Mark Scheme (Results)

Summer 2025

Pearson Edexcel International GCSE Mathematics A (4MA1) 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**
  - 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					
Values in quotation marks must come from a correct method previously seen unless clearly stated otherwise.					
Q		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Montana	1	B1
	(b)		314 200	1	B1
	(c)		4 thousands	1	B1 accept 4000, thousands
	(d)		420 727	1	B1
	(e)		Twenty three thousand, eight hundred (and) seventy one	1	B1
					Total 5 marks

2	(a)		unlikely	1	B1
	(b)		× at 1	1	B1
	(c)		2 numbers which are even	1	B1
					Total 3 marks

3	(a)		5.3 cm or 53 mm or 5cm 3mm	2	B2 for 5.3 cm or 53 mm or 5cm 3mm (allow 5.1 – 5.5 cm or 51 – 55 mm or 5cm 1mm – 5cm 5 mm) (B1 for 5.3 (allow 5.1 – 5.5) **or** 53 (allow 51 – 55) **or** cm with a value from 4.8 – 5.8 **or** mm with a value from 48 – 58)
	(b)		109	1	B1 (± 2)
	(c)		hexagon	1	B1
					Total 4 marks

4	(a)		0.9	1	B1
	(b)		6	1	B1
	(c)		15 squares shaded	1	B1
	(d)		$\frac{2}{500}$	1	B1
	(e)	eg $\frac{32-8}{32}$ oe or $1-\frac{8}{32}$ oe or $\frac{32}{32}-\frac{8}{32}$ oe or $\frac{24}{32}$ or 0.75 or $\frac{1}{4}$		2	M1
		Correct answer scores full marks (unless from obvious incorrect working)	$\frac{3}{4}$		A1
					Total 6 marks

5	(a)		$28ef$	1	B1
	(b)		d^5	1	B1
	(c)		$4a - 5k$	2	B2 for $4a - 5k$ (B1 for $4a$ or $-5k$ **or** $4a + -5k$)
	(d)		9	1	B1
	(e)	$2r = 14 + 9$ or $2r = 23$ oe **or** $(14 + 9) \div 2$ **or** $2 \times 11.5 - 9 = 14$		2	M1 for a correct first step **or** a correct calculation for r
		Correct answer scores full marks (unless from obvious incorrect working)	11.5		A1 for 11.5 or $\frac{23}{2}$ or $11\frac{1}{2}$
					Total 7 marks

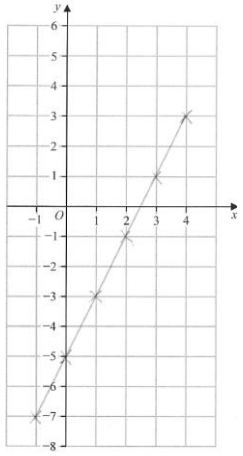
6	27.3 – 16.8 (= 10.5) **or** $7b + 2c = 27.3$ $\underline{4b + 2c = 16.8}$ $3b \quad = 10.5$		4	M1	for a correct first step to find the weight of 3 boxes
	"10.5" ÷ (7 – 4) (= 3.5) **or** $b = 3.5$			M1	for a method to find the weight of one box
	eg $27.3 - 7 \times "3.5" (= 2.8)$ **or** $16.8 - 4 \times "3.5" (= 2.8)$ **or** $2c = 16.8 - 4 \times "3.5" (= 2.8)$			M1	for a method to find the weight of 2 crates
	Correct answer scores full marks (unless from obvious incorrect working)	1.4		A1	oe eg $\frac{7}{5}$
					Total 4 marks

7 (a)		Reason given	1	B1	vertically opposite angles are equal **or** vertically opposite angles are equal opposite to 58(°)
(b)	(*JGH* =) 360 – 163 – 90 – 47 (= 60) **or** (*JGH* =) 180 – 110 (= 70)		4	M1	for a method to find angle *JGH* either using the quadrilateral **or** assuming line *FGH* is straight
	Correct answer scores full marks (unless from obvious incorrect working)			A1	(110 + 60 =) 170 **or** 110 + 60 ≠ 180 **or** (180 – 60 =) 120 **or** (70 + 163 + 90 + 47 =) 370 **or** 70+ 163 + 90 + 47 ≠ 360 **or** for (180 – 110 =) 70 **and (**360 – 163 – 90 – 47 =) 60
				B1	angles on a straight line add to 180° **or** angles on a straight line add to 180°
				B1	angles in a quad(rilateral) add up to 360 **or** angles in a quad(rilateral) add up to 360 (Accept 4-sided shape)
					Total 5 marks

