

Mark Scheme

AQA Foundation Mock Set B Paper 3

For AQA GCSE Mathematics (8300)

Foundation tier • Paper 3 (Calculator)

Total 80 marks

Key to the marks

M	Method mark: for a correct method that could lead to the correct answer.
A	Accuracy mark: for a correct value or answer that follows from a correct method. The method may be implied.
B	Independent mark: for a correct answer or statement; no method needs to be seen.
Q	Quality mark: for a clear, complete and correct explanation or conclusion.
ft	Follow through: credit correct work that uses a wrong value from an earlier step.
dep	Dependent: can only be given if the mark before it has been given.
SC	Special case: credit for a common misreading that still has some mathematical worth.
oe	Or equivalent: accept any equal value or form, e.g. 0.5 for $\frac{1}{2}$.
cao	Correct answer only.
$[a, b]$	Accept any value from a to b inclusive.
3.14 ...	Accept any answer that begins 3.14, e.g. 3.14, 3.142, 3.1416.
()	Working in brackets does not need to be seen.

Give credit for any correct method, including ones not listed here. A correct answer with no working scores full marks unless the question asks for working (for example “show that” or “you must show your working”). If a correct answer is followed by further work that does not change it, ignore the further work. Probabilities must be written as fractions, decimals or percentages.

Indicative grade boundaries

Grade	5	4	3	2	1
Whole set: Papers 1, 2 and 3 (out of 240)	186	156	115	75	36
This paper alone, rough guide (out of 80)	62	52	38	25	12

Indicative only. Based on the real AQA boundaries for June 2023 to June 2026 (median), adjusted for how this set compares in difficulty with the real papers. Grades are awarded on the total for all three papers; the single-paper guide is about one third of the set boundaries.

These are estimates to help you judge performance on a practice paper; real boundaries change every year.

Marking guidance

Q	Answer	Marks	Guidance
1(a)	206 050	B1	206 050 <i>Additional guidance:</i> 2 006 050 or 206 500 or 20 650 scores B0
1(b)	Any value between 4.2 and 4.25, e.g. 4.23	B1	any value x with $4.2 < x < 4.25$, e.g. 4.21 <i>Additional guidance:</i> Do not accept 4.2 or 4.25. Accept an equivalent fraction, e.g. $4\frac{11}{50}$
Total for Question 1: 2 marks			
2(a)	34	B1	34
2(b)	Divide by 2 (halve)	B1	$\div 2$ or halve or $\times \frac{1}{2}$ oe <i>Additional guidance:</i> Do not accept “goes down by half” unless it is clear each term is halved. Do not accept -2 or an n th term
2(c)	9	B1	9 <i>Additional guidance:</i> 65 (rule applied forwards) or 6.33 ... (from $23 \div 3 + 4$) scores B0
Total for Question 2: 3 marks			
3	£23.55	M1	$62.80 \div 8$ or 7.85 or 3×62.80 or 188.4(0) or 0.375×62.80
		A1	23.55 <i>Additional guidance:</i> 23.55 with no working scores M1A1. 2355 on the £ answer line scores M1A0
4(a)	8	B1	8
4(b)	28	B1	28 <i>Additional guidance:</i> 17 or 11 alone scores B0
4(c)	$\frac{29}{48}$	M1	$\frac{29}{a}$ with $a > 29$ or $\frac{b}{48}$ with $b < 48$
		A1	$\frac{29}{48}$ oe <i>Additional guidance:</i> Accept 0.604(...) or 0.6 from $\frac{29}{48}$ seen, or 60.4(...)%. $\frac{37}{48}$ (includes both) scores M1A0. Do not accept ratio or words, e.g. 29 : 48 or 29 out of 48, for A1
Total for Question 4: 4 marks			
5(a)	0.064	B1	0.064 <i>Additional guidance:</i> 0.06 or 0.0637 or 0.063 scores B0
5(b)	800 000	B1	800 000

