Mark Scheme (Results)

January 2018

Pearson Edexcel International GCSE Mathematics A (4MA0) Foundation Paper 2F

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January 2018
Publications Code 4MA0_2F_1801_MS

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.
- 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  If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.

International GCSE Maths (4MA0_2F)				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)	$\frac{18}{24}$, $\frac{6}{8}$	$\frac{3}{4}$	2	M1 any equivalent fraction A1
(b)		$\frac{7}{10}$	1	B1
(c)		$\frac{47}{1000}$	1	B1
(d)		3.25	1	B1
2 (a)		24	1	B1
(b)	$28-18$ **or** 1.25×8 oe	10	2	M1 A1
(c)	$549\div 3$ **or** $\frac{1}{3}\times 549$ (=183) $549-$"183" **or** $2\times$"183"	366	3	M1 M1 for $1-\frac{1}{3}\left(=\frac{2}{3}\right)$ M1 dep for "$\frac{2}{3}$"$\times 549$ oe A1

Question	Working	Answer	Mark	Notes
3 (a)		18	1	B1
(b)		22	1	B1
(c)		1	1	B1
(d)		hexagon drawn	1	B1
4 (i)		unlikely	1	B1
(ii)		cross at 0	1	B1
(iii)		cross at ½	1	B1
5 (a)		5.5 cm	2	B2 B1 for 5.3 – 5.7 or 53 – 57 B1 for cm or mm (consistent with their answer 4.5 – 6.5 would be cm and 45 – 65 would be mm) (accept 2.1 – 2.2 inches)
(b)(i)		diameter	1	B1
(b)(ii)		chord	1	B1
(b)(iii)		segment	1	B1
6 (a)		4	1	B1
(b)	16 − 3	13	2	M1 for 16 and 3 selected A1

Question	Working	Answer	Mark	Notes
(c)	$(3+4+4+5+10+14+16)\div 7$ **or** $56\div 7$	8	2	M1 A1
7 (a)	$1500\div 500(=3)$ or $500+500+500$ oe "3"$\times 40+15$	135	3	M1 M1 A1
(b)	$\frac{180}{40}(=4.5)$ e.g. $\frac{180}{40}\times 500$	2250	3	M1 complete method: ft from (a)eg. $3\times 60+15-$"135"$(=60)$ or $\frac{"60"}{40}\times 500+1500$ A1 [SCB1 for $\frac{195}{40}\times 500$ or $\frac{190}{40}\times 500$ seen as working]
(c)		11 40 (am)	2	B2 B1 for a time using 11(am) eg 11 20 or for a time with hours and 40 (mins) where the hours < 13, eg 10 40
8	$2\times 110(=220)$ $(475-$"220"$)\div 3$	85	3	M1 M1 complete method A1

Question	Working	Answer	Mark	Notes
9 (a)		two of 1, 2, 3, 6		B2 For 2 correct common factors of from 1, 2, 3, 6 −1 for each error or omission
(b)		e.g. 36	1	B1 for any multiple of 36
10	$2x+3x+67+48=360$ **or** $360-67-48(=245)$ $(360-67-48)\div 5$ **or** "245"÷5	49	3	M1 M1 Dep or for angles of $2x = 98°$ or $3x = 147°$ (may be on diagram) A1
11	$\frac{1}{2}\times 9\times 12(=54)$ **or** $9\times 12\times 25(=2700)$ "54"×25 **or** "2700"×0.5	1350	3	M1 NB: surface area calculation scores no marks M1 dep A1
12 (a)	$3\times 7-2\times 9$ **or** $21-18$	3	2	M1 A1
(b)		$9x-2y$	2	B2 B1 for $9x$ **or** $-2y$
(c)	$4t=18-5$ **or** $4t=13$	$3\frac{1}{4}$	2	M1 A1 oe eg. $\frac{13}{4}$ or 3.25

Question	Working	Answer	Mark	Notes
(d)		$5(5m+6n)$	1	B1
(e)		$2p^2-3p$	1	B1
13 (a)	125 : 175	5 : 7	2	M1 for any equivalent ratio **or** 7 : 5 A1 Accept 1 : 1.4
(b)	$750\div125$ oe (=6) **or** $8\div1.5$ oe (=5.3333)	5	2	M1 A1
14 (a)	eg. $\frac{10}{24}$ $\frac{21}{24}$ $\frac{18}{24}$ $\frac{12}{24}$ $\frac{9}{24}$ **or** 0.416…, 0.875, 0.75, 0.5, 0.375	$\frac{9}{24}$ $\frac{5}{12}$ $\frac{1}{2}$ $\frac{3}{4}$ $\frac{7}{8}$	2	M1 correct conversion of at least 3 fractions into the same form (common denominators or decimals) **or** at least 4 fractions in correct order in answer A1

