Mark Scheme (Results)

Summer 2017

Pearson Edexcel International GCSE
In 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
    - o M marks: method marks
    - o A marks: accuracy marks
    - o B marks: unconditional accuracy marks (independent of M marks)
- Abbreviations
    - o cao – correct answer only
    - o ft – follow through
    - o isw – ignore subsequent working
    - o SC - special case
    - o oe – or equivalent (and appropriate)
    - o dep – dependent
    - o indep – independent
    - o 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.

PMT

Apart from questions 17 and 22 (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method

Ques	Working	Answer	Mark	Notes
1a		8.8	1	B1
b		Correct place	1	B1
c		6	1	B1
d	(1.4 + 4.8) ÷ 2 or (4.8 - 1.4) ÷ 2 (=1.7) and '1.7' + 1.4	3.1	2	M1 for a method to find the half way value
				A1
				Total 5 marks

2a		10	1	B1
b		30	1	B1
c		40	1	B1
d		0.6(0)	1	B1
e	$\dfrac{60}{100}$	$\dfrac{3}{5}$	2	M1 oe
				A1
				Total 6 marks

3a		× at 0.5	1	B1
b		× at $\dfrac{1}{6}$	1	B1
c		× at 0	1	B1
				Total 3 marks

4		Chord	3	B1	
		Radius		B1	
		Tangent		B1	
					Total 3 marks

5a		Obtuse	1	B1	
b		60	1	B1	
c		Trapezium	1	B1	
					Total 3 marks

6a		9	1	B1	
b		21	1	B1	
c		Explanation	1	B1	e.g all the terms are odd and 150 is even **or** 149 is in the sequence **or** $4n + 1 = 150$ does not have an integer answer
					Total 3 marks

7a		100	1	B1	
b		−52	1	B1	
c		7.5	1	B1	
d		$y = 4x - 20$ oe	2	B2	(B1 for $4x$ $(- 20)$ oe or $x = \dfrac{y + 20}{4}$)
					Total 5 marks

8a		$(-3, -2)$	1	B1	
b		Plotted	1	B1	
c		Suitable point	2	B2	for e.g $(3, -2)$, $(-3, 4)$ (B1 for C plotted correctly but coordinates written incorrectly)
					Total 4 marks

9a		24	1	B1	
bi		$\dfrac{1}{10}$	3	B1	
ii	28, 32, 36, 38, 40, 45, **or** $\dfrac{6}{n}$	$\dfrac{6}{10}$		M1	ft from (a)
				A1	ft from (a)
					Total 4 marks

10a	$3x + 3x + 2x + x + x$	36	3	M1	
	$10x = 360$ oe			M1	
				A1	
b	$5400 \div 360 \, (= 15)$ **or** $\dfrac{40}{360}$ **or** $360 \div 40 \,(=9)$	600	3	M1	
	'15 ' $\times 40$ **or** $\dfrac{40}{360} \times 5400$ **or** $5400 \div$ "9"			M1	
				A1	
					Total 6 marks

11a		3 lines correct	2	B2	all 3 lines correct
					(B1 any one correct line)
b		3	1	B1	
c		2	1	B1	
					Total 4 marks

12	(Angle *ABE* =)180º −2 × 72º (=36º)	126	3	M1	
	Angle *ABC* = 180º −2 × 72º + 90º			M1	
				A1	
					Total 3 marks

13	34.00 + 9.20 + 12.20 + 39.00 + 8.75 + 9.50 (= 112.65)	7.35	4	M1	adding at least 5 correct prices
	70 + 50 (= 120)			M1	
	'120' −'112.65'			M1	(dep M1,M1)
				A1	
					Total 4 marks

14a		3	1	B1	
b	$8 \times 2t = 80$	5		M1	or for $8 \times 2t$ **or** $80 \div 8$ **or** $80 \div 2$
				A1	
					Total 3 marks

15a		17 or 19	1	B1	for either or both
b		2, 23	1	B1	
c	$(60 - 2) \div 2$	29, 31	2	M1	any complete method
				A1	
					Total 4 marks

16	$\dfrac{6 - 2.84}{(\sqrt{5})^2}$ **or** $\dfrac{6 - 2.84}{5}$ oe			M1	or for 0.63 NB: Accept 2.23(6…) in place of $\sqrt{5}$
		0.632	2	A1	for 0.632 or $\dfrac{79}{125}$ SC : B1 for an answer of 1.41(31…)
					Total 2 marks