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> 8 or 900 000 or 850 000 scores B0
5(c)	£2.47	B1	2.47 <i>Additional guidance:</i> 2.4714(...) unrounded scores B0. 2.48 scores B0
Total for Question 5: 3 marks			
6	Shop B (A: £1.30, B: £1.25, C: £1.27 per ball)	M1	one correct comparable value, e.g. 1.3(0) or 1.25 or 1.26(...) or 1.27 or 11.4(0) for 9 balls
		M1	three correct comparable values, e.g. 1.3(0), 1.25 and 1.26(...) or 1.27 or costs of 36 balls 46.8(0), 45 and 45.6(0)
		A1	Shop B with three correct comparable values <i>Additional guidance:</i> Comparable values may be in pounds or pence and may be for any number of balls, e.g. balls per £1: 0.769, 0.8, 0.789. Shop C as $5.70 \div 3 = 1.9(0)$ scores M0 for Shop C. Shop B ticked with no working scores MOM0AO
7	3.62	B2	3.62
		(B1)	25.2(1 ...) or 6.97 or 3.617(...) <i>Additional guidance:</i> $7.635 \dots + 17.576 \div 6.97 = 10.157 \dots$ scores B0 unless 25.2(1 ...) or 6.97 is seen. 3.61 (truncated) with 3.617 seen scores B1
8	Yes. The width is 1.7 m, so the perimeter is 8.4 m, which is less than 8.5 m	M1	$4.25 \div 2.5$ or 1.7
		M1dep	$2 \times (2.5 + 1.7)$ oe or 8.4
		A1	Yes and 8.4 (and 8.5 or 0.1 left over) <i>Additional guidance:</i> Yes with 4.2 (two sides only) scores M1M0AO. Ticking Yes with no working scores MOM0AO. Alternative: $8.5 \div 2 - 2.5 = 1.75$ and $2.5 \times 1.75 = 4.375 > 4.25$ scores M1M1, then A1 for Yes
9(a)	£15.48	M1	$6.45 \div 5$ or 1.29 or $6.45 \times 12 \div 5$ oe
		A1	15.48 <i>Additional guidance:</i> Build-up methods, e.g. $6.45 + 6.45 + 1.29 + 1.29$, score M1
9(b)	£30.15	M1	$40 \div 4.5$ or 8.8(...) or 8.9 or 9 (bags) or $8 \times 4.5 = 36$ and $9 \times 4.5 = 40.5$
		A1	30.15

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> 26.8(0) (8 bags) scores M1A0. 29.7(7 ...) (from 8.88 ... $\times$ 3.35) scores M1A0
Total for Question 9: 4 marks			
10(a)	5 + 31 or 7 + 29 or 13 + 23 or 17 + 19	B1	5 and 31 or 7 and 29 or 13 and 23 or 17 and 19 (either order) <i>Additional guidance:</i> 18 + 18 or 1 + 35 or 3 + 33 scores B0
10(b)	25 + 8 = 33	B1	25 and 8
10(c)	e.g. 66 – 56 or 90 – 80 (6a – 8b = 10, both > 50)	B2 (B1)	66 and 56 or 90 and 80 or any 6a and 8b greater than 50 with 6a – 8b = 10 a multiple of 6 minus a multiple of 8 equal to 10, e.g. 18 – 8 or 42 – 32 or a multiple of 8 minus a multiple of 6 equal to 10 with both over 50, e.g. 64 – 54
Total for Question 10: 4 marks			
11(a)	$40 < t \leq 50$	B1	$40 < t \leq 50$ oe <i>Additional guidance:</i> Accept 40–50. Do not accept 16
11(b)	44.25 minutes	M1 M1 A1	midpoints 25, 35, 45, 55 seen or used $\sum fx$ using x consistently within or at the ends of the classes, e.g. 75 + 315 + 720 + 660 or 1770 44.25 accept 44.2 or 44.3 <i>Additional guidance:</i> 1770 $\div$ 4 = 442.5 scores M1M1A0. Using lower or upper class limits: $\sum fx = 1570$ or 1970 (39.25 or 49.25) scores M0M1A0. 1770 seen with no midpoints shown implies M1M1
Total for Question 11: 4 marks			
12	Image with vertices (2, 2), (2, 5), (4, 5), (4, 3)	B2 (B1)	correct image, vertices (2, 2), (2, 5), (4, 5), (4, 3) 90° anticlockwise about a different centre or 90° clockwise about (1, 1) [vertices (0, 0), (0, –3), (–2, –3), (–2, –1)] <i>Additional guidance:</i> Mark intention. Rotation about (0, 0) gives (0, 2), (0, 5), (2, 5), (2, 3): B1
13(a)	Discrete, Continuous, Continuous	B1	all three rows correct: discrete, continuous, continuous