8	eg 8 small squares = 16 **or** 2 large squares = 16 **or** 2 small squares = 4 **or** [small square =] 16 ÷ 8 (= 2) **or** [large square =] 16 ÷ 2 (= 8) **or** [small square =] 4 ÷ 2 (=2) **or** [2 small squares] = 16 ÷ 4 (=4) **or** Friday = 28 (toys) and Thursday = 12 (toys)		3	M1	for starting to work with proportion may be seen in a square on the pictogram or in working or implied by correct working **or** for finding the correct number of toys sold on Thursday and Friday
	eg 9 × "2"oe **or** 2.25 × "8"oe **or** 4.5 × "4" oe			M1	for a complete method to find the toys sold on Monday
	Correct answer scores full marks (unless from obvious incorrect working)	18		A1	cao
					Total 3 marks

9 (i)		33	1	B1	
(ii)		Added 7	1	B1	accept eg add 7, (n) + 7, 7n – 2
					Total 2 marks

10	1 × 4 + 2 × 10 + 3 × 5 + 4 × 7 + 5 × 4 (= 87) **or** 4 + 20 + 15 + 28 + 20 (= 87)		3	M1	for at least 4 correct products and intention to add. Products may be seen by the side of the table.
	"87" ÷ 30 oe			M1	dep on M1. Allow use of their "30" from adding the frequencies from the table.
	Correct answer scores full marks (unless from obvious incorrect working)	2.9		A1	accept an answer of 3 if correct working seen eg 87 ÷ 30 oe
					Total 3 marks

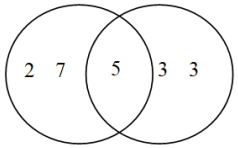
11	(−1, −7) (0, −5) (1, −3) (2, −1) (3, 1) (4, 3) 	For a correct line between $x = -1$ and $x = 4$	3	B3 for a correct line between $x = -1$ and $x = 4$ B2 for a correct straight line segment through at least 3 of (−1, −7) (0, −5) (1, −3) (2, −1) (3, 1) (4, 3) **or** for all of (−1, −7) (0, −5) (1, −3)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

12	eg $\frac{42}{35}$ (=1.2) **or** $\frac{35}{42}$ (=0.833...) **or** $\frac{54}{35}$ (=1.54...) **or** $\frac{35}{54}$ (=0.648...)		3	M1 a method to find a correct ratio
	eg 54×"1.2" **or** 54÷"0.833..." **or** 42×"1.54..." **or** 42÷"0.648..."			M1 for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	64.8		A1 accept 64.80
				Total 3 marks

13	eg $\pi \times 6.4^2 \left(= \frac{1024}{25}\pi\right)$		2	M1	allow 3.14… or $\frac{22}{7}$ for π
	Correct answer scores full marks (unless from obvious incorrect working)	129		A1	accept 128 – 129
					Total 2 marks

14	6 – 3.5 (= 2.5) **or** 4 × 6 + 4 × 3.5 (= 38) **or** 6 × 6 + 6 × 3.5 (= 57) or 2 × 9.5 × 3 (= 57) or 19 × 3 (= 57)		4	M1	for a method to find the 'missing length' (may be shown on the diagram) **or** for a method to find the length of the solid lines excluding 2.5 cm, may include extra sides added **or** for a method to find the perimeter of the 3 rectangles
	4 × 6 + 4 × 3.5 + 2 × "2.5" (= 43) or 6 × 6 + 6 × 3.5 – 4 × 3.5 (= 43) or 2 × 9.5 × 3 – 4 × 3.5 (= 43) or 19 × 3 – 4 × 3.5 (= 43)			M1	for a complete method to find the perimeter of the shape
	eg "43" × 7.6			M1	for a method to find the cost, allow use of their "43" as long as from adding at least 4 correct lengths including a length of 3.5 **and** a length of 6 eg 57 × 7.6(0) or 38 × 7.6(0)
	Correct answer scores full marks (unless from obvious incorrect working)	326.8(0)		A1	
					Total 4 marks

