

Mark Scheme

AQA Foundation Mock Set B Paper 2

For AQA GCSE Mathematics (8300)

Foundation tier • Paper 2 (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)	87 mm	B1	[86, 88] <i>Additional guidance:</i> [8.6, 8.8] (in cm) scores B0.
1(b)	117°	B1	[115, 119] <i>Additional guidance:</i> [61, 65] (wrong scale) scores B0.
Total for Question 1: 2 marks			
2(a)	7%	B1	7 <i>Additional guidance:</i> 70 scores B0.
2(b)	0.625	B1	0.625 <i>Additional guidance:</i> 1.6 (from $8 \div 5$) scores B0.
2(c)	$\frac{7}{25}$	B1	$\frac{7}{25}$ <i>Additional guidance:</i> $\frac{28}{100}$ or $\frac{14}{50}$ scores B0.
Total for Question 2: 3 marks			
3(a)	5w	B1	5w <i>Additional guidance:</i> Condone $5 \times w$ or $w5$. w^5 scores B0.
3(b)	$10k + 6$	B1	$10k + 6$ <i>Additional guidance:</i> Accept $6 + 10k$. $16k$ or $10k + 12$ scores B0.
Total for Question 3: 2 marks			
4(a)	5.5 gallons	B1	[5.4, 5.6]
4(b)	About 73 litres (accept 72 to 74)	M1	correct method using readings from the graph, e.g. 2× reading at 8 gallons, or reading at 10 + reading at 6, or 4× reading at 4, or 16× reading at 1
		A1	[72, 74] <i>Additional guidance:</i> Readings: 1 gallon [4.4, 4.7], 4 gallons [18, 18.5], 6 gallons [27, 27.5], 8 gallons [36, 37], 10 gallons [45, 46]. Using a known fact (e.g. $16 \times 4.5 = 72$) with no use of the graph scores M1A1 if the answer is in range.
Total for Question 4: 3 marks			
5(a)	3	B1	3
5(b)	Housing: 9R bar to 10 (shaded), 9S bar to 5 (white)	M1	$15 \div 3$ or 5 or 10 seen, or two values with a sum of 15 where one is double the other
		A1	9R = 10 and 9S = 5 (may be seen on the chart)

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Q	Answer	Marks	Guidance
		B1ft	both bars drawn at their heights, next to each other, shaded to match the key <i>Additional guidance:</i> 7.5 and 7.5 scores M0A0, but B1ft is possible. Bars may be any width; condone a small gap between them. Ignore the order of the two bars if the shading matches the key.
Total for Question 5: 4 marks			
6	No. The answer is $24 \div 6 = 4$. Joe needed brackets: $(15 + 9) \div (3 \times 2)$	M1	$24 \div 6$ or 24 and 6 seen, or $(15 + 9) \div (3 \times 2)$ oe
		A1	No and 4 <i>Additional guidance:</i> No with $15 + 9 \div 3 \times 2 = 21$ only scores 0. $(15 + 9) \div 3 \times 2 = 16$ is M0A0. No with “he should use brackets” and no value scores M0A0.
7	£14.58	M1	0.125×64.80 or 8.1(0), or 1.125×64.80 or 72.9(0), or 12.96×1.125
		M1	their $72.90 \div 5$, or $64.80 \div 5$ or 12.96
		A1	14.58 <i>Additional guidance:</i> Dividing by 4: $72.90 \div 4 = 18.225$ scores M1M0A0. $64.80 \div 5 = 12.96$ with 12.5% not added (answer 12.96) scores M0M1A0. Accept working in pence.
8(a)	279, 297, 729, 792, 927, 972	B2	all 6 correct codes and no others
		(B1)	at least 4 correct codes, ignore repeats <i>Additional guidance:</i> Codes may be in any order. Ignore repeats of correct codes for B2. A code that uses a digit twice (e.g. 277) or a digit not on the list is an incorrect code: B1 maximum.
8(b)	3	B1ft	3, ft their list from (a)
Total for Question 8: 3 marks			
9(a)	1.6	M1	$(0 \times 4 + 1 \times 7 + 2 \times 5 + 3 \times 3 + 4 \times 2) \div 21$ oe, or $34 \div 21$, allow one error in the products
		A1	1.6 or 1.61(...) or 1.62 <i>Additional guidance:</i> $34 \div 5 = 6.8$ scores M0A0. $10 \div 5 = 2$ scores M0A0. Accept 1.61... or 1.62 (more accuracy than asked) for A1.

