80 x 195 ÷ 30 oe or 6 x 80 + 40 oe	520	3	M2 A1	M1 for 195 ÷ 30 or 30 ÷ 195 or 80 ÷ 30 or 30 ÷ 80
(b)	120/800 x 360 oe	54	2	M1 A1	
					Total 5 marks

14 (a)		Shape in correct position	2	B2	B1 for reflection in line x =k where (k≤2) tolerance of ½ sq
(b)		Rotation 90° or quarter turn anticlockwise (0,0) or *O* or origin	3	B1 B1 B1	 accept 90° or – 270° **Answers that give multiple transformations score zero**
					Total 5 marks

15	3/5 x 15 or 15 ÷ 5 × 3	9	2	M1 A1	M1 for 3/5 or 15 ÷ 5 × 3
					Total 2 marks

16 (a)	1 – (0.15 + 0.4 + 0.35)	0.1	2	M1 A1	
(b)	0.15 + 0.4	0.55	2	M1 A1	
					Total 4 marks

17	7800 ÷ 9.75 or 7800 ÷ 585 x 60	800	3	M2 A1	M1 for 7800 ÷ 9.45 or 7800 ÷ 585 or 13.3(....
					Total 3 marks

18 (a)	21/24 – 20/24		2	B2 for both fractions written correctly with a common denominator, followed , if necessary, by cancelling to 1/24 B1 for 1 correct fraction with denominator of a multiple of 24
(b)	5/8 x 12/7 or 15/24 ÷ 14/24	60/56	2	M1 leaving first fraction unchanged, changing ÷ to x and inverting the second fraction **or** converting each fraction with a common denominator of 24 oe with ÷ sign A1 60/56 from the x or 15/14 from the ÷
				Total 4 marks

19	10 x 24, 30 x 20, 50 x 9,70 x 12, 90 x 15 10 x 24 + 30 x 20 + 50 x 9 + 70 x 12 + 90 x 15 240 + 600 + 450 + 840 +1350	3480	3	M1 at least 4 products *fx x* used consistently within interval (inc end points) M1(dep) for Σfx with use of at least 4 correct ½ way values A1
				Total 3 marks

20 (a)		(4.5 , 3)	2	B1 B1
(b)	Identifies 2 & 7 as sides "2"^{2} + "7"^{2} √("2"^{2} + "7"^{2})	7.28	4	B1 M1 "2" & "7" must be identified as sides M1 dep A1 awrt 7.28
				Total 6 marks

21	Factor tree or repeated division with 2 or more correct prime factors (2, 2, 3, 17) Fully correct factor tree or repeated division or 2, 2, 3, 17	2 x 2 x 3 x 17	3	M1 M1 A1	condone 1s factors must multiply to 204 condone 1s
					Total 3 marks

22.	22 x 25000 (=550000) "550000" ÷100000	5.5	3	M1 M1 A1	or 25000 cm = 0.25km or 22 ÷100000 or 22 x 0.25 or "0.00022" × 25000
					Total 3 marks

23. (a)	$-6/3 \leq x < 9/3$	$-2 \leq x < 3$	2	M1 A1	M1 for $-6/3 \leq x$ or $x < 9/3$ SC B1 for $-2 < x < 3$
(b)		−2, −1 , 0, 1, 2	2	B2	B1 for five correct values and one wrong value or four correct values with no wrong value
					Total 4 marks

				TOTAL FOR PAPER: 100

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