Mark Scheme (Results)

November 2020

Pearson Edexcel International GCSE
Mathematics A (4MA1)
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
- awrt – answer which rounds to
- 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.

  If a candidate misreads a number from the question. Eg. Uses 252 instead of 255; method marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review. If there is a choice of methods shown, mark the method that leads to the answer on the answer line; where no answer is given on the answer line, award the lowest mark from the methods shown.

  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 to another.

International GCSE Maths					
Apart from questions 20(a) (where the mark scheme states otherwise) the correct answer, unless clearly obtained by an incorrect method, should be taken to imply a correct method					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Gabon	1	B1
	(b)		11 100	1	B1 accept −11 100
	(c)		248 000	1	B1
					Total 3 marks

2	(a)		100	1	B1
	(b)		1 ¾ pictures	1	B1
	(c)	$2\frac{1}{2}+3\frac{1}{4}+5+4\frac{1}{4}+'1\frac{3}{4}'(=16\frac{3}{4})$ oe **or** $2\frac{1}{2}\times 20+3\frac{1}{4}\times 20+5\times 20+4\frac{1}{4}\times 20+35\ (=335)$ **or** 50 + 65 + 100 + 85 + 35 (= 335)		3	M1 ft from (b) for adding up the number of squares or finding the total number of books – allow one error or omission
		500 – '$16\frac{3}{4}$' × 20 oe **or** 500 – '335'			M1 ft
			165		A1
					Total 5 marks

3	(a)		cylinder	1	B1
	(b)(i)		6	1	B1
	(b)(ii)		8	1	B1
	(c)	20 × 8 × 11		2	M1
			1760		A1
					Total 5 marks

4	(a)		pentagon	1	B1	
	(b)		85	1	B1	for 83 – 87
	(c)		parallel sides marked	1	B1	No additional sides marked
	(d)		No with reason	1	B1	No and, for example, 12 ÷ 4 = 3 but 5 ÷ 3 does not equal 3
						Total 4 marks

5	20 – 2.35 (=17.65)		3	M1	
	‘17.65’ ÷ 0.74 (= 23.8…) **or** 24			M1	A clear attempt to subtract 0.74 23 times
		23		A1	
					Total 3 marks

6	(a)	E.g. $\frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \frac{15}{25}, \frac{18}{30}, \frac{21}{35}$		2	M1	for any fraction equivalent to $\frac{24}{40}$ with denominator less than 40
			$\frac{3}{5}$		A1	
	(b)		0.2	1	B1	
	(c)		$\frac{3}{10}$ oe	1	B1	
	(d)	$\frac{9n}{24n}+\frac{1n}{24n}$ or $\frac{9n+1n}{24n}$		2	M1	for correct fractions with a common denominator (multiple of 24)
		eg $\frac{10}{24}=\frac{5}{12}$	Shown		A1	for a multiple of $\frac{10n}{24n}=\frac{5}{12}$
	(e)	$\frac{1}{2}\times 280$ (= 140) oe **or** $\frac{2}{5}\times 280$ (= 112) oe		3	M1	
		280 – '140' – '112'			M1	
			28		A1	
		Alternative method				
		$\frac{1}{2}+\frac{2}{5}\left(=\frac{9}{10}\right)$ or 0.5 + 0.4 (= 0.9) oe		3	M1	
		$\left(1-'\frac{9}{10}'\right)\times 280$ or (1 – '0.9') × 280 oe			M1	
			28		A1	
						Total 9 marks

7	(a)		5cd	1	B1
	(b)		7	1	B1
	(c)		4	1	B1
	(d)		6k + 11m	2	B2 If not B2 then award B1 for 6k **or** 11m
	(e)		12g + 4	1	B1
					Total 6 marks

8					B4 for all 12 correct values. If not B4 then award (B3 for 9 or 10 or 11 correct values) (B2 for 6 or 7 or 8 correct values) (B1 for 4 or 5 correct values)
					Total 4 marks

	Europe	Africa	Asia	Total
Male	10	**3**	**16**	**29**
Female	**14**	6	11	31
	24	**9**	27	**60**