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Q	Answer	Marks	Guidance
9(b)	No. The median is the 11th value, which is 1 goal.	M1	$\frac{21+1}{2}$ or 11th seen, or cumulative frequencies 4, 11 (16, 19, 21) seen, or a correct ordered list of the 21 values
		A1	No and median = 1 <i>Additional guidance:</i> No with “she has not used the frequencies” but no median scores MOA0. Median 5 (from ordering the frequencies 2, 3, 4, 5, 7) scores MOA0.
Total for Question 9: 4 marks			
10	£281.30	M1	11.60×1.5 or $17.4(0)$, or 11.60×0.5 or $5.8(0)$
		M1	19 (normal hours) or 3.5 (extra hours), or 2.5 and 1
		M1	their normal hours $\times 11.60$ + their extra hours $\times$ their higher rate, or $22.5 \times 11.60 + 3.5 \times 5.80$ oe
		A1	281.3(0) <i>Additional guidance:</i> Weekly threshold ($22.5 - 21 = 1.5$ extra hours): $21 \times 11.60 + 1.5 \times 17.40 = 269.70$ scores M1MOM1A0. All hours at the normal rate ($22.5 \times 11.60 = 261$) scores MOMOMOA0. Accept working in pence.
11	38	M1	2×9 or 18, or -5×-4 or $+20$ seen
		A1	38 <i>Additional guidance:</i> -2 (from $18 - 20$) scores M1A0. 56 (from $(2 \times -3)^2 + 20$) scores M1A0. 2 (from $-18 + 20$) scores M1A0.
12(a)	40 minutes	B1	40
12(b)	18 km/h	M1	$24 \div 1\frac{1}{3}$ or $24 \div 80 \times 60$ or $24 \div 1.33(\dots)$ oe, or 0.3 (km per minute)
		A1	18 <i>Additional guidance:</i> $24 \div 1.2 = 20$ scores MOA0. Allow [17.9, 18.1] from using 1.33 for A1. $42 \div 3.5 = 12$ (whole journey) scores MOA0.
12(c)	After her stop: the line is steeper (18 km/h compared with 12 km/h)	B1ft	After with a correct reason, e.g. the line is steeper, or 12 (km/h) and 18 (km/h), or she covered the same distance in less time <i>Additional guidance:</i> ft their (b) compared with 12 if their (b) comes from a correct method with one error. After with no reason scores B0. “She went further after the stop” is B0.

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Q	Answer	Marks	Guidance
Total for Question 12: 4 marks			
13	20°	M1 M1dep A1	360 ÷ 9 or 40, or (9 – 2) × 180 or 1260, or 140 seen (180 – their 140) ÷ 2, or their 40 ÷ 2 20 <i>Additional guidance:</i> 140 as the final answer scores M1M0A0. 40 as the final answer scores M1M0A0. Their 140 must be from a polygon angle method.
14(a)	–3 (when $x = -1$) and 7 (when $x = 4$)	B1 B1	–3 (at $x = -1$) 7 (at $x = 4$) <i>Additional guidance:</i> –5 or –7 at $x = -1$ scores B0.
14(b)	Smooth U-shaped curve through (–2, 1), (–1, –3), (0, –5), (1, –5), (2, –3), (3, 1), (4, 7)	B1ft B1ft	at least 6 points plotted correctly, ft their table smooth curve through all 7 of their points <i>Additional guidance:</i> Tolerance: within half a small square. Straight line segments joining the points score the first B1 only. A flat bottom between $x = 0$ and $x = 1$ scores the first B1 only.
Total for Question 14: 4 marks			
15	Estimate $500 \times 4 \div 20 = 100$, so 9.044 is wrong	M1 A1	at least two of 500 (or 490), 4, 20 seen 100 (or a correct estimate from their values, e.g. 98) and a conclusion, e.g. 100 is much bigger than 9 <i>Additional guidance:</i> Calculating 90.4(...) exactly without approximations scores M0A0. Accept other sensible approximations, e.g. $\frac{480 \times 4}{20} = 96$. Accept 2000 and 20 with “2000 ÷ 20 = 100”.
16	11.6 km/h	M1 M1 A1	41.25 or $41\frac{1}{4}$ (minutes), or 2475 (seconds), or 0.6875 or 0.69 (hours) 8 ÷ their time in hours, or 8 ÷ their time in minutes × 60, or 8 ÷ their time in seconds × 3600 11.6

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> Using 41.15 minutes: $8 \div 41.15 \times 60 = 11.66 \dots$, so 11.7, scores M0M1A0. $8 \div 41.25 = 0.19(\dots)$ (km per minute) only scores M1M0A0. 11.63 ... or 11.64 not rounded to 1 dp scores M1M1A0.
17	8.93×10^5	M1 A1	$2.5 \times 10^4 \div 2.8 \times 10^{-2}$ or $25\,000 \div 0.028$, or $892\,857(\dots)$ or $8.928 \dots \times 10^5$ 8.93×10^5 <i>Additional guidance:</i> 893 000 or 8.92×10^5 scores M1A0. 7×10^2 (from multiplying) scores M0A0.
18	segment	B1	segment
19	£140	M1 M1dep A1	$100 + 8$ or 108 or 1.08 $151.20 \div 1.08$ or $151.20 \div 108 \times 100$ oe 140 <i>Additional guidance:</i> $151.20 \times 0.92 = 139.10(4)$ scores M0M0A0. $151.20 - 0.08 \times 151.20$ scores M0M0A0. Accept 140.00
20(a)	On average, Service B is quicker (its mean is lower). Service A's times are more consistent (its range is smaller).	B1 B1	compares means in context, e.g. Service B is quicker on average compares ranges in context, e.g. Service A's times are more consistent or less varied <i>Additional guidance:</i> Do not accept "Service A has a higher mean" with no interpretation. Comparisons using the shortest time are not accepted for either mark.
20(b)	Service A: its longest time is $28 + 12 = 40$ minutes, but Service B's longest time is $15 + 31 = 46$ minutes.	B1	Service A with 40 and 46 seen, or 40 and a correct statement that B can take longer than 45 minutes <i>Additional guidance:</i> Service A with "the range is smaller" only scores B0. Service B with "lower mean" scores B0.
Total for Question 20: 3 marks			
21(a)	2308.9 cm^2	M1 A1	$36 \times 50 + \frac{1}{2} \times \pi \times 18^2$ oe [2308.6, 2309] given to 1 dp