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Q	Answer	Marks	Guidance
13(b)	He only asks Year 7, and students in other years may think differently.	B1	valid reason, e.g. only one year group asked or other years are not included or Year 7 may have different views <i>Additional guidance:</i> Do not accept “40 is too small” alone. Do not accept “it is biased” with no reason
Total for Question 13: 2 marks			
14	$\frac{5}{8}, \frac{13}{20}, \frac{2}{3}, \frac{9}{7}$	B2 (B1)	$\frac{5}{8}, \frac{13}{20}, \frac{2}{3}, \frac{9}{7}$ all four correctly converted to decimals, percentages or a common denominator or three in the correct order <i>Additional guidance:</i> Accept the fractions written as correct decimals in the correct order. Reverse order scores B1
15	Harvey £74, Lewis £92, Felix £184	M1 M1dep A1 A1	two of $x, x + 18, 2(x + 18)$ oe (any letter, may be in terms of Lewis’s amount) $x + x + 18 + 2(x + 18) = 350$ oe or $4x + 54 = 350$ or $(350 - 18 - 36) \div 4$ oe 74 (Harvey) or 92 (Lewis) or 184 (Felix) 74, 92 and 184 all correct and in the correct places <i>Additional guidance:</i> Correct answers with no working score 4 marks. Using $2x$ for Felix gives $4x + 18 = 350, x = 83$: scores M1MOA0A0. Trial and improvement leading to all three correct scores 4; otherwise 0
16	No. $1.8 \text{ m}^2 = 18\,000 \text{ cm}^2$	M1 A1	100×100 or 10 000 or $1.8 \times 10\,000$ oe No and 18 000 <i>Additional guidance:</i> Ticking No with no working scores MOA0. No with $1.8 \times 1000 = 1800$ scores MOA0. Alternative: $180 \div 10\,000 = 0.018 \text{ m}^2$ and No scores M1A1
17	31.7 m	M1 M1dep A1	$42^2 - 27.5^2$ or $1764 - 756.25$ or 1007.75 $\sqrt{1007.75}$ oe 31.7 accept [31.7, 31.75] <i>Additional guidance:</i> $\sqrt{42^2 + 27.5^2} = 50.2(\dots)$ scores MOMOA0. 31.745 ... with 31.8 on the answer line scores M1M1A0
18(a)	Identity	B1	Identity

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Q	Answer	Marks	Guidance
18(b)	$12x - 8 - 5x + 15 = 7x + 7$ and $7(x + 1) = 7x + 7$	M1	$12x - 8 - 5x + 15$ allow one error
		A1	$7x + 7$ from correct working and $7(x + 1) = 7x + 7$ or $7x + 7 = 7(x + 1)$ <i>Additional guidance:</i> $12x - 8 - 5x - 15 = 7x - 23$ scores M1A0. Factorising $7x + 7$ to $7(x + 1)$ is an acceptable alternative to expanding the right-hand side
		Total for Question 18: 3 marks	
19(a)	£14 091.96	M1	$21\,400 \times 0.87$ or 18 618 or $21\,400 \times 0.13$ or 2782
		M1dep	$21\,400 \times 0.87^3$ oe or three correct successive decreases
		A1	14 091.96 accept 14 092 or 14 091.9(...) <i>Additional guidance:</i> $21\,400 \times 0.61 = 13\,054$ (simple decrease) scores M1M0A0. $21\,400 \times 0.87^2 = 16\,197.66$ (2 years) scores M1M0A0. Year-by-year values: 18 618, 16 197.66, 14 091.96(42)
19(b)	It is less than the answer to part (a)	B1	It is less than the answer to part (a)
Total for Question 19: 4 marks			
20(a)	118°	B1	[116, 120]
20(b)	C marked 6 cm from B on a bearing of 335°	B1	cross or line from B on a bearing of $[333^\circ, 337^\circ]$
		B1	cross [5.8, 6.2] cm from B <i>Additional guidance:</i> Use an overlay. The second B1 can be awarded for a cross 6 cm from B on any bearing. A cross on a bearing of 025° (6 cm) scores B0B1
Total for Question 20: 3 marks			
21	$(x + 12)(x - 12)$	B2	$(x + 12)(x - 12)$ either order
		(B1)	$(x + a)(x - a)$ with $a \neq 12$ or $(x + 12)(x + 12)$ or $(x - 12)(x - 12)$ or $(x + a)(x - b)$ with $ab = 144$ <i>Additional guidance:</i> $(x - 12)^2$ scores B1. $x(x - 144)$ scores B0. Ignore an attempt to solve $= 0$ after a correct answer
22(a)	-3	B1	-3 <i>Additional guidance:</i> 3 or 4 or $-3x$ scores B0
22(b)	$2y = 4x + 1$	B1	$2y = 4x + 1$