9 (a)	$3 \times 4 + 2 \times 7$ **or** $12 + 14$		2	M1	
		26		A1	
(b)	$2 \times (-6)^2 + 3 \times -2$ **or** $72 - 6$ **or** $2 \times -6 \times -6 + 3 \times -2$		2	M1	
		66		A1	
(c)		T = 6g + 12h	3	B3	for T = 6g + 12h oe (B2 for 6g + 12h oe **or** T = 6g + ah **or** T = bg + 12h **or** T = 12g + 6h oe) (B1 for 6g + ah **or** bg + 12h o**r** 12g + 6h **or** for an incorrect expression in g and h eg T = g + h)
					Total 7 marks

10 (a)	$\frac{88.96}{7.48...}$		2	M1	for 88.96 **or** 7.48…**or** for an answer of 11.9 or better
		11.88778…		A1	11.88778(004)
(b)		12	1	B1	ft provided (a) has at least 3 sig figs
					Total 3 marks

11	$2 \times \pi \times 18$ **or** $\pi \times 36$		2	M1	
		113		A1	for 113 – 113.15
					Total 2 marks

12	E.g. (72 ÷ 3) × 1.34 (= 17.91) **or** 34.5 × 1.34 (= 46.23) **or** 72 ÷ 1.34 (= 53.73) **or** (34.5 × 3) × 1.34 (= 138.69)		4	M1	for converting £ to $ or $ to £
	34.5 – '17.91' (= 16.59) **or** '46.23' – (72 ÷ 3) = (22.23) **or** (34.5 × 3) – '53.73' (= 49.77) **or** '138.69' – 72 (= 66.69)			M1	for profit of 1 pair of jeans or 3 pairs of jeans
	$\frac{'16.59'}{'17.91'} \times 100$ **or** $\frac{'22.23'}{72 \div 3} \times 100$ **or** $\frac{'49.77'}{'53.73'} \times 100$ **or** $\frac{'66.69'}{72} \times 100$			M1	for a complete method
		93		A1	for 92.625 – 93
					Total 4 marks

13	(a)		(3,5) (5,5) (5,8)	2	B2	If not B2 then award B1 for a reflection in x = 2 [(1,−1) (−1,−1) (−1,−4)] **or** for correct shape in the correct orientation
	(b)			3	B1	Rotation (with none of reflection, translation, enlargement, mirrored, flipped or moved (up, right, left, down etc) stated)
					B1	(centre) (0,0) or origin (O) (award if no vector or equation of line or SF mentioned)
			Rotation of 90^o anticlockwise about (0,0)		B1	90^o anticlockwise or 270^o clockwise
						Total 5 marks

14	(a)		2, 4, 6, 12	1	B1	
	(b)		5, 7, 8, 9, 10, 11, 13, 14	1	B1	
	(c)			2	M1	for $\frac{a}{14}$ with a < 14 **or** $\frac{3}{b}$ with b > 3 **or** for 3 and 14 used with incorrect notation e.g. 3 : 14
			$\frac{3}{14}$		A1	for $\frac{3}{14}$ oe **or** 0.214(…)
						Total 4 marks

15	15 × 60 × 60 (= 54 000) oe **or** $\frac{60}{12}$ × 60 × 15 (= 4500) oe **or** 5 × $\frac{60}{12}$ × 60 (= 1500) oe		4	M1	M2 for $\frac{15\times60\times60\times5}{12}$ (= 22 500)
	'54000' ÷ 12 × 5 (= 22 500) oe **or** '4500' × 5 (= 22 500) oe **or** '1500' × 15 (=22 500) oe			M1	
	'22 500' × 0.002 oe			M1	dep on M2 for a complete method
		45		A1	
					Total 4 marks

16	**x** −2 −1 0 1 2 3 **y** 15 11 7 3 −1 −5 (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5)	Correct line between x = −2 and x = 3	3	B3	for a correct line between x = −2 and x = 3 (B2 for a correct straight line segment through at least 3 of (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5) **or** for all of (−2, 15) (−1, 11) (0, 7) (1, 3) (2, −1) (3, −5) plotted but not joined) (B1 for at least 2 correct points stated (may be in a table) **or** plotted **or** for a line drawn with a negative gradient through (0, 7) **or** for a line with a gradient of −4)
					Total 3 marks