15	eg 119 ÷ 140 (× 100) or 0.85 (× 100) or $\frac{17}{20}$ (× 100) oe		2	M1
	Correct answer scores full marks (unless from obvious incorrect working)	85		A1
				Total 2 marks

16	45, 90, 135, 180... **and** 70, 140, 210, 280... **or** 2, 5, 7 **and** 3,3,5 **or**  **or** $\frac{45\times70}{5}$ **or** 2, 3, 3, 5, 7 oe **or** 5 | 45 | 70 | 9 | 14 **or** 5, 9, 14 oe		2	M1 for any correct valid method eg for starting to list at least **four** multiples of each number **or** 2, 5, 7 and 3, 3, 5 seen (may be in a factor tree, ignore 1) **or** a fully correct Venn diagram **or** 5, 9, 14 oe (could be in a table)
	Correct answer scores full marks (unless from obvious incorrect working)	630		A1 Allow $2 \times 3^2 \times 5 \times 7$ oe eg $5 \times 9 \times 14$
				Total 2 marks

17		142.75	1	B1
		142.85	1	B1 accept 142.8499... or $142.84\dot{9}$
				Total 2 marks

18	eg $\frac{9}{4}$ and $\frac{12}{7}$		3	M1	for $2\frac{1}{4}$ and $1\frac{5}{7}$ expressed as improper fractions
	eg $\frac{9}{\cancel{4}^{1}} \times \frac{\cancel{12}^{3}}{7}$ **OR** $\frac{9}{4} \times \frac{12}{7} = \frac{108}{28}$ oe eg $\frac{63}{28} \times \frac{48}{28} = \frac{3024}{784}$			M1	correct cancelling or multiplication of numerators and denominators without cancelling
	eg $\frac{9}{\cancel{4}^{1}} \times \frac{\cancel{12}^{3}}{7} = \frac{27}{7} = 3\frac{6}{7}$ **or** $\frac{9}{4} \times \frac{12}{7} = \frac{108}{28} = \frac{27}{7} = 3\frac{6}{7}$ **or** $\frac{9}{4} \times \frac{12}{7} = \frac{108}{28} = 3\frac{24}{28} = 3\frac{6}{7}$ **or** $\frac{9}{4} \times \frac{12}{7} = \frac{63}{28} \times \frac{48}{28} = \frac{3024}{784} = \frac{27}{7} = 3\frac{6}{7}$ **or** $\frac{9}{4} \times \frac{12}{7} = \frac{63}{28} \times \frac{48}{28} = \frac{3024}{784} = 3\frac{672}{784} = 3\frac{6}{7}$ **or** correct working to $\frac{27}{7}$ **and** writing $3\frac{6}{7} = \frac{27}{7}$ *Working required*	shown		A1	dep on M2, for conclusion to $3\frac{6}{7}$ from correct working – either sight of the result of the multiplication e.g. $\frac{108}{28}$ oe must be seen **or** correct cancelling prior to the multiplication to $\frac{27}{7}$ NB: use of decimals scores no marks unless as a check
					Total 3 marks

19 (a)			0.7	1	B1 oe eg $\frac{7}{10}$ oe or 70% or $\frac{0.7}{1}$ If probabilities are given as percentages then % sign must be seen
	(b)	eg 1 – (0.12 + 0.2 + 0.38) (= 0.3) oe **or** 1 – "0.7" (= 0.3) oe **or** 0.12 + 0.20 + 0.38 + 4x + x = 1 oe **or** "0.7" × 350 (= 245) oe **or** 0.12 × 350 (= 42) **or** 0.38 × 350 (= 133)		4	M1 ft their "0.7" If probabilities are given as percentages then % sign must be seen
		eg "0.3" ÷ 5 (= 0.06) **or** "0.3" ÷ 5 × 4 (= 0.24) **or** 0.24 **or** (x =) 0.06 **or** (4x =) 0.24 **or** "0.3" × 350 (= 105) oe **or** 350 – "245" (= 105) oe **or** 350 – "42" – 0.20 × 350 – "133" (=105) oe			M1
		eg "0.06" × 350 (= 21) oe **or** "105" ÷ 5 (= 21) oe **or** "0.06" × 4 × 350 oe **or** "0.24" × 350			M1 or for $\frac{21}{350}$ or $\frac{84}{350}$
		Correct answer scores full marks (unless from obvious incorrect working)	84		A1 cao
					Total 5 marks