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Q	Answer	Marks	Guidance
			<i>Additional guidance:</i> Using $\pi \times 18^2$ (full circle): 2817.8 ... scores M0A0. Using radius 36: 3835.7 ... scores M0A0. $\pi = 3.14$ gives 2308.7 (M1A1).
21(b)	192.5 cm	M1 A1	$\frac{1}{2} \times \pi \times 36$ or 56.5(...) seen [192.5, 192.6] <i>Additional guidance:</i> Including the dashed line: 228.5(...) scores M1A0. Using a full circle: 249.0(...) or 249.1 scores M0A0. $\pi = 3.14$ gives 192.52 (M1A1).
Total for Question 21: 4 marks			
22	5.4 m	M1 M1dep A1	$\sin 22 = \frac{h}{14.5}$ oe $14.5 \times \sin 22$ [5.43, 5.432] given to 1 dp as 5.4 <i>Additional guidance:</i> Using cos: $14.5 \times \cos 22 = 13.4(4 \dots)$ scores M0M0A0. 5.43 with no 1 dp answer scores M1M1A0. Calculator in radians (−0.128 ...) scores M1M1A0.
23	13.1%	M1 M1dep A1	$9\,870 - 6\,125$ or $3\,745$, or $28\,640 - 6\,125 + 9\,870$ or $32\,385$ their $3\,745 \div 28\,640 (\times 100)$ or their $32\,385 \div 28\,640$ or 1.13(07 ...) [13.07, 13.1] <i>Additional guidance:</i> Dividing by 32 385: 11.56 ... scores M1M0A0. $\frac{9\,870}{28\,640} \times 100 = 34.5 \dots$ scores M0M0A0. 113.1 scores M1M1A0.
24	$c = \frac{T - 6a}{5}$	M1 A1	$T - 6a = 5c$ or $\frac{T}{5} = \frac{6a}{5} + c$ oe $c = \frac{T - 6a}{5}$ oe <i>Additional guidance:</i> Accept $c = \frac{T}{5} - \frac{6a}{5}$ or $c = \frac{T}{5} - 1.2a$. $c = \frac{T + 6a}{5}$ scores M0A0. $c = T - 6a \div 5$ scores M1A0.
25(a)	$\frac{8}{36} = \frac{2}{9}$	M1 A1	a correct sample space or list of outcomes, or 8 (ways) or denominator 36 $\frac{8}{36}$ oe <i>Additional guidance:</i> Accept 0.22(...) or 22.2%. $\frac{4}{36}$ (one order only) scores M1A0. $\frac{1}{6}$ (from 6 possible scores) scores M0A0.

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Q	Answer	Marks	Guidance
25(b)	No. $P(0) = \frac{6}{36}$ but $P(1) = \frac{10}{36}$, so a score of 1 is more likely.	B1	No with a correct reason, e.g. 1 has 10 outcomes and 0 has 6, or $P(1) = \frac{10}{36}$ and $P(0) = \frac{6}{36}$, or a score of 1 is more likely <i>Additional guidance:</i> No with “all scores are equally likely” scores B0. Allow “a score of 1 is the most likely” with no counts. Total for Question 25: 3 marks
26	42	M1 M1dep M1 A1	$18 \div 3 \times 4$ or 24 (dogs), or 10:4:3 oe 60 (cats), or $18 \div 3 \times 10$ their number of cats – 18 42 <i>Additional guidance:</i> Ratios joined as 5:4:3 or 5:2:3 (one part = 6, cats 30, answer 12) scores M0M0M1A0. $60 - 24 = 36$ (cats – dogs) scores M1M1M0A0. 102 (the total number of animals) with no subtraction scores M1M1M0A0.
27	No. Sand costs £4.60 and cement costs £7.25, so Rafael needs £30.95	M1 A1 M1 A1	correct method to eliminate one variable, e.g. $28.30 - 19.10$ or $9.2(0)$, or $3s + 2c = 28.30$ and $3s + 6c = 57.30$ oe $4.6(0)$ or 7.25 $2 \times$ their sand + $3 \times$ their cement, where their prices satisfy one of the equations No and 30.95 <i>Additional guidance:</i> 9.20 taken as one bag of sand ($c = 4.95$, total 33.25): M1A0M1A0. Correct prices by trial and improvement score M1A1. No with no working, or with incorrect working, scores 0. Accept working in pence.