17	$5x - x = 8 - 10$			M1	for correct rearrangement with x terms on one side and numbers on the other in a correct equation **or** the correct simplification of either x terms or numbers on one side in a correct equation eg. $4x - 8 = -10$; $5x = x - 2$
	$4x = -2$			M1	or $-4x = 2$ **or** $4x + 2 = 0$ **or** $-4x - 2 = 0$ NB: This mark implies the previous M1
		−0.5	3	A1	oe e.g. $-\dfrac{2}{4}$ dep on M1
					Total 3 marks

18	Angle $BCD = 142°$ **or** Angle $BCF = 180 − 62$ (=118°) **or** Angle $ABC = 180 – 142$ (=38)			M1	for angle $BCD = 142°$ or angle $BCF = (180 − 62)$ °
	$360 – 142 – $ "118" **or** "38" $+ 62$			M1	for a complete method to find x
		100	3	A1	
					Total 3 marks

19a	$3500 ÷ 119$			M1			
		29.41	2	A1	for $29.41 – 29.412$		
b	$8500 ÷ 52$ **or** $163(.461..)$			M1		M1 for $8500 × 119 =1011500$	M1 for $119 ÷ 52$ (=2.28…)
	"163.461.".× 119			M1	dep	M1 for "1011500" $÷ 52$	M1 for $8500 × $ "2.28…"
		19452	3	A1	for $19380 – 19520$		
c	$24 ÷ 60$ (=0.4) **or** 2.4 **or** $2\dfrac{24}{60}$ oe **or** $2 × 60 + 24$ (=144)			M1			
	$1534 ÷ 2.4$ oe **or** $(1534 ÷ 144) × 60$ oe			M1	(allow $1534 ÷ 2.24$ **or** answer of 684(.82…) or 685)		
		639	3	A1	for $639 – 639.17$		
							Total 8 marks

20a	$\pi \times 2.5$ oe **or** $2 \times \pi \times \left(\dfrac{2.5}{2}\right)$			M1	
		7.85	2	A1	7.85 – 7.86
b	$10 \times \dfrac{4.7}{2.5}$ oe **or** $10 \times \dfrac{470}{250}$ oe			M1	or for digits 188
		18.8	2	A1	accept 19 if 18.8 seen
					Total 4 marks

21a	$\dfrac{a+b+c}{3} = 21$ **or** $\dfrac{a+b}{2} = 19$ **or** $3 \times 21(=63)$ **or** $2 \times 19(=38)$			M1	
	$3 \times 21 - 2 \times 19$			M1	for a complete method
		25	3	A1	
b	$2 \times 19 - 20$ (=18) **or** $21 \times 3 - 20 - $ "25" (=18)			M1	ft from (a) for a complete method to find age of 3rd person
	"25" – "18"			M1	dep or for 18 – 25
		7	3	A1	ft from answer in (a)
					Total 6 marks

22	e.g. 2 × 2 × 7 × 12 **or** at least 3 divisions in a factor tree			M1	for the start of a correct method e.g. may be a factor tree **or** consecutive divisions condone 1 error
	All 6 correct prime factors, no extras (2,2,2,2,3,7,(1))			M1	e.g. from a factor tree, ignore 1s
		2×2×2×2×3×7	3	A1	oe dep on M1, M1
					Total 3 marks

23a		Correct trapezium (1, −1) (1, −2) (3, 1) (3, −2)		1	B1
b		Correct triangle (−1, −2) (−1, 0) (2, −2)		2	B2 (B1 for a rotation of 90° clockwise about a different centre i.e. a triangle in the same orientation as the correct triangle **or** rotation by 90° anticlockwise about (0, 2))
					Total 3 marks

24		$10e^5 f^2$	2	B2	If not B2 then award B1 for $ke^5 f^2, k \neq 10$ or $10e^5 f^a$ or $10e^b f^2$ $a, b \neq 0$
					Total 2 marks

25a	$100 - 9.4 \ (= 90.6)$	$\dfrac{9.4}{100} \times 607$ oe $(= 57.058)$			M1	
	$\dfrac{"90.6"}{100} \times 607$ oe	$607 - "57.058"$			M1	(dep)
			550	3	A1	for 549.942 **or** 549.94 **or** 549.9
b	$\dfrac{100}{20} \times 1320$ oe				M2	for a complete method If not M2 then award M1 for a correct first step $1320 \div 20 \ (=66)$ **or** $0.2x = 1320$ **or** $1320 \div 2 \ (=660)$
			6600	3	A1	
						Total 6 marks