17	$\frac{x+10}{2} = 9$ **or** $x = 8$		4	M1 (indep)
	$\frac{4+7+x+10+y+y}{6} = 11$ oe **or** '66' – 4 – 7 – 10 (= 45)			M1 where x may be a number $7 < x < 10$
	(y =) (6 × 11 – 4 – 7 – 10 – '8') ÷ 2			M1 ft their ft their value of x provided $7 < x < 10$ for a fully correct method
		x = 8 and y = 18.5 oe		A1
				Total 4 marks

18	(a)		0.0057	1	B1
	(b)		8×10^5	1	B1
	(c)	$\frac{273000}{6 \times 10^{-2}}$		2	M1 for 273 000 **or** digits 455
			4 550 000		A1 for 4 550 000 or 4.55×10^6 oe
					Total 4 marks

19	100 ÷ 28 440 (= 0.0035…) **or** 28 440 ÷ (60 × 60) (= 7.9)		3	M1
	'0.0035...' × 60 × 60 **or** 100 ÷ '7.9'			M1
		13		A1 for 12.65 – 13
				Total 3 marks

20	(a)	$20 - 5x\ (= 7 - 3x)$		3	M1	for expansion of bracket
		E.g. $20 - 7 = -3x + 5x$ or $-5x + 3x = 7 - 20$			M1	ft from a 4-term equation for a correct process of isolating terms in x on one side of the equation and numbers on the other side
			6.5 oe		A1	dep on M2 awarded
	(b)			2	M1	for any **correct** partial factorisation with at least 2 factors, one of which must be a letter **or** the correct common factor with no more than 1 error inside the bracket
			$8m^2 g^3(2m + 3g^2)$		A1	
	(c)(i)	$(y \pm 6)(y \pm 8)$		2	M1	
			$(y - 8)(y + 6)$		A1	
	(c)(ii)		8, −6	1	B1	**must** ft from their factors in (c)(i)
						Total 8 marks

21	(10 – 2) × 180 oe (= 1440) **or** (6 – 2) × 180 oe (= 720)		4	M1	for a method to find the sum of the interior angles of a decagon or a hexagon
	'1440' – 148 – 2×150 – 2×168 – 2×134 – 2×125 (=138) **or** **'**1440' – 1302 (= 138) **or** '720' – 148÷2 – 150 – 168 – 134 – 125 (= 69) **or** '720' – 651 (= 69)			M1	Allow omission of one angle
	360 – '138' **or** 360 – 2 × '69'			M1	
		222		A1	
	Alternative method (exterior angles)				
	360 – 2×(180 – 125) – 2×(180 – 134) – 2×(180 – 168) – 2×(180 – 150) – (180 – 148) **or** 360 – 2×55 – 2×46 – 2×12 – 2×30 – 32		4	M2	If not M2 then award M1 for at least 3 or (180 – 125) , (180 – 134) , (180 – 168) , (180 – 150), (180 – 148) **or** at least 3 of 55, 46, 12, 30, 32
	180 + '42'			M1	
		222		A1	
					Total 4 marks

22	E.g. 1 − 0.2 (= 0.8) **or** 100(%) − 20(%) (= 80(%)) **or** $\frac{1080}{80}$ (= 13.5) oe		3	M1
	E.g. 1080 ÷ 0.8 or 1080 ÷ 80 × 100 or '13.5' × 100 1080 × 100 ÷ 80			M1 for a complete method
		1350		A1
				Total 3 marks

23	(a)		2×3^{37}	1	B1
	(b)	$2 \times 3^{43} \times 2^{4} \times 3^{37}$ **or** $2^{5} \times 3^{p}$ $(p \neq 80)$ **or** $2^{q} \times 3^{80}$ $(q \neq 5)$		2	M1
			$2^{5} \times 3^{80}$		A1
					Total 3 marks

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