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Q	Answer	Marks	Guidance
Total for Question 22: 2 marks			
23(a)	76	M1	0.62×150 or 93
		A1	76 <i>Additional guidance:</i> $0.62 \times 150 - 17$ evaluated correctly scores M1A1. 93 as the final answer scores M1A0
23(b)	Ibrahim's, because he threw the cup more times (150 compared with 40).	B1	Ibrahim with a reason, e.g. he threw it more times or 150 is more than 40 or more trials <i>Additional guidance:</i> Ibrahim with no reason scores B0. Do not accept "he got it on its side more times"
Total for Question 23: 3 marks			
24	£887.60	B1	18 and 12 or 8 and 4 or one square = 4 m^2 or 1 cm represents 2 m oe
		M1	their 18×12 – their 8×4 or 46×4 or 184
		M1	$100 \times 5.6(0)$ or 560
		M1	(their $184 - 100$) $\times 3.9(0)$ their $184 > 100$
		A1	887.6(0) <i>Additional guidance:</i> $184 \times 5.60 = 1030.40$ scores B1M1M0M0A0. $184 \times 3.90 = 717.60$ scores B1M1M0M0A0. Each square as 2 m^2 (lawn $46 \times 2 = 92 \text{ m}^2$, cost 515.20) scores B0M0M0M0A0. Lawn area 184 with $560 + 84 \times 3.9$ and an arithmetic slip scores B1M1M1M1A0
25	40 cm	M1	$2880 \div 4500$ or 0.64
		M1dep	their $0.64 \div 1.6$ or 0.4
		A1	40 <i>Additional guidance:</i> 0.4 on the cm answer line scores M1M1A0. 2880×4500 or $4500 \div 2880$ scores M0. $0.64 \div 1.6 \div 0.45 = 0.888 \dots$ scores M1M1A0
26	The plank may be only 465 cm long, and 9 pieces need $9 \times 52 = 468$ cm, which is more than 465 cm.	B1	465 or 4.65 seen
		M1	9×52 or 468 or 4.68 or their $465 \div 52$ or 8.9(4...)

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Q	Answer	Marks	Guidance
		A1	468 and 465 compared with a conclusion or 8.9(4...) and fewer than 9 <i>Additional guidance:</i> Using 470: $470 \div 52 = 9.03(\dots)$ scores B0M1A0. 475 used as a bound scores B0. Accept working in metres, e.g. $4.65 < 4.68$. The conclusion may be “he may only be able to cut 8 pieces” oe
27	0.96 g/cm ³	M1	0.92×450 or 414 or $303 \div 1.01$ or 300
		M1dep	(their 414 + 303) $\div$ (450+ their 300) oe or $717 \div 750$
		A1	0.96 accept 0.956 <i>Additional guidance:</i> $(0.92 + 1.01) \div 2 = 0.965$ (0.97) scores M0M0A0. Vinegar not changed to grams, e.g. $(414 + 0.303) \div (450 + 0.3) = 0.92$, scores M1M1A0. 0.95 (truncated) scores M1M1A0