Question	Working	Answer	Mark	Notes
14 (b)	$\frac{2}{7}\times\frac{5}{4}$ $\frac{2}{7}\times\frac{5}{4}=\frac{10}{28}=\frac{5}{14}$ or show cancelling giving $\frac{1}{7}\times\frac{5}{2}=\frac{5}{14}$	$\frac{5}{14}$	2	M1 A1 answer from correct working with $\frac{10}{28}$ oe seen or $\frac{5}{14}$ from correct cancelling
	Alternative method $\frac{10}{35}\div\frac{28}{35}$ oe $\frac{10}{28}=\frac{5}{14}$ oe $\frac{2}{4}=0.5\ \frac{7}{5}=1.4$ $\frac{0.5}{1.4}=\frac{5}{14}$	$\frac{5}{14}$	2	M1 A1 answer from correct working with $\frac{10}{28}$ oe seen or from use of decimals with $\frac{0.5}{1.4}$ seen.
(c)	eg $\frac{19}{6}-\frac{5}{3}$ eg $\frac{19}{6}-\frac{10}{6}$ eg $\frac{9}{6}=1\frac{3}{6}\left(\frac{3}{2}\right)=1\frac{1}{2}$ (2) $\frac{1}{6}-\frac{4}{6}$ $2-\frac{3}{6}$ $1\frac{3}{6}=1\frac{1}{2}$ $3\frac{1}{6}-1\frac{4}{6}$ $2-\frac{3}{6}$ $1\frac{3}{6}=1\frac{1}{2}$ $\frac{7}{6}-\frac{4}{6}$ $1\frac{7}{6}-\frac{4}{6}$ $1\frac{3}{6}=1\frac{1}{2}$	$1\frac{1}{2}$	3	M1 common denominator used for subtraction **or** improper fractions M1 Method which would lead to $\frac{9}{6}$ oe or $1\frac{3}{6}$ oe dep on first M1 A1 answer from correct working with all steps seen

Question	Working	Answer	Mark	Notes
15		$T = 24c + 37r$	3	B3 for a correct final answer (award B2 if $T = 24c + 37r$ is incorrectly simplified) If not B3 then B2 for $T = 24c + kr$ **or** $T = kc + 37r$ (k may be 0) **or** $24c + 37r$ B1 for $24c$ **or** $37r$ **or** T = (linear expression in c and r eg $T = c + r$ but not $T = cr$)
16	$165 \div 50 (= 3.3)$ $'0.3' \times 60 (= 18)$ **or** $'3.3' \times 60 (= 198)$	3 hours 18 minutes	3	M1 M1 A1
17	$110 \div 20 (= 5.5)$ Point marked on bearing of 220° from C	D marked	3	M1 may be implied by a line of length 5.5 cm or a circle of radius 5.5 cm; allow ±2 mm [or D marked 5.5 cm from B] M1 allow ±2° A1 D marked in correct position (overlay)
18	$\pi \times 18$ **or** $2 \times \pi \times (18 \div 2)$	56.5	2	M1 A1 56.5 – 56.6
19		(1, 1) (2, 1) (4, −2) (1, −2)	2	B2 If not B2 then B1 for 3 correct points plotted or for shape in correct orientation or for a correct rotation 90° anticlockwise [(−5, 0)(−8, 0)(−5, −3)(−6, −3)]

Question	Working	Answer	Mark	Notes
20	e.g. $1-\frac{1}{12}\left(=\frac{11}{12}\right)$ **or** $\frac{1}{12}+x+3x=1$ "$\frac{11}{12}$"$\div 4$ **or** $\left(1-\frac{1}{12}\right)\div 4$ **or** $1-\frac{33}{48}$	$\frac{11}{48}$ oe	3	M1 or two fractions that add to $\frac{11}{12}$ eg $\frac{3}{12}, \frac{8}{12}$ **or** 2.75 **or** an answer of $\frac{8.25}{12}$ M1 complete method or an answer of $\frac{33}{48}\left(=\frac{11}{16}\right)$ **or** $\frac{2.75}{12}$ A1 or 0.229(16…) or 22.9(16…)%
21 (a)	0.145 × 62 (=8.99) oe (0.145 × 62 000 000(=8 990 000)) oe 62 – "8.99" (62000000−"8990000") Allow 53 010 000	53.01	3	M1 M1 for 1 – 0.145 (=0.855) M1 Dep M1 dep for "0.855" × 62 ("0.855" × 62 000 000) A1 accept 53 million (53 000 000) if working seen SCB2 if M0 scored then award B2 for digits 5301
(b)	1656 – 1404 (=252) **or** $\frac{1404}{1656}(=0.848)$ **or** for 84.8 $\frac{"252"}{1656}\times 100$ **or** (1 − "0.848") × 100 **or** 100 – "84.8"	15.2	3	M1 M1 dep A1 15.2 – 15.22

Question	Working	Answer	Mark	Notes
(c)	$5\times3+15\times16+25\times6+35\times4+45(\times1)$ **or** $15+240+150+140+45$	590	3	M2 For the addition of 5 products (at least 4 correct) if not M2 then award M1 for multiplication of midpoints (at least 4 correct) by frequencies (without addition) **or** for the addition of 5 products (at least 4 correct) not using the mid-value where the value is consistently within the interval (including either end) A1 SCB2 for (19.6(6...))
22 (a)		2, 4, 6, 7, 8, 10, 11, 12	1	B1
(b)		No with reason	1	B1 e.g. 20 is not in the universal set, set *A* only goes up to 12, etc
(c)		e.g. 1, 3, 7	2	B2 for 7 and any two of 1, 3, 5, 9 if not B2 then award B1 for three values of which two are correct **or** for 7 **and** three or four correct values, none incorrect
23 (a)	$\frac{y^{13}}{y^4}$ **or** $y^{(1)}\times y^8$ **or** $y^5\times y^4$ **or** y^{5+8-4}	y^9	2	M1 A1
(b)	$x^2+7x-3x-21$	$x^2+4x-21$	2	M1 3 terms correct with signs **or** 4 terms correct ignoring signs **or** $x^2+4x\pm\ldots$. **or** $\ldots.+4x-21$ A1