20 (a)(i)		2, 3, 4, 6, 8, 9, 10, 12	1	B1	
(ii)		1, 2, 4, 5, 7, 8, 10, 11	1	B1	
(b)(i)		$\varnothing$	1	B1	
(ii)		$\notin$	1	B1	
					Total 4 marks

21 (a)		$-2 < x \leq 1$	2	B2	accept $1 \geq x > -2$ **or** $x > -2, x \leq 1$ if not B2 then B1 for $-2 < x$ **or** $x \leq 1$ **or** $-2 \leq x < 1$ **or** $-2 \leq x \leq 1$ **or** $-2 < x < 1$ Condone use of a variable other than x but not 0
(b)	$7a - 3a \leq 28 + 5$ **or** $4a \leq 33$ **or** $-5 - 28 \leq 3a - 7a$ **or** $-33 \leq -4a$		2	M1	for a terms on one side and numbers on the other. Condone = rather than $\leq$ or any other sign for this mark.
	Working required	$a \leq 8.25$		A1	(dep on M1) oe eg $a \leq \frac{33}{4}$ **or** $a \leq 8\frac{1}{4}$ **or** $8.25 \geq a$ must have correct sign on answer line (sight of correct answer in working space and just 8.25 on answer line gains M1 only).
					Total 4 marks

22	(a)	1262 ÷ 17.5 oe		2	M1	1262 ÷ their time their time may be an incorrect conversion to a decimal time eg 17.3 or from an attempt at converting to minutes eg 1050
			72		A1	accept 72.1 **or** 72.11...
	(b)	$50x \div 1000$ (= $0.05x$) oe **or** $50x \times 60 \times 60$ (= $180\,000x$) oe **or** $50x \div \frac{1}{3600}$ (= $180\,000x$) oe **or** $50x \div 1000 \times 60$ (= $3x$) **or** $\frac{3600}{1000}$ or $\frac{18}{5}$ or 3.6 **or** $\frac{1000}{3600}$ or $\frac{5}{18}$ or 0.277(77…)		3	M1	Condone omission of x for this marks
		$\frac{50x \times 60 \times 60}{1000}$ oe **or** $50x \times 3.6$ oe **or** $50x \div \frac{1000}{3600}$ oe **or** 180			M1	for a complete method including x **or** for an answer of 180
		Correct answer scores full marks (unless from obvious incorrect working)	$180x$		A1	
						Total 5 marks

23	(a)		$x^2 - 3x$	1	B1	
	(b)	eg $5m = t + 4$ **or** $m = \frac{t}{5} + \frac{4}{5}$		2	M1	for a correct first step
		Correct answer scores full marks (unless from obvious incorrect working)	$t = 5m - 4$		A1	oe eg $t = 5\left(m - \frac{4}{5}\right)$ **or** $t = -4 + 5m$ $5m - 4$ only on answer line scores M1 unless $t = 5m - 4$ is seen in the working then score M1A1
	(c)		a^{16}	1	B1	
	(d)		c^{18}	1	B1	
	(e)(i)			2	M1	for $(y \pm 3)(y \pm 7)$ **or** for $(y \pm a)(y \pm b)$ with $ab = 21$ or $a + b = -10$
		Correct answer scores full marks (unless from obvious incorrect working)	$(y - 3)(y - 7)$		A1	for correct factors
	(ii)		3, 7	1	B1	ft dep on factorising in the form $(y \pm p)(y \pm q)$
						Total 8 marks

24	eg $\tan 24 = \frac{6.5}{QR}$ **or** $\frac{6.5}{\sin 24} = \frac{QR}{\sin(180-90-24)}$ oe **or** $\tan(180-90-24) = \frac{QR}{6.5}$ **or** $(PR =)\ \frac{6.5}{\sin 24} (= 15.9...)$ **and** $6.5^2 + QR^2 = "15.9"^2$		3	M1	for setting up a trig equation in *QR* **or** for a complete method to find *PR* **and** then setting up Pythagoras or trig equation for *QR*
	eg $(QR =) \frac{6.5}{\tan 24}$ **or** $(QR =) \frac{6.5}{\sin 24} \times \sin 66$ **or** $(QR =)\ 6.5 \tan 66$ [where 66 = 180 – 90 − 24] **or** $(QR =) \sqrt{"15.9"^2 - 6.5^2}$			M1	for a complete method
	Correct answer scores full marks (unless from obvious incorrect working)	14.6		A1	accept 14.5 – 14.61
					Total 3 marks

<table>
<tr><td rowspan="3">25</td><td>(volume of water =) $9\times35\times28(=8820)$
or (total volume of cuboid =) $20\times35\times28(=19600)$
or (volume of space =) $(20-9)\times35\times28(=10780)$</td><td></td><td rowspan="3">3</td><td>M1</td><td>for a method to find a relevant volume for the cuboid</td></tr>
<tr><td>$\pi\times10^2\times33$ $(=3300\pi$ or $10367(.25...))$ oe</td><td></td><td>M1</td><td>(indep) for a method to find the volume of the cylinder, accept a volume in the range 10362 to 10368.6
Allow 3.14… or $\frac{22}{7}$ for π</td></tr>
<tr><td>(total volume of water =) “8820” + “10367(.25...)” (= 19187(.25...))
(difference between volumes of both solids =)
“19600” − “10367(.25…)”(= 9232(.74…))
(volume not filled =) “19600” – “8820” – “10367(.25…)”
(=412(.74…))

Working required</td><td>Shown</td><td>A1</td><td>correct workings with accurate figures
eg
<table><tr><td>Value 1</td><td>Value 2</td></tr><tr><td>10780</td><td>10367(.25…)
accept 10362 to 10372</td></tr><tr><td>19600</td><td>19187(.25…)
accept 19182 to 19192</td></tr><tr><td>8820</td><td>9232(.74…)
accept 9228 to 9238</td></tr><tr><td>412(.74…) or 413
accept 408 to 418</td><td>none needed</td></tr></table></td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Total 3 marks</td></tr>
</table>

26	2500 ÷ 20 × 3 (= 375) oe **or** 125 × 3 (=375) **or** 7500 ÷ 20 (= 375) 3000 ÷ 20 × 3 (= 450) oe **or** 150 × 3 (= 450) **or** 9000 ÷ 20 (= 450)			5	M1	for a method to find the interest for Bank A 2875 or 3450 implies this method mark	
	for 0.04 × 3000 oe (= 120) or 0.04 × 2500 oe (= 100) **or** 1.04 × 3000 oe (= 3120) or 1.04 × 2500 oe (= 2600)	**OR** 3000×1.04^2 (= 3244.8) **or** 2500×1.04^2 (=2704)			M1	for finding 4% **or** 104% of 3000 or 2500	**OR** M2 for 3000×1.04^2 (= 3244.8) **or** 2500×1.04^2 (=2704) **or** 3000×1.04^3 (= 3374.59) **or** 2500×1.04^3 (= 2812.16)
	1.04 × "3120" oe (= 3244.8) 1.04 × "2600" oe (= 2704)				M1	for completing method to find the total amount for Bank B	
	eg "3244.8" – 3000 (= 244.8) **or** "2704" – 2500 (= 204)				M1	for a complete method to find the interest for Bank B	
	Correct answer scores full marks (unless from obvious incorrect working)		130.2(0)		A1		
						SC: if none of the 2nd or 3rd M marks gained award M1 for 0.08 × 3000 oe **or** 240 **or** 1.08 × 3000 **or** 3240 **or** 0.08 × 2500 oe **or** 200 **or** 1.08 × 2500 **or** 2700 **or** $3000 \times (1 - 0.04)^2$ (= 2764.8(0)) **or** $2500 \times (1 - 0.04)^2$ (= 2304) accept (1 + 0.04) or $\left(1 + \frac{4}{100}\right)$ as equivalent to 1.04 throughout	
							Total 5